KUVEMPU UNIVERSITY

Govt. of Karnataka, State Public University

Jnanasahyadri Campus, Shankaraghatta-577451, Shivamogga District, Karnataka

Supporting Documents pertaining to the following Metric:

1.1.1: Curricula developed and implemented have relevance to the local, regional, national, and global developmental needs, which is reflected in the Programme outcomes (POs), and Course Outcomes (COs) of the Programmes offered by the University

1.1.1 Program and Course Outcome

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Kuvempu University

Faculty of Arts

School of Languages

English

Hindi

Kannada

Sanaskrit

Urdu

KUVEMPU UNIVERSITY
DEPARTMENT OF P.G. STUDIES IN ENGLISH

Papers offered from the academic year 2024-25

Paper Code	Paper Type	Title of the Paper	Hrs.	Credit	Marks
Semester-I					
HC-1.1	Hardcore-I	British Literature - Part I	6	6	100
HC-1.2	Hardcore -II	Gender Studies	6	6	100
HC-1.3	Hardcore -III	Reading and Interpretation	6	6	100
SC-1.1	Soft core -I	Introduction to Linguistics and Phonetics	4	4	100
SC-1.2	Soft core -II	American and Afro-American Literature	4	4	100
SC-1.3	Soft core -III	Dalit and Subaltern Literature	4	4	100
Semester-II					
HC-2.1	Hardcore-I	British Literature - Part II	6	6	100
HC-2.2	Hardcore -II	Literary Theory –Part-I	6	6	100
SC-2.1	Soft core -I	Women's Novel and Worldliness	4	4	100
SC-2.2	Soft core-II	Post Colonial Literatures	4	4	100
SC-2.3	Soft core -III	World Literatures –Part-I	4	4	100
2.1	Electives -1	Film Studies	2	2	50
Semester-III					
HC-3.1	Hardcore -I	Contemporary ELT	6	6	100
HC-3.2	Hardcore -II	Research Methodology	6	6	100
SC-3.1	Soft core -I	Modernity and Modernism; culture and Texts	4	4	100
SC-3.2	Soft core-II	Contemporary British Literature	4	4	100
SC-3.3	Soft core-III	World Literatures –Part-II	4	4	100
SC-3.4	Soft core-IV	Introduction to Film Studies	4	4	100
3.1	Electives -1	Making meaning in Indian Cinema.	2	2	50
Semester-IV					
HC-4.1	Hardcore-i	Cultural Studies	6	6	100
HC-4.2	Hardcore-II	Literary Theory - Part II	6	6	100
SC-4.1	Soft core-1	South Asian Women's Writing	4	4	100
SC-4.2	Soft core-II	Modern Indian Literature in English and Translation	4	4	100
SC-4.3	Soft core-III	Discourse Analysis	4	4	100
		Dissertation		**6**	100

PROPOSED SYLLABUS FOR THE MA (ENGLISH) PROGRAMME- 2024-25

KUVEMPU UNIVERSITY
DEPARTMENT OF P.G. STUDIES IN ENGLISH
PROPOSED SYLLABUS FOR THE MA (ENGLISH) PROGRAMME 2024-25
SEMESTER WISE ALLOCATION OF PAPERS

FIRST SEMESTER

Hardcore Papers
HC- 1.1. British Literature -Part I
HC- 1.2 Gender Studies
HC 1.3. Reading and Interpretation

Soft-Core Papers
SC-1. Introduction to Linguistics and Phonetics
SC-1.2. American and Afro – American Literatures
SC-1.3. Dalit and Subaltern Literatures

SECOND SEMESTER

Hardcore Papers
HC-2.1. British Literature Part - II
HC-2.2. Literary Theory Part – I

Soft-Core Papers
SC-2.1 Women's Novel and Worldliness
SC-2.2. Post-Colonial Literature
SC-2.3. World Literatures – Part **I**

Electives
2.1. Film Studies

THIRD SEMESTER

Hardcore Papers
HC-3.1. Contemporary ELT
HC- 3.2. Research Methodology

Soft-Core Papers

SC-3.1. Modernity and Modernism; Culture and Text
SC-3.2. Contemporary British Literature
SC-3.3. World Literatures – Part -II
SC-3.4. Introduction to Film Studies

Electives
3.1. Making Meaning in Indian Cinema

FOURTH SEMESTER

Hardcore Papers
HC-4.1 .Cultural Studies
HC-4.2 Literary Theory Part –II

Soft-Core Papers
SC-4.1.South Asian Women's writing
SC-4.2: Modern Indian Literatures in English and Translation
SC-4.3 Discourse Analysis

The Masters Course in English is designed to equip students with skills to analyze and interpret literary texts from various genres, periods and cultural backgrounds. The curriculum aims to build in them the ability to evaluate critical theories and methodologies relevant to the study of literature and apply them effectively in literary texts. The course engages in an interdisciplinary approach to literary studies which helps learners to integrate insights from related fields which helps foster an appreciation for diverse voices and perspectives in literature including marginalized and underrepresented voices. The focus of the course is also to explore connections between society and literature and understand issues of identity, power dynamics and social justice. The learner is also exposed to the intricacies of writing clear, coherent and persuasive arguments in academic essays, critiques and research papers.

Detailed Syllabus

SEMESTER – I Hard Core Papers
HC- 1.1. BRITISH LITERATURE -PART I

Course Description

This course provides an overview of British literature from medieval times to the Romantic period, focusing on key works and authors. It explores the social, historical, and cultural contexts of literary works and their significance in shaping British identity and literary traditions.

Course Objectives

1. To analyse the social and historical background of medieval society and its influence on literature.

2. To examine the literary works of Chaucer, Marlowe, Shakespeare, Wyatt, and Spenser in the context of the Renaissance and the Elizabethan Age.

3. To understand the development of metaphysical poetry in the seventeenth century, focusing on works by John Donne and Andrew Marvell.

4. To explore the themes of love, mortality, and spirituality in John Milton's "Paradise Lost."

5. To analyse the rise of the novel and the development of periodical essays in the Neo-Classical period.

6. To study the Romantic period in British literature, focusing on the works of Wordsworth and Keats.

7. To evaluate the impact of Romanticism on British literature and its enduring influence.

Learning Outcomes

1. Demonstrate a critical understanding of the social, historical, and cultural contexts of British literature from medieval times to the Romantic period.

2. Analyse and interpret key works of British literature, including "The Canterbury Tales" by Chaucer, "Doctor Faustus" by Marlowe, and "Othello" by Shakespeare.

3. Evaluate the themes and motifs of metaphysical poetry, as exemplified in the works of Donne and Marvell.

4. Analyse Milton's portrayal of Eve in "Paradise Lost" and its significance in the context of seventeenth-century England.

5. Explore the development of the novel and its significance in British literary history, with a focus on Robinson Crusoe by Daniel Defoe.

6. Understand the role of periodical essays in the Neo-Classical period and their impact on British society.

7. Analyse the themes of nature, mortality, and spirituality in Romantic poetry, focusing on Wordsworth's "Intimations of Immortality" and Keats's odes.

8. Develop research skills to explore and analyse scholarly works in British literature, including critical essays and reference guides.

9. Enhance communication skills through written and oral presentations on literary topics related to British literature.

Unit - I

Study of Medieval Society and its social, historical background,

Chaucer: Prologue to the Canterbury Tales

Unit – II

The Renaissance in Europe and the Elizabethan Age

Christopher Marlowe: Doctor Faustus

Shakespeare: Othello

Thomas Wyatt: 1. They flee from me 2. Whose list to hunt

Edmund Spenser: The Prologue to the Faerie Queen.(First four stanzas only) also sonnet no 54 and 68 from Amoretti

Unit –III

The Seventeenth Century Background

The Metaphysical Poets –John Donne; Andrew Marvell

John Donne: 1. Valediction Forbidding Mourning 2. The Good morrow

3. The Sun Rising 4. Canonisation

Andrew Marvell: To his Coy Mistress 2. On a Drop of Dew 3.Horatian ode

Milton: The Seduction of Eve (from Paradise Lost Book IX)

Restoration Drama: (1) The Way of the World –William Congreve

Neo Classicism; Rise of the novel

'Alexander Pope: Rape of the Lock'

Daniel Defoe: Robinson Crusoe

Periodical Essays: 1. Joseph Addison, "A Critical Diary"

2. Richard Steele, "The Spectator Club"

Unit – IV

Romanticism:

William Wordsworth: 'Intimations of Immortality'

'Tintern Abbey'

John Keats: Ode on a Grecian Urn

Ode to a Nightingale

Ode to autumn'

Suggested Reading:

F.W. Bateson and H.T. Meserole, A guide to English and American literature. 3rd edn. London: Longman, 1976.

M.J. Marcuse, Reference guide for English studies. Berkeley; Oxford: University of California Press, 1990.

M. Drabble (ed.), The Oxford companion to English literature. 6th edn. Oxford: Oxford University Press, 2000.

I. Ousby (ed.), The Cambridge guide to literature in English. [Rev edn.] Cambridge: Cambridge University Press, 1993.

J. Stringer (ed.), The Oxford companion to twentieth century literature in English. Oxford: Oxford University Press, 1996.

C. Buck (ed.), Women's literature. London: Bloomsbury, 1994.

Abrams, M.H. Glossary of literary terms. 5th ed. New York: Holt, Rinehart, and Winston, 1988

Baugh, Albert Croll. A literary history of England. 2nd ed. New York: Appleton-Century-Crofts, 1967.

The Cambridge guide to literature in English. Ed. Ian Ousby. Revised Edition. Cambridge; New York: Cambridge University Press, 1993.

The Cambridge history of English literature. Ed. A. W. Ward, A. R. Waller. New York; London: Putnam, 1907-33. 15 v.

A. DRAMA

Arnott, James Fullarton. English theatrical literature, 1559-1900 : a bibliography ; incorporating Robert W. Lawe's 'A bibliographical account of English theatrical literature' published in 1888.London: Society for Theatre Research, 1970.

Carpenter, Charles A. Modern British drama. Arlington Heights, IL: AHM Pub. Corp., c1979.

English Verse Drama

Harbage, Alfred. Annals of English drama, 975-1700 : an analytical record of all plays, extant or lost, chronologically arranged and indexed by authors, titles, dramatic companies &c. 3rd ed. London; New York: Routledge, 1989.

Nicoll, Allardyce. English drama, 1900-1930; the beginnings of the modern period. New York: Cambridge University Press, 1973.

Nicoll, Allardyce. A history of English drama, 1660-1900. Cambridge: University Press, 1952

The Revels history of drama in English. Ed. Clifford Leech, T. W. Craik. London: Methuen ; New York : Dist. by Harper and Row, 1975-

B. PROSE FICTION

Allen, Walter Ernst. The English novel: a short critical history. London: Phoenix House, 1954.

Baker, Ernest Albert. The history of the English novel. London: H. F. & G. Witherby, [1934-39]. 10 v.

Stevenson, Lionel. The history of the English novel : volume XI : yesterday and after. New York: Barnes & Noble, [1967].

C. POETRY

Courthope, William John. A history of English poetry. London: Macmillan and Co., 1903-35.

New Princeton encyclopedia of poetry and poetics. Ed. Alex Preminger and T. V. F. Brogan. Princeton, NJ: Princeton University Press, 1993.

Perkins, David. A history of modern poetry. Cambridge, MA: Belknap Press of Harvard University Press, 1976-1987. 2 v.

HC- 1.2 Gender Studies

Course Description

This course introduces students to the field of Gender Studies, focusing on feminist theory and gender ideology. It covers the history and concepts of feminism, waves of feminism, and the relationship between gender and feminism. The course also explores Indian feminism, its various perspectives, and its significance in the Indian context. Additionally, it examines gender ideology through key texts such as Judith Butler's Gender Trouble, Virginia Woolf's A Room of One's Own, and Kate Millet's Sexual Politics, along with excerpts from Manusmrithi and Wendy Donigher's commentary. The course includes texts, essays, and media that highlight the inter-sectionality of gender and caste, same-sex love in India, and representations of gender in films and literature.

Course Objectives

1 To learn the history and waves of feminism, differentiate between gender and feminism, and explore perspectives of Indian feminism.

2. To examine key texts by authors such as Judith Butler, Virginia Woolf, Kate Millet, and selections from Manusmrithi , Ruth Vanitha, and other media to analyse gender ideologies and their impact on society.

3. To explore the intersectionality of gender and caste through selected readings and texts by authors like Uma Chakravarthi, focusing on caste dynamics and the subordination of women.

4. To explore and analyse representations of gender and feminist perspectives in Indian society through literary and films texts.

Learning Outcomes

By the end of the course, the student will be able

1. Demonstrate an understanding of the historical development and different waves of feminism, as well as the evolution of gender ideologies, particularly within the Indian context.

2. Develop critical thinking skills through the analysis of key texts and media representations, enabling students to identify and evaluate gender ideologies and their implications.

3. Gain insight into the intersectionality of gender with caste and other social factors, allowing students to recognize and analyse the complex dynamics of gender-based discrimination.

4. Develop cultural sensitivity and awareness of diverse gender experiences, particularly regarding same-sex love and representation in literature and media.

5. Enhance literary interpretation skills by critically analysing gender representation in literature, identifying stereotypes, biases, and feminist perspectives within the texts.

6. Acquire research and analytical skills through engagement with suggested readings, enabling students to explore and critically evaluate various theoretical perspectives on gender and feminism.

7. Develop effective communication skills in discussing and articulating gender-related issues, both orally and in writing, drawing upon theoretical frameworks and empirical evidence from the course materials.

SECTION A

Feminism - Introduction; brief history; waves/Gender-Concepts, definitions
Gender v/s feminism Indian Feminism - Introduction, perspectives.

SECTION B

Gender ideology

Selections from Judith Butler - Gender Trouble: Feminism and the Subversion of Identity

Virginia Woolf - A Room of One's Own

Kate Millet - Sexual Politics.

Manusmrithi - Selections - From The Laws of Manu

by Wendy Donigher,

Penguin Books. 2000. Introduction

Chapter- III

Chapter- IXs

Texts/Essays/Media.

Uma Chakravarthi - Selections from Gendering Caste: Though a feminist lens.

Understanding Caste.

The formation of patriarchy and the subordination of Women.

Caste and Gender Contemporary India.

Ruth Vanitha - Introduction – Same Sex Love in India.

Water - Film

Angry Indian Goddesses - Film

Rudali - Mahaswetha Devi (Text/Movie)

Lalithambika Antarjanam - The Goddess of Revenge (also titled 'Revenge Herself')

Charlotte Perkins Gilman - The Yellow Wall Paper

Suggested Reading

Bhasin, Kamala. What is Patriarchy? Kali for Women, 1993.

Butalia, Urvashi. The Other Side of Silence: Voices from the Partition of India Duke University Press, 2000.

Carol C, Gould. Gender Key concepts in Cultural Theory IV, V. Humanity Books, 1999.

Choudhary, Maitrayee . Feminism in India. Kali for Women, 2004.

Cixous, Helene and Catherine Clement . The Newly Born Woman. Manchester University Press, 1986.

Eagleton, Mary. Feminist Literary Theory: A Reader. Wiley- Blackwell, 2010.

Eagleton, Terry . Literary Theory. Wiley India Pvt Ltd, 2008.

Evans, Mary. Feminism. Sage Publications Ltd, 2017.

Gubar, Susan and Sandra Gilbert. The Madwoman in the Attic. The Woman Writer and the Nineteenth-Century Literary Imagination. Yale University Press, 2000.

Kumar, Radha. The History of Doing. Zubaan 2011.

Padma, Anagol. The Emergence of Feminism in India 1850-1920. Routledge, 2006.

Sarkar, Tanika. Hindu Wife, Hindu Nation: Community, Religion and Cultural Nationalism. (Aspects of Contemporary Hindutva) Indiana Universit Press, 2010.

Tharu, Susie and Tejaswini Niranjana. Social Scientist . "Problems for a Contemporary Theory of Gender" Vol.22.No.3/4 Mar-Apr.1994.

HC- 1. 3 READING AND INTERPRETATION

Course Description

This course will introduce a diversity of literary texts and genres selected with a free and open hand from the point of socio-cultural relevance for the contemporary life world for first hand reading in the class room. It also includes two critical essays for close reading and analyses that address issues of gender/sexuality and post-coloniality. These essays will introduce the seminal themes of woman/gender centric and postcolonial literary theories.

Course Objectives

This paper aims to give firsthand experience in reading and understanding choice literary texts of all genres and develop keen interest for independent reading habit. It also aims to develop student skills for expressing their literary responses through classroom discussions and writing activities. In order to achieve these goals it will provide model readings of select texts and also provide descriptions of reading practices (accompanied by practical analysis) derived from current field of critical theories, with especial focus on gender and postcolonial reading practices.

Expected Learning Outcomes

1. Learner will be able to analyze the overt themes & meanings and underlying ideological biases in any literary texts.

2. Learner will be able to analyze the relation between literary text and the real world.

3. Learner will be able to appreciate varied literary styles and genres.

4. Learner will be able to understand the concept of reading practices.

5. Learner will be able to apply critical concepts such as gender centric reading and postcolonial reading.

6. Learner will be able to evaluate literary texts.

7. Learner will be able to express their responses to literary texts both orally and in the written mode.

SECTION A

The following critical essays are for close study in class.

1. Alice Walker "In Search of our Mother's Garden" From her book by same title, Womanist Press, 1983)

2. Rey Chow "Where have all the Natives Gone?" From Angelika Bammer (Ed) Displacements: Cultural Identities in Question (Indiana University Press 1994, pp 125-

SECTION B

The practice of reading

Aspects of textual analysis of literary texts shall be discussed under the following headings

Gendered/feminist

Post-colonial

A selection of poems, short stories or excerpts from novels and /or prose will be used for the demonstration and practice of analysis in the classroom. The students will produce written analysis each time.

Suggested Reading

Joanna Thorn borrow and Shane Warring Language: An Introduction to Language and Literary Style

Raymond Chandler Semiotics: The Basics

M.H.Abrahams Glossary of Literary Terms

R.L. Trask Key Concepts in Language and Linguistics

Martin Coyle et al. (ed) Encyclopedia of Literature and Criticism (especially the introduction)

Roger Fowler Language of Literature

Jeremy Hawthorne A Glossary of Contemporary Literary Theory

John Drakakis Alternative Shakespeare, Chapters 2,3, and 4.

Julian Wolfreys and William Baker (ed) Literary Theories: A Case Study in Critical Performance.

John Barrell Poetry, Language and Politics

Judith Fetterly The Resisting Reader

Susan Laurer "Towards a Feminist Narratology"

Patricinio P. Shcwieckart "Reading Ourselves: Towards a Feminist Theory of Reading"
Annette Kolodny "Dancing through the Minefield; Some Observations on the Theory, Practice and Politics of Feminist Literary Criticism"

SOFT CORE PAPERS

SC-1.1 INTRODUCTION TO LINGUISTICS AND PHONETICS

Course Description

This course provides an introduction to the fundamental concepts and theories in linguistics and phonetics. It covers the basics of language, including its features and variations, as well as the branches of linguistics. The course also focuses on phonetics, including the study of speech sounds, phonemes, and the sound system of English.

Course Objectives

1. To understand the nature of language and its features, including human and animal communication.

2. To explore language variations, including synchronic and diachronic variations, dialects, idiolects, and social dialects.

3. To introduce the branches of linguistics, including phonetics, phonology, morphology, syntax, semantics, and pragmatics.

4. To provide a brief introduction to structuralism and its key concepts, such as synchrony/diachrony and langue/parole.

5. To study the organs of speech and the production of speech sounds, including phones, phonemes, and allophones.

6. To examine the sound system of English, including consonants, vowels, stress, and intonation patterns.

7. To understand sentence and utterance structures, as well as text and discourse coherence.

8. To explore cohesion in language, including anaphoric and cataphoric cohesion, reference, substitution, ellipsis, conjunction, and lexical cohesion.

Learning Outcomes

1. Demonstrate an understanding of the basic features of language and its variations.

2. Analyse language variations, including dialects, idiolects, and social dialects.

3. Identify and describe the branches of linguistics and their relevance to the study of language.

4. Apply the principles of structuralism to analyse language as a system.

5. Identify and describe the organs of speech and their role in producing speech sounds.

6. Analyse the sound system of English, including consonants, vowels, stress, and intonation patterns.

7. Demonstrate proficiency in using the International Phonetic Alphabet (IPA) for transcription.

8. Analyse sentence and utterance structures, as well as text and discourse coherence.

9. Identify and apply cohesive devices in language, including anaphoric and cataphoric cohesion, reference, substitution, ellipsis, conjunction, and lexical cohesion.

SECTION A: Linguistics

Language; Human and animal communication; Features of Language; Theories of the origin of language.

Language variations- synchronic and diachronic; dialect, idiolect, social dialects, register; Bilingualism ; pidgin and creoles.

Branches of Linguistics- Phonetics, Phonology, Morphology, Syntax, Semantics and Pragmatics.

Brief introduction to Structuralism; synchrony/diachrony; langue/parole; language as a system; syntagm/paradigm

SECTION B – Phonetics

organs of speech; phone, phonemes and allophones

The Sound System of English; Consonants and Vowels; three term description of consonants and vowels; I P A and transcription

Stress; word stress; intonation-rising tone, falling tone and falling rising tone strong and weak sound

SECTION C

1. Sentence and utterance; text and discourse

2. Cohesion – anaphoric and cataphoric cohesion, reference, substitution, ellipsis, conjunction and lexical cohesion;

3. Coherence; different levels at which coherence operates.

Suggested Reading

Daniel Jones. English Pronouncing Dictionary. Cambridge University Press. 2003.

Gimson A.C. An Introduction to the Pronunciation of English. Hodder Arnold, 1989.

Yule, George. The Study of Language. CUP. 2014.

Varma, S.K and J. Krishnaswamy. N. Modern Linguistics, An Introduction, OUP 1997.

SC-1.2 AMERICAN AND AFRO – AMERICAN LITERATURES

Course Description

This course explores American and Afro-American literatures, focusing on foundational works and their representation of race, identity, and socio-political themes. It examines the development of American literature, including key movements such as the Harlem Renaissance and Civil Rights era, and analyses major works that reflect the American Dream, protest, dissent, and the experiences of Afro-American women.

Course Objectives

1. To analyse the foundations of American literature and its representation of race and identity.

2. To understand the socio-political contexts of American literature, including the post-war era, the South, the Beats, the Hipster culture, and the Civil Rights movement.

3. To examine key works of American literature that reflect the American Dream and its complexities.

4. To explore works of protest and dissent in American literature, including poetry and fiction that challenge societal norms.

5. To analyse Afro-American women's writings and their contributions to American literature.

Learning Outcomes

1. Demonstrate a critical understanding of the foundations of American literature and its representation of race and identity.

2. Analyse and interpret key works of American literature, including "Huckleberry Finn" by Mark Twain and "Invisible Man" by Ralph Ellison.

3. Evaluate the socio-political contexts of American literature, including the impact of movements such as the Harlem Renaissance and Civil Rights era.

4. Engage in meaningful discussions about the American Dream and its portrayal in literature, drawing upon texts like "Death of a Salesman" by Arthur Miller.

5. Analyse works of protest and dissent in American literature, including selected poems by Allen Ginsberg and selected stories by Flannery O'Connor.

6. Evaluate the contributions of Afro-American women writers to American literature, focusing on works like "Their Eyes Were Watching God" by Zora Neale Hurston and "The Bluest Eye" by Toni Morrison.

7. Develop research skills to explore and analyse scholarly works in American and Afro-American literatures.

8. Enhance communication skills through written and oral presentations on literary topics related to American and Afro-American literatures.

SECTION A

Foundations of American Literature.

Literary representation of Race and Depression Stories; The Novel And The Making Of Americans, Post War America- The South: Old and New, The Beats, The Hipster, Harlem Renaissance, Civil Rights

SECTION B Illustrative Texts

Race/Racism

Mark Twain: Huckleberry Finn

Ralph Ellison: Invisible Man

Harper Lee: To Kill a Mocking Bird

American Dream

Aurther Miller Death of a Salesman

Spike Lee: School Daze

Protest and Dissent

Allen Ginsberg: Selected Poems

Flanerry O Conner: Selected Stories

Afro American Women's Writings

Zora Neale Hurston Their Eyes were Watching God (novel)

Toni Morisson: Bluest Eye.

SC 1.3 DALIT AND SUBALTERN LITERATURES

Course Description

This course explores the themes, contexts, and literary contributions of Dalit and subaltern voices in Indian literature. It examines the role of caste in Indian society, the impact of colonialism and modernity, and the development of Dalit literature as a form of resistance and expression.

Course Objectives

1. To understand the concept of caste as a system, including its origin, development, features, and significance in Indian society.

2. To analyse the role of colonialism, modernity, reformation, and post-colonial developments in shaping caste dynamics in Indian society.

3. To examine the intersection of caste and gender, as well as their influence on agrarian and other social movements.

4. To explore the origins, development, contexts, influences, concerns, and preoccupations of Dalit literature.

5. To critically engage with key texts in Dalit literature, including poetry and prose, to understand the themes and narratives of Dalit and subaltern experiences.

Learning Outcomes

1. Demonstrate a nuanced understanding of the concept of caste and its complexities in Indian society.

2. Analyse the impact of colonialism, modernity, and post-colonial developments on caste dynamics.

3. Evaluate the intersectionality of caste and gender, as well as their influence on social movements.

4. Critically analyse the origins, development, and key themes of Dalit literature.

5. Engage with and interpret key texts in Dalit literature, demonstrating an understanding of the socio-political contexts and narratives of Dalit and subaltern experiences.

Concepts to be discussed

Caste as a system – origin – development, features, significance

Caste and Indian Society – Role of Colonialism, modernity, reformation and post-colonial developments

Caste and Gender, agrarian and other social movements.

Dalit literature – origins, development, contexts, influences, concern and pre-occupations

Text /prescribed

Annihilation of Caste : Dr. B.R.Ambedkar

Why I am not a Hindu : Kancha Iliah (chapter -1)

Jotirao Phule and the Ideology of Social Revolution in India - Gail Omvedf

Poetry : a) 'Empty Advice '– Prahlad Chendwankar

"Revolution" – Arjun Dangle

"Request" - Anuradha Gaurav

"Caste" – Vaman Nimbalkar

'The Paddy Harvest' – Mogalli Ganesh

Joothan - A Dalit 's life – Omprakash Valmiki

Meena Kandaswamy:

Bama:Sangathi

Suggested Reading

Aston, N.M. Literature of the Marginality: Dalit Literature and African-American Literature, Prestige Books: New Delhi, 2000

------,,--------. Dalit literature and African-American literature, Prestige Books: New Delhi, 2001.

Breuk, L.R. Writing Resistance: The Rhetorical Imagination of Hindi Dalit Literature (South Asia Across the Disciplines). New York: Columbia University Press, 2014.

Dangle, Arjun. (ed) Poisoned Bread: Translation from Modern Marathi Dalit Literature (1992), Bombay: Orient Longman, 1994.

Ganguly, Debjani. Caste, Colonialism and Counter-Modernity: Notes on a Postcolonial Hermeneutics of Caste Paperback . Oxon:Routledge.2005.

Guha, Ranjit. A Subaltern Studies Reader: 1986-1995, Delhi: Oxford University Press, 1998.

Jaffrelot, Christophe. Dr Ambedkar And Untouchability: Analysing And Fighting Caste .London:C.Hurst and Co.Publishers,2005.

Joshil K. Abraham and Judith Misrahi-Barak. editors. Dalit Literatures in India. Routledge India,2015.

K. Satyanarayana and Susie J Tharu. Editors. The Exercise of Freedom: An Introduction to Dalit Writing. Navayana Publishing, 2013.

Malik,S.K. "Dalit Identity: The Hermeneutical Understanding and an Epistemological Alternative Worldview". Sage journals. Vol 7.No 1.Jan 2014. 45-60. http://journals.sagepub.com/doi/abs

Natarajan, Nalini. Handbook Of Twentieth-century Literatures Of India .London: Greenwood Publishing Group,1996.

Navaria, Ajay. Unclaimed Terrain (translated by Laura Brueck) Allen, Douglas. (ed). Culture and Self: Philosophical and Religious Perspectives: East and West, U.S.A.: Westview Press, 1997.

,-------. Dalit Subaltern Emergence in Region Cultural Subjectivity: Iyothee Thassar and Emancipatory Buddhism, New Delhi: Critical Quest, 2007.

Nimbalkar, Waman. Dalit literature: Nature and Role, Nagapur: Prabodhan Prakashan, 2006.

Omvedt, Gail. Cultural Revolt in a Colonial Society, Bombay: Scientific Socialist Education Trust, 1976.

-------,,-----. (ed). Land, Caste and Politics in Indian States, New Delhi: Guild Publications, 1982

-------,,-----. Untouchable to Dalit: Essays on the Ambedkar Movement, New Delhi: Manohar Publication, 1992.

-------,,-----. Dalits and democratic Revolution: Dr. Ambedkar and the Dalit Movement in Colonial India, New Delhi: Sage, 1994.

. -------,,-----. Buddhism in India: Challenging Brahmanism and Caste, New Delhi: Sage publication, 2003.

-------,,-----. Dalit Visions: The Anti-Caste Movement and the Construction of an Indian Identity, New Delhi: Orient Longman, 2006.

Patankar, Bharat and Omvedt, Gail. The Dalit Liberation Movement in Colonial Period, New Delhi: Critical Quest, 2007.

Rege, Sharmila. Writing Caste/Writing Gender: Narrating Dalit Women's Testimonies.New Delhi:Zubaan.2013.

S.B ,Hunt. Hindi Dalit literature and politics of representation. New Delhi:Routledge.2014.

II SEMESTER

HARD CORE PAPERS

HC-2.1 BRITISH LITERATURE – PART II

Course Description

This course surveys British literature from the Victorian Age to the Twentieth Century, focusing on key literary works and movements. Students will explore the themes, styles, and socio-cultural contexts of major literary works from this period.

Course Objectives

1. To analyse the themes, characters, socio-cultural context, and narrative techniques in Charlotte Bronte's "Jane Eyre," Charles Dickens's "Great Expectations," and other Victorian novels.

2. To examine the cultural and historical contexts of Matthew Arnold's "Culture and Anarchy" and its relevance to Victorian society and the modern world.

3. To evaluate the modernist innovations in poetry through the study of T.S. Eliot's "The Waste Land," W.B. Yeats's selected poems, and Sylvia Plath's poetry.

4. To explore the impact of the Irish Literary Revival through the study of J.M. Synge's "Riders to the Sea" and selected short stories by D.H. Lawrence and James Joyce.

5. To engage with critical theories and approaches in analysing British literature, including structuralism, post-colonialism, Marxism and feminism.

Learning Outcomes

1. Demonstrate a comprehensive understanding of the literary characteristics and thematic concerns of Victorian novels.

2. Analyse and interpret the socio-cultural contexts of Victorian literature, including the impact of industrialization and social reforms.

3. Evaluate the modernist innovations in poetry and their influence on twentieth-century literature.

4. Critically analyse the themes, characters, and narrative techniques in selected modernist and post-modernist works.

5. Apply theoretical approaches, such as structuralism, Marxism and post-colonialism, to analyse British literature from the Victorian Age to the Twentieth Century.

UNIT I: The Victorian Age

Charlotte Bronte : Jane Eyre

Matthew Arnold : 'Culture and Anarchy'iii)Charles Dickens : Great Expectations

Tennyson : Ulysses ; Lotus Eaters"

UNIT II: The Twentieth Century

Poetry (selected poems)

T.S Eliot : 'The Waste Land'

W.B. Yeats : Easter 1916 ; ' Sailing to Byzantium'

Sylvia Plath : 'Daddy' 'The Mirror'

Philip Larkin: 'Church Going' 'Friday Night at the Royal Station Hotel"

UNIT III: Drama

J.M. Synge: Riders to the Sea

Short-stories:

Selected Short stories D.H. Lawrence, James Joyce ;

D.H Lawrence : "The Horse Dealer's Daughter"- a Short Story

Suggested Reading

F.W. Bateson and H.T. Meserole, A guide to English and American literature. 3rd edn. London: Longman, 1976.

M.J. Marcuse, Reference guide for English studies. Berkeley; Oxford: University of California Press, 1990.

M. Drabble (ed.), The Oxford companion to English literature. 6th edn. Oxford: Oxford University Press, 2000.

I. Ousby (ed.), The Cambridge guide to literature in English. [Rev edn.] Cambridge: Cambridge University Press, 1993.

J. Stringer (ed.), The Oxford companion to twentieth century literature in English. Oxford: Oxford University Press, 1996.

C. Buck (ed.), Women's literature. London: Bloomsbury, 1994.

Abrams, M.H. Glossary of literary terms. 5th ed. New York: Holt, Rinehart, and Winston, 1988.

Baugh, Albert Croll. A literary history of England. 2nd ed. New York: Appleton-Century-Crofts, 1967.

The Cambridge guide to literature in English. Ed. Ian Ousby. Revised Edition. Cambridge; New York: Cambridge University Press, 1993.

The Cambridge history of English literature. Ed. A. W. Ward, A. R. Waller. New York; London: Putnam, 1907-33. 15 v.

A. Drama

Arnott, James Fullarton. English theatrical literature, 1559-1900 : a bibliography ; incorporating Robert W. Lawe's 'A bibliographical account of English theatrical literature' published in 1888.London: Society for Theatre Research, 1970.

Carpenter, Charles A. Modern British drama. Arlington Heights, IL: AHM Pub. Corp., c1979.

English Verse Drama

Harbage, Alfred. Annals of English drama, 975-1700 : an analytical record of all plays, extant or lost, chronologically arranged and indexed by authors, titles, dramatic companies &c. 3rd ed. London; New York: Routledge, 1989.

Nicoll, Allardyce. English drama, 1900-1930; the beginnings of the modern period. New York: Cambridge University Press, 1973.

Nicoll, Allardyce. A history of English drama, 1660-1900. Cambridge: University Press, 1952

The Revels history of drama in English. Ed. Clifford Leech, T. W. Craik. London: Methuen ; New York : Dist. by Harper and Row, 1975-

B. Prose Fiction

Allen, Walter Ernst. The English novel : a short critical history. London: Phoenix House, 1954.

Baker, Ernest Albert. The history of the English novel. London: H. F. & G. Witherby, [1934-39]. 10 v.

Stevenson, Lionel. The history of the English novel : volume XI : yesterday and after. New York: Barnes & Noble, [1967].

C. Poetry

Courthope, William John. A history of English poetry. London: Macmillan and Co., 1903-35.

New Princeton encyclopedia of poetry and poetics. Ed. Alex Preminger and T. V. F. Brogan. Princeton, NJ: Princeton University Press, 1993.

Perkins, David. A history of modern poetry. Cambridge, MA: Belknap Press of Harvard University Press, 1976-1987. 2 v.

HC-2.2 LITERARY THEORY-PART- I

Course Description

This course introduces students to key concepts and debates in literary theory, focusing on major movements such as New Criticism, Structuralism, and Poststructuralism. Students will engage with foundational texts and theories to develop a critical understanding of literary analysis.

Course Objectives

1. To understand the origins and principles of New Criticism, including its focus on close reading and the text's autonomy from external factors.

2. To analyse the key ideas of T.S. Eliot, F.R. Leavis, and The Scrutiny group in the context of New Criticism and its cultural implications.

3. To examine the principles and limitations of Formalist Criticism through the works of Kenneth Burke and its impact on literary analysis.

4. To explore the foundational concepts of Structuralism, including its roots in modern linguistics and anthropology, and its application to literary theory.

5. To analyse selected chapters from Terry Eagleton's "Literary Theory" to understand the broader implications of structuralist thought.

6. To examine Poststructuralist theories, including the works of Jacques Derrida and Michel Foucault, and their critique of structuralism and modernist concepts.

7. To engage with the concept of the "linguistic turn" in literary theory and its impact on understanding texts and authors.

Learning Outcomes

1. Demonstrate a thorough understanding of the principles and techniques of New Criticism and its application in literary analysis.

2. Evaluate the cultural and historical contexts of New Criticism and its influence on literary studies.

3. Analyse and interpret key texts and essays by T.S. Eliot, F.R. Leavis, and other New Critics in relation to their critical methods.

4. Apply Formalist Criticism principles to analyse literary texts, considering both their form and content.

5. Critically evaluate the principles of Structuralism and its application in literary theory, including its influence on semiotics and poetics.

6. Analyse selected chapters from Terry Eagleton's "Literary Theory" to understand the broader implications of structuralist thought in literary studies.

7. Critically engage with Poststructuralist theories, including deconstruction and the critique of authorship and textual meaning.

SECTION – A

The New Criticism : its genealogy; historical context; major tenets; its apolitical,

ahistorical stance; its minority view of culture; its cultural conservatism; discussion of T.S. Eliot & F.R Leavis and The Scrutiny group .

Essays and books to refer :

"Formalist Criticism; its Principles and Limits" – Kenneth Burke

"Tradition and the Individual Talent" - by T.S. Eliot

"The Well Wrought Urn (selected chapters) – Cleanth Brooks

" The intentional Fallacy" from The Verbal Icon by Wimsatt and Beardsley.

SECTION – B

Literary Theory (selected chapters) – by Terry Eagleton

Structuralism & Russian Formalism

Structuralism: Modern linguistics and structuralism; Social anthropology and other disciplines and structuralism structuralist poetics; seminology and semiotics; Russian Formalism: A brief introduction

Books to refer:

Structuralist Poetics – Jonathan Culler

Structuralism

SECTION – C

Poststructuralist theories

The meaning of post-structuralism; its relationship with post-modernism; post-modernist theories; the linguistic turn.

'Structure. Sign and Play' – J. Derrida

'What is an Author? – M. Foucault

Beginning Post Structuralism and Semiotics – Tony Tanner

SOFT CORE PAPERS

SC- 2.1 Women's Novel and Worldliness

Course Description

This paper includes 6 contemporary age novels by six different women novelists from diverse geographical and historical settings for reading in the class room. It also includes 2 theoretical essays for providing further perspectives for reading women's novels.

Course Objectives

This paper aims to expand the understanding of women's writing beyond conventional terrains of home and family. It will give insight into women's experiences and perceptions of the world beyond in varied cultural settings, framed by geographical, historical, professional and economic events. It seeks to take women's writing into the postfeminist phase.

Expected Learning Outcomes

1. Learner will be able to understand the material contexts of gender and sexuality in women's lives

2. Learner will be able to understand impact of modernity and capitalism on women

3. Learner will be able to understand the impact of colonial politics on women's sexuality, character and opportunities.

4. Learner will be able to understand the impact of nationalist politics on lives of people.

5. Learner will be able to understand cultural changes in contemporary age.

6. Learner will be able to appreciate women's narratives of varied regions and cultures.

Learner will be able to evaluate the specificities of modern woman's experiences.

UNIT 1: Theory

•Ellen Rooney "The Politics of Feminist Literary Theory"(essay)

• Berthold Schoene "Queer politics, queer theory and the future of "identity" ; spiralling out of culture"

UNIT 2: Gender & Sexuality

•Radclyffe Hall The Well of Loneliness

•ShashiDeshpande A Matter of Time

UNIT 3: Nationalism &Postcolonialism

•Jean Rhys Wide Sargasso Sea

•TaslimaNasreen Homecoming /Phera

UNIT 4: Modernity & Capitalism

•Anita Desai In Custody

•Shobha De Strange Obsession

Select Bibliography

Ananthamurthy, Dr U.R. BettlaePoojeYakeKoodadu?

Bose, Brenda (Ed) (2002)Translating Desire: The Politics of Gender and Culture in India Katha, New Delhi.

Butalia, Urvashi(1998)The Other Side of Silence; Voices from the Partition Penguin.

Butler, Judith (1999)Gender Trouble: Feminsm and the Subversion of Identity Routledge.

Chakravorthy, Bidyuth (Ed) (2003) Communal Identity in India OUP.

Chatterjee, Partha(1997) TheNation and its Fragments; Colonial and PostcolonialHistories, OUP.

Das, Veena(1995) Critical Events; An anthropological perspective on contemporary India OUP.

Fisher, Will (2006) Materializing Gender in Early Modern Britian (introduction chapter)

Ganesh, Kamala &UshaThakkar (Eds) (2005)Culture and the Making of Identity in Contemporary India.

Ghadially, Rehana (1988) Women in Indian Society Sage, New Delhi.

Ivekovic, Rada& Julie Mostov(eds) (2004) From Gender to NationZuban

Jain, Devaki (Ed) Indian Woman

Kelkar, Meena and DeeptiGangavane (Eds) (2005)Feminism in Search of Identity; The Indian Context,Rawat.

Kishwar, Madhu(1999) Off the Beaten Track; Rethinking Gender Justice for Indian Women.

Klienman, Arthur, Veena Das and Margaret Lock (Eds) (1997) Social Suffering OUP.

Khullar, Mala (Ed) (2009) Writing the Women's Movement: A ReadingZubaan, New Delhi.

Kumkum Roy (Ed) (1999) Women in Early Indian SocietyManoharPubl, New Delhi.

Margli, FredriqueApfeil(1985)Wives of the God-King: Rituals for Devadasis of Puri, Oxford University Press, New Delhi.

Menon,Nivedita(Ed)(1999)Gender and Politics in India.

Misra, Geetanjali&RadhikaChandiramani (Eds) (2006)Sexuality, Gender and Rights, Sage, New Delhi.

Niranjan, Seemanthini(2001)Gender and Space: Femininity, Sexualization and the Female Body Sage, New Delhi.

Oberoi, Patricai (Ed) (1996(Social Reform, Sexuality and the State,Sage.

Robinson, Catherine A. Tradition and Liberation; The Hindu Tradition in the Indian Women's Movement

Rooney, Ellen (Ed) (2006)The Cambridge Companion to Feminist Literary Theory

Sangari, Kumkum& Suresh Vaid (eds)Recasting Women (1998)

SarkaraTanikaHindu Wife/Hindu Nation; Aspects of Contemporary Hindutva

Saunders, Kriemild (Ed) (2004) Feminsit Post-Development Thought.Zubaan.

Shiva, Vandana (1988), Staying Alive: Women Ecology and Survival in India, Kali

Sreenivas, Mythili(2009), Wives, Widows & Concubines The Conjugal Family Ideal in Colonial India,Orient Black Swan.

Sundar-Rajan, Rajeshwari (Ed) (1999) Sign-posts Gender Issues in Post –Independence India, Kali.

_____(2003,2008) The Scandal of the State: Women, law and Citizenship in postcolonial India Permanent Black, India, 2003, 2008.

Tharu, Susie &Lata Mani (1993) Women Writing in Indiavol 1&2

_____ (1996) "Problems for a contemporary Theory of Gender" in Shahid Amin&DipeshChakravorthy (Eds) Subaltern Studies IX .

Vanitha, Ruth and SalimKidwai (Eds) (2000) Same Sex Love in India Macmillan, India.

Viswanathan, Nalini et al (Eds) (1994)The Women, Gender and Development Reader Zed Books.

_____(1994)The Polity Reader in Gender Studies, Polity Press.

SC 2.2 POST COLONIAL LITERATURE

Course Description

This course examines the literature of countries formerly colonized by European powers, focusing on themes of identity, power, and resistance. Students will analyse texts that critique colonial legacies and explore post-colonial identities and cultures.

Course Objectives

1. To introduce students to key concepts and theories in post-colonial literature, including Orientalism, mimicry, hybridity and subaltern studies, through readings by Edward Said, Homi Bhabha, and Ranajit Guha.

2. To analyse the impact of colonization on language and culture, as discussed in N. Ngugi's "The Language of African Literature," and Chinua Achebe's "Racism in Conrad's Heart of Darkness."

3. To explore the complexities of post-colonial identities and histories through the works of authors such as Salman Rushdie, Chinua Achebe, and Ngugi wa Thiong'o.

4. To examine the themes of resistance and cultural hybridity in post-colonial literature, as seen in texts like Achebe's "Arrow of God" and Rushdie's "Midnight's Children."

5. To contextualize post-colonial literature within broader debates about nationalism, cultural identity, and globalization, as discussed in works by Kwame Anthony Appiah and Partha Chatterjee.

6. To develop critical reading and analytical skills through close readings of primary texts and engagement with secondary sources in post-colonial studies.

7. To encourage students to think critically about the representation of colonial and post-colonial experiences, and to articulate their own interpretations and arguments in oral and written form.

Learning Outcomes

1. Demonstrate a critical understanding of key concepts and theories in post-colonial literature, including Orientalism, mimicry, and subaltern studies.

2. Analyse the ways in which colonization has shaped language, culture, and identity in post-colonial societies, as reflected in literary texts.

3. Evaluate the different strategies employed by post-colonial writers to resist and subvert colonial narratives and stereotypes.

4. Engage with the complexities of post-colonial identities and histories, and recognize the diversity of experiences within post-colonial societies.

5. Interpret and analyse post-colonial texts in relation to their historical, political, and cultural contexts, and articulate their own interpretations and arguments.

6. Develop critical reading and analytical skills through close readings of primary texts and engagement with secondary sources in post-colonial studies.

7. Communicate their ideas effectively in oral and written form, using appropriate academic conventions and sources to support their arguments.

1) Chinua Achebe – Racism in Conrad's Heart of Darkness"

2) Edward Said – Introduction to Orientalism

3) Ashish Nandi – Intimate Enemy – Chapter-I

4) Ranjith Guha –"Introduction" to Subaltern Studies-I

5) N. Ngugi – The Language of African Literature

6) Homi Baba – "On Mimicry

7) Chinua Achebe – Arrow of God

8) Salman Rushdie – Midnight's Children

Suggested Reading

Amuta, Chidi. The Theory of African Literature. London: Zed Books, 1989.

Appiah, Kwame Anthony. In My Father's House: Africa in the Philosophy of Culture. Oxford: Oxford UP, 1992.

Arnold, Stephen, ed. African Literature Studies: The Present State. Washinton: Three Continent P, 1985.

Ashcroft, Bill. Caliban's Voice: The Transformation of English in Post-Colonial Literatures. London: Routledge, 2009.

Ashcroft, Bill, Gareth Griffiths, and Helen Tiffin, eds. The Empire Writes Back: Theory and Practice in Post-Colonial Literatures. London: Routledge, 1989.

Ashcroft, Bill, Gareth Griffiths, and Helen Tiffin, eds. The Postcolonial Reader. London: Routledge, 1995.

Ashcroft, Bill, Ranjini Mendis, Julie McGonegal, Arun Mukherjee, and Henry A. Giroux, eds. Literature for Our Times: Postcolonial Studies in the Twenty-first Century. Amsterdam: Rodopi, 2012.

Bhabha, Homi K. The Location of Culture. London: Routledge, 1994. Bhabha, Homi K., ed. Nations and Narration. London: Routledge, 1990.

Chatterjee, Partha. Nationalist Thought and the Colonial World: A Derivative Discourse? Minneapolis: U of Minnesota P, 1993.

Ngugi, Thiong'o wa. Decolonising the Mind: The Politics of Language. London: James Currey, 1989. Ngugi, Thiong'o wa. Moving the Centre: The Struggle for Cultural Freedom. London: James Currey, 1993.

SC 2.3 WORLD LITERATURES – Part –I (Drama)

Course Description

This course provides a survey of significant dramatic works from various cultures and time periods. Through close reading and analysis, students will explore themes, styles, and cultural contexts of each play, gaining a deeper understanding of the diversity and richness of world drama.

Course Objectives

1. To introduce students to a range of dramatic texts from different cultures and historical periods.

2. To develop students' critical thinking and analytical skills through the close reading and interpretation of dramatic literature.

3. To examine the cultural, social, and historical contexts in which these plays were written and performed.

4. To enhance students' understanding of dramatic techniques and conventions employed by playwrights.

5. To foster an appreciation for the diversity of world literature and its relevance to contemporary society.

Learning Outcomes

By the end of the course, students will be able to:

1. Demonstrate a comprehensive understanding of the selected dramatic works, including their themes, characters, and cultural significance.

2. Analyse dramatic texts using appropriate literary and dramatic terminology.

3. Evaluate the impact of cultural, social, and historical contexts on the interpretation and performance of the plays.

4. Compare and contrast the styles, themes, and techniques of different playwrights studied in the course.

5. Engage in critical discussions and written assignments that demonstrate a nuanced understanding of world drama.

6. Apply their knowledge of dramatic literature to interpret and appreciate other forms of literature and art.

7. Develop a lifelong appreciation for the value and diversity of world literatures.

1. Kalidasa,	Abhijnana Shakunthalam
2. Shudraka	Mrichchakatika
3. Sophocles	Oedipus The King
4. Ibsen	Master Builder
5. Brecht	The Life and Times of Galileo
6. Beckett	Waiting for Godot
7. Chekhov	The Cherry Orchard

Inter departmental Elective (II SEMESTER)

2- 1 FILM STUDIES

Course Description

This course provides an overview of film studies, covering basic concepts, history, and key theoretical frameworks. It explores the elements of filmmaking, including mise-en-scene, cinematography, editing, and sound design, and examines the role of film as a medium of entertainment and art. Additionally, it explores the relationship between film studies and cultural studies, and the significance of film in reflecting and shaping ideology, popular culture, gender, and national identity.

Course Objectives

1. To analyse the basic concepts and components of filmmaking, including mise-en-scene, cinematography, editing, and sound design.

2. To understand the historical development of filmmaking and its evolution as a medium of entertainment and art.

3. To explore the relationship between film studies and cultural studies, and the significance of film as a medium of entertainment and art.

4. To examine the role of ideology in shaping films and their reception, and its impact on cultural politics.

5. To identify and analyse different genres and schools of filmmaking, and their influence on film texts.

6. To evaluate the reception of films, including audience response, and the ways in which films are consumed and interpreted by audiences.

Learning Outcomes

1. Demonstrate a critical understanding of the basic concepts and techniques of filmmaking, including mise-en-scene, cinematography, editing, and sound design.

2. Analyse and interpret films using theoretical frameworks from the course texts, such as "Film and Ideology" and "Film, nation, cultural politics."

3. Evaluate the role of ideology in shaping the narratives and themes of films, as discussed in "Film and Ideology" and "Film and Gender."

4. Engage in meaningful discussions about the complexities of film as a medium of entertainment and art, drawing upon theoretical frameworks from the course texts.

5. Apply theoretical frameworks from film studies to analyse and interpret film texts effectively, using films like "Roshoman" and "Modern Times" as examples.

6. Identify and analyse different genres and schools of filmmaking, and their impact on the development of cinema, referencing films like "Rang de Basanti" and "Bombay."

7. Develop research skills to explore and analyse scholarly works in film studies, including texts like "Suggested Reading: Ideology of Hindi Films" by Madhav Prasad.

8. Enhance communication skills through written and oral presentations on film-related topics, referencing texts such as "Film Studies the Basics" by Amy Villarejo

Unit I

Introduction and basic concepts

Brief history of Film-making:

The constituents of a Film:

Film as medium of entertainment and art;

Unit II

Mise-en-scene

Pro-filmic elements of Mise-en-scene

Cinematography; editing; sound-track

UNIT III

1.Film and Ideology

2.Film and/ as Popular Culture

3.Film and Gender

4.Film, nation, cultural politics

UNIT IV

Reception of Films

1.Audience Response

FILM TEXTS

Roshoman

Modern Times

Rang de Basanti

Bombay

Suggested Reading

1.Ideology of Hindi Films - Madhav Prasad

2.Parasakthi: Life and times of a DMK Film – MSS Pandian

3.Filming the Gods – Rachel Dwyer

4.Tejaswini Niranjana's Essays.

5.Film Bodies: Gender, Genre and Excess – Linda Williams

6.Cinema as Collective Fantasy – Sudhir Kakar

7.Beginning Film Studies – Andrew Dix

8.Film Studies the Basics – Amy Villarejo

9.Seeing is Believing – Chidananda Das Gupta

III SEMESTER

HC-3.1 CONTEMPORARY ELT

Course Description

This paper will introduce four different theories of language drawing from descriptive and socio-linguistics, viz. structural, skill, functional- notional and communicative competence. It will also introduce three different theories of learning and the different paradigms regarding language learning, viz. behaviorist, mentalist and social constructivist. In addition it will introduce four learning models for class room management and pedagogic designs. It will introduce the concept of multiple intelligences and learning styles.

Course Objectives

This paper aims to give a broad eyes view of recent developments in the field of English language learning and teaching covering areas of linguistics, psycho linguistic theories of learning, and pedagogic practices. It aims to familiarize the use of technological aids for language pedagogy and the notion of classroom dynamics and management. It also aims the learners to apply some of these concepts in the actual production of lesson planning in the form of assignments.

Expected Learning Outcomes

1. Learner will be able to understand the concept of communication in verbal language and its importance to pedagogy of language learning

2. Learner will be able to understand the different aspects of language as linguistic system in the perspectives of diverse theoretical approaches in order to develop and handle language syllabuses in the future.

3. Learner will be able to understand the concept of learning and second language learning, in diverse perspectives in order to develop classroom pedagogic blueprints.

4. Learner will be able to understand student diversity and factors impacting learning in order to address such diversity in future professional settings.

5. Learner will be able to understand the meaning of pedagogic practice and its diversity in order to develop classroom pedagogic blueprints

6. Learner will be able to understand and write out in detail lesson plan for future professional use.

7. Learner will be able to use PPT and internet for future professional use.

Unit one

Concept of communication, interlocutors, communication loop; types of meanings, communication & linguistic system(s), communication channels & genres, etc.

Concept of Second Language; place of mother tongue

Types of courses: General English, ESP, EOP, Remedial, Bridge etc.

Unit Two

Identifying areas and content of language learning—

Grammar & vocabulary, skills & competencies, functions & notions, Literature.

Unit Three

Defining language learning as a process; route of learning, types of learning, cognitive process and learning styles.

Unit Four

Classroom methodologies—types of classrooms, learning activities; teacher-student roles, lesson planning..

teaching aids & technology in the classroom- using the interactive board, & power point; audio & video medias; use of internet

Suggested Reading

Carter, Ronald & David Nunan Teaching English to speakers of Other Languages (CUP)

Halliday, M A K, Learning How to Mean- Explorations in the Development of Language Longman, 1975.

_____ Language as Social Semiotics Longman, 1978

Hutchinson, Tom & Alan Waters English for Specific Purposes

Lazar, Gillian Literature and Langauge Teaching CUP 1993.

Little wood, William T. Teaching English as Foreign and Second Language CUP 1997.

McArthur, Tom The English Languages CUP 1998

Miller A George Language and Communication (McGraw hill, 1963)

Miller, Joanne L & Peter Eiman (eds) Speech, Language and Communication (2nd edition) (Elsevier, 1995)

Richards, Jack C. The Context of Language Teaching CUP, 1991.

Richards, Jack C.and Rodgers Approaches and Methods in Language Teaching CUP 2001.

Stienberg, Danny D Psycholinguistics: Language, Mind and World, Longman, 1982.

Tudor, Ian Dynamics of the Classroom CUP 2001

Woodward, Tessa Planning Lessons and Courses CUP 2001.

HC-3.2 Research Methodology

Course Description

This course provides an overview of research methods and methodologies in the context of literary studies and English language teaching. It covers the scientific paradigm and different types of research, including qualitative, quantitative, and action research. Students will learn about research design, hypothesis formulation, and the ethical considerations of data collection. The course also explores various approaches to literary research, such as textual analysis, comparativist, contextual/historical, and cultural studies perspectives. Additionally, students will be introduced to the MLA style sheet for documentation and ethical issues in research, including plagiarism and consent of participants.

Course Objectives

1. To Introduce students to the scientific paradigm and different types of research, including qualitative and quantitative approaches, action research, and their application in various fields such as social sciences, literary studies, and English language teaching.

2. To familiarize students with research methods, frameworks, and designs, as well as the formulation of hypotheses and objectives essential for conducting research effectively.

3. To guide students through the initial stages of research, which entail selecting a research area and identifying a research gap, crafting a preliminary synopsis, and distinguishing between essay, research paper, and thesis writing.

4. To provide instruction on planning and structuring the thesis and research paper effectively, giving them firsthand experience to fine-tune this skill and develop their inherent abilities in this field

5. To eexplore different approaches to literary research, including textual analysis (new criticism, deconstructionist), comparatist, contextual/historical, and cultural studies perspectives, enabling students to critically engage with literary texts.

6. To discuss ethical considerations in research, particularly regarding data collection and obtaining consent from participants, ensuring that students understand the importance of ethical conduct in research.

7. To introduce students to essential research tools and resources, including the MLA style sheet for documentation.

8. To provide an overview of various data collection methods such as sampling, surveys, questionnaires, interviews, and observation, equipping students with the knowledge to select appropriate methods for their research inquiries.

Learning Outcomes

By the end of this course, the student will be able to

1. Develop a comprehensive understanding of research methodologies and techniques, enabling students to critically evaluate research studies and apply appropriate methodologies in their own research endeavours.

2. Acquire practical skills in planning and executing research projects, including selecting research topics, formulating research questions, and structuring research papers effectively.

3. Enhance critical thinking skills through engagement with different approaches to literary research, fostering the ability to analyse literary texts from diverse perspectives and contexts.

4. Demonstrate ethical conduct in research by adhering to principles of integrity, transparency, and respect for participants' rights and confidentiality throughout the research process.

5. Develop proficiency in utilizing research tools and resources, including the MLA style sheet, to effectively document sources, avoid plagiarism, and access information using digital technologies and online databases.

6. Gain practical experience in employing various data collection methods, analysing research findings, and interpreting data accurately to draw meaningful conclusions in research studies.

7. Enhance communication skills in presenting research findings through written reports, oral presentations, and academic discussions, effectively communicating complex ideas and research insights to diverse audiences.

I WHAT IS RESEARCH?

The scientific paradigm; research in social sciences; research in literary studies; research in English language teaching;

Different types of research: Qualitative and quantitative research; action research;

Research methods and methodology; research framework or design; hypothesis and objectives

Getting Started

Selecting area, and topic/ research problem; writing a preliminary synopsis; difference between writing an essay and a research paper; planning chapterisation

II. APPROACHES IN LITERARY RESEARCH

1) Textual Analysis (new critical, De constructionist)

2) Comparatist

3) Contextual/Historical

4) Cultural Studies Perspective.

III. MLA style sheet; plagiarism; documentation (chapters 5 and 6 from MLA style sheet)

Computer, internet and research; computer in formatting; using computer to referencing in MLA style; using internet for information;

Ethics of data collection and consent of participants

Sampling Surveys, questionnaires, interviews and observation.

Suggested Reading

Kothari, C. R. Research Methodology: Methods and Techniques. New Delhi: New Age Techno Press, 2004.

Cohen Louis, Lawrence Manion and Keith Morrison. Research Methods in Education. London and New York: Routledge, 2007.

MLA Handbook for Writers of Reseach paper. 7th. East West Press, 2009.

Eliot, Simon and W.R. Owens A Handbook to Literary research. London and New York: Routledge, 2010.

Brown, James Dean and Theodore S. Rodgers Doing Second langauge Reasearch. 2002, Oxfors University press.

SOFT CORE PAPERS

SC-3.1: MODERNITY AND MODERNISM: CULTURE AND TEXT

Course Description

This course explores the concepts of modernity and modernism in cultural and textual contexts. Through a range of readings and discussions, students will examine the origins, features, and ideological implications of modernity, as well as the artistic and literary movements associated with modernism. The course will also consider the impact of colonialism, nationalism, and post-colonialism on the development of modernity and modernism.

Course Objectives

1. To introduce students to the historical development and key features of modernity and modernism.

2. To examine the relationship between modernity, colonialism, and post-colonial societies.

3. To explore the ideological dimensions and debates surrounding modernity and modernism.

4. To analyse selected texts and cultural artifacts that reflect the themes and concerns of modernity and modernism.

5. To develop students' critical thinking and analytical skills through engagement with complex theoretical and philosophical texts.

6. To enhance students' understanding of the cultural, political, and social contexts in which modernity and modernism emerged.

Learning Outcomes

By the end of the course, students will be able to:

1. Identify and explain the key concepts and features of modernity and modernism.

2. Analyse and interpret texts and cultural artifacts from different historical periods and cultural contexts.

3. Evaluate different theoretical perspectives on modernity and modernism, including those of Foucault, Kant, Weber, and Habermas.

4. Demonstrate an understanding of the ideological debates surrounding modernity and modernism.

5. Engage in critical discussions and written assignments that demonstrate a nuanced understanding of the course material.

6. Apply their knowledge of modernity and modernism to analyse contemporary cultural phenomena.

7. Develop a deeper appreciation for the complexity and diversity of modern and modernist thought.

Issues, Concepts and topics to be debated.

Modernity: origin, history, development and features, tradition.

Modernity and colonialism, Post – Colonial Societies

Ideological contours and contestants of modernity (modernity and its discontents)

Modernism and Avant Garde Movements

The process and functioning of modernity in various contexts.

Multiple Modernities

Post Modernism

Modernity- Political, Economic, Social and cultural

-Discussion on modernity and enlightenment

-by Michel Foucault, Immanuel Kant Max Weber and Hebarmas

1) 'Talking about modernity in two Languages' - Patha Chatterjee

2) 'When was Modernism' – Raymond Williams

3) Mistaken Modernity – Dipankar Gupta (I & II Chapter)

4) South Asian Politics : Modernity and the Landscape of Clandestine and Incommunicable Self Ashis Nandi

5) 'The Politics of Modernism : Modernist Poetry in Kannada' – R. Shashidhar

6) Induleka – O Chandu Menon

7) Hind Swaraj – M.K. Gandhi

8) Jalsaghar (film text) – by Sathayjit Ray

9. Saraswathi Vijayam - Potteri Kunhumbu

Suggested Reading

Adorno, T.W. & Horkheimer, M. Dialectic of Enlightenment. Trans. Cumming, J. London: Verso, 1979. Print.

Aikant, Satish C.Rev. of " Mass of Conquests" by Gauri Vishwanathan ARIEL: A Review of International English Literature, 31:1 & 2, Jan.-Apr. 2000. 338. Print.

Akulova, Oxana. Gandhi's Critique of Modernity as Critique of Ourselves. Diss.Hyderabad University, 2013.Web.23 Sept. 2015.

Aloysius, G. Nationalism without a Nation in India. New Delhi: OUP, 1997. Print.

Ambedkar, B.R. Annihilation of Caste. New Delhi: Critical Quest, 2007. Print.

---. What Congress and Gandhi have done to the Untouchables, Chapter XI, N.p.:n.p.,1945. n.pag.Web 14 September 2015. Arunima, G. There Comes Papa: Colonialism and the Transformation of Matriliny in Kerala, Malabar c.1850-1940. New Delhi: Orient Longman.2003.Print.

---. Writing culture: Of modernity and the Malayalam novel. Studies in History 1997, Web. 12 Feb 2016. http://www.sagepublications.com.

Bayly, C.A. Recovering Liberties: Indian Thought in the Age of Liberalism & Empire. New York: Cambridge University Press, 2011. Print.

Benhabib, Seyla, & Maurizo passerin d'Entreves, eds. Habermas and the Unfinished Project of Modernity: Critical Essays on The Philosophical Discourse of Modernity. Cambridge, Massachusetts: MIT Press, 1997. Print. Brooks, Thom. Rev.of Modernity in Indian Social Theory, by Raghuramaraju, A. Oxford University Press, 2011. Print.

Chakravarti, Uma. “Conceptualizing Brahmanical Patriarchy in Early India Gender, Caste, Class”, Economic and Political Weekly, April 3, 1993.Print.

Chandumenon, O.Preface. Indulekha.Trans. Anitha Devasia. New Delhi: Oxford University Press, 2005. Print.

Chatterjee, Partha. Colonialism, nationalism, and colonialized women: the contest in India. American Ethnologist, Vol. 16, No.4 Nov.1989. Print.

---. The Nation and its Fragments: Colonial and Postcolonial Histories. New Jersey: Princeton UP, 1993. Print.

---. Our Modernity. Rotterdam/Dakar: South-South Exchange Programme for Research on the History of Development (SEPHIS) and the Council for the Development of Social Science Research in Africa (CODESRIA), 1997. Print.

Descartes, René.Discourse on the Method of Rightly Conducting one’s Reason and Seeking Truth in the Sciences.Trans. Donald A. Cress. 3rd ed. Part IV. Indianapolis/Cambridge: Hacket Publishing Company,1998. Print.

Eagleton, Terry. Marxism and Literary Criticism, Berkeley, U of California P, 1976Language and Silence 1958 rptd Harmondsworth, Penguin, 1969).

Eisenstadt, S. N. “Multiple Modernities”. Daedalus, Vol. 129, No. 1, MIT Press, 2000. Print.

Fort SI. George Papers State of Slavery in Company’s territories. Correspondence of Court ofDirectors and the Governments in India.Web. 13 Sept. 2015.

Foucault, M. “The Subject and Power”.Critical Inquiry.Vol. 8. 1982. Print.

Giddens, Antony. The Consequencesof Modernity.N.p.:Stanford University Press, 1991. Print.

Gopal Guru, “Modernity and Its Margins: A Critique”, CREST National Lecture Kozhikode: n. p.,2009.Web. 26 May 2015.

Habermas, Jurgen. Habermas And The Unfinished Project of Modernity.N.p.:MIT Press, 1997. Print.

Hendrick, George. The Influence of Thoreau’s “Civil Disobedience” on Gandhi's Satyagraha.The New England Quarterly. Vol. 29, No. 4 (Dec. 1956). Print.

Kunhambu, Potheri. Saraswativijayam Trans. Dilip Menon. New Delhi: The Book Review Literary Trust, 2002. Print.

Menon, Dilip M. The Blindness of Insight: Essays on Caste in Modern India. Pondicherry:Navayana Publications, 2006. Print.

---. "Caste and Colonial Modernity: Reading Saraswativijayam". Studies in History13 (1997): 291-312.http://sih.sagepub.com/content/13/2/291.full.pdf+html

Nair, Janaki. Women and Law in Colonial India: A Social History. Delhi: Kali for Women, 1996.Print.

Palshikar, Suhas. "Gandhi-Ambedkar Interface".Economic and Political weekly. Vol. 49, Issue No. 13, 29 Mar, 2014. Web.12 Nov 2015

Satyanarayana K and Susie Tharu. The Exercise of Freedom: An Introduction to Dalitwriting.New Delhi: Navayana Publishing, 2013. Print.

Weber, Max. The Protestant Ethic And The Spirit of Capitalism and Other Writings. eds. Peter Baehr and Gordon C. Wells (2002). N.p.: Penguin. 21 Aug.2011. Web 10Oct.2015.

Williams, Raymond. The Politics of Modernism.New York: Verso, 1989.Print.

SC-3.2 SOFT CORE. CONTEMPORARY BRITISH LIETERATURE

Course Description

This course examines significant trends in contemporary British literature since the 1980s, focusing on themes such as Thatcherism, race, gender, sexuality, class, emigration, British identity, and popular culture. Through a selection of poetry, fiction, and drama, students will explore how these texts reflect and respond to the social, political, and cultural changes in Britain during this period.

Course Objectives

1. To familiarize students with the major themes and issues in contemporary British literature.

2. To explore the ways in which contemporary British literature reflects and responds to social, political, and cultural changes in Britain.

3. To develop students' critical reading and analytical skills through close engagement with a variety of literary texts.

4. To encourage students to think critically about the relationship between literature and society.

5. To enhance students' understanding of the diversity of contemporary British literature and its relevance to contemporary issues.

Learning Outcomes

By the end of the course, students will be able to:

1. Identify and analyse key themes and trends in contemporary British literature.

2. Interpret and evaluate literary texts from a variety of genres, including poetry, fiction, and drama.

3. Demonstrate an understanding of the cultural, social, and political contexts of contemporary British literature.

4. Engage in critical discussions and written assignments that demonstrate a nuanced understanding of the course material.

5. Apply literary and critical theories to analyse contemporary British texts and their significance in the context of contemporary British society.

Section A

An overview of the significant trends in the Contemporary Britain since 1980s: Thatcher and Thatcherism, race ,gender, sexuality, class, and emigration, British Identity, British popular culture

Section B: Study of the Illustrative Texts.

Poetry

1. Seamus Heaney 1) Digging
   2) Mid- Term Break
2. Hugo Williams 1) The Butcher
   2) Tides
   3) Her News
3. Tony Harrison 1. Long Distance 1
   2. Long Distance II

Fiction

1. Zadie Smith – On Beauty
2. Kazuo Ishiguro - The Remains of the Day
3. Hanif Khureishi - The Buddha of Sub- Urbia

Drama

1. Harold Pinter : Birthday Party
2. Tom Stoppard : Arcadia

SC-3.3: WORLD LITERATURES PART – II

Course Description

This course explores major works of world literature from the 20th century, focusing on themes of existentialism, political oppression, and magical realism. Through close reading and critical analysis, students will examine how these texts reflect cultural and historical contexts, as well as universal human experiences.

Course Objectives

1. To analyse and interpret complex themes, styles, and literary techniques in world literature.

2. To contextualize literary works within their historical, cultural, and philosophical frameworks.

3. To engage critically with diverse perspectives and narratives presented in the texts.

4. To develop advanced skills in literary analysis, argumentation, and academic writing.

5. To foster an appreciation for the cultural richness and diversity of global literary traditions.

Learning Outcomes

By the end of the course, students will be able to:

1. Demonstrate a nuanced understanding of existentialist themes in literature through the analysis of Camus' "Outsider" and Kafka's "The Trial."

2. Evaluate the representation of political and social issues in Silone's "Fontamara" and Solzhenitsyn's "One Day in the Life of Ivan Illich."

3. Analyse the narrative techniques and use of magical realism in Marquez's "One Hundred Years of Solitude" and Allende's "Eva Luna."

4. Apply various literary theories and critical approaches to interpret and evaluate the selected texts.

5. Synthesize ideas from different cultural and literary traditions to form well-supported arguments in written and oral forms.

1. Albert Camus,	Outsider
2. Ignazio Silone	Fontamara
3. Marquez	One Hundred Years of Solitude
4. Solzenitsin	One Day in the Life of Ivan Illich
5. Kafka	The Trial
6. Isabel Allende	Eva Luna

SC-3. 4: INTRODUCTION TO FILM STUDIES

Course Description

This course provides a comprehensive introduction to the field of film studies, covering basic concepts, history, and key theoretical frameworks. It explores the elements of filmmaking, including mise-en-scene, cinematography, editing, and sound design, and examines the role of film as a medium of entertainment, art, and narrative.

Course Objectives

1. To analyse the basic concepts and components of filmmaking, including mise-en-scene, cinematography, editing, and sound design.

2. To understand the historical development of filmmaking and its evolution as a medium of entertainment and art.

3. To explore the relationship between film studies and cultural studies, and the significance of film as a narrative form.

4. To examine the role of ideology in shaping films and their reception, and its impact on cultural politics.

5. To identify and analyse different genres and schools of filmmaking, and their influence on film texts.

6. To evaluate the reception of films, including audience response, star system, and the distinction between classics and commercial films.

Learning Outcomes

1. Demonstrate a critical understanding of the basic concepts and techniques of filmmaking, including mise-en-scene, cinematography, editing, and sound design.

2. Analyse and interpret films using theoretical frameworks from the course texts, such as "Film and Ideology" and "Film, nation, cultural politics."

3. Evaluate the role of ideology in shaping the narratives and themes of films, as discussed in "Film and Ideology" and "Film and Gender."

4. Engage in meaningful discussions about the complexities of film as a medium of entertainment and art, drawing upon theoretical frameworks from the course texts.

5. Apply theoretical frameworks from film studies to analyse and interpret film texts effectively, using films like "Roshoman" and "Pather Panchali" as examples.

6. Identify and analyse different genres and schools of filmmaking, and their impact on the development of cinema, referencing films like "Bicycle Thief" and "Modern Times."

7. Develop research skills to explore and analyse scholarly works in film studies, including texts like "Genres and schools of Film-making."

8. Enhance communication skills through written and oral presentations on film-related topics, referencing texts such as "Reception of Films" and "Film as medium of entertainment and art."

UNIT I

Introduction and basic concepts

Brief history of Film-making:

The constituents of a Film:

Film as medium of entertainment and art;

Film as narrative

The meaning and scope of Film studies and its relationship to Cultural Studies

Overview of the developments in the area of study- from film appreciation to Film studies.

UNIT II

Mise-en-scene

Pro-filmic elements of Mise-en-scene

Cinematography; editing; sound-track

UNIT III

1.Film and Ideology

2.Film and/ as Popular Culture

3.Film and Gender

4.Film, nation, cultural politics

UNIT IV

Genres and schools of Film-making.

Introduction and Film texts.

UNIT V

Reception of Films

1.Audience Response

2.Start-system

3.Classics and Commercials

FILM TEXTS

Roshoman

Pather Panchali

Bicycle Thief

Ghatashraddha

Nishanth

Modern Times

Samskara

Rang de Basanti

Bombay

Tamas

Children of Heaven

Suggested Reading

1.Ideology of Hindi Films - Madhav Prasad

2.Parasakthi: Life and times of a DMK Film – MSS Pandian

3.Filming the Gods – Rachel Dwyer

4.Tejaswini Niranjana's Essays.

5.Film Bodies: Gender, Genre and Excess – Linda Williams

6.Cinema as Collective Fantasy – Sudhir Kakar

7.Beginning Film Studies – Andrew Dix

8.Film Studies the Basics – Amy Villarejo

9.Seeing is Believing – Chidananda Das Gupta

Interdepartmental Elective Paper (III Semester)

3.1: MAKING MEANING IN INDIAN CINEMA

Course Description

This course delves into the various ways in which meaning is constructed and interpreted in Indian cinema. It examines the socio-political, cultural, and ideological aspects of Indian films, focusing on key texts and their impact on the audience.

Course Objectives

1. To analyse the socio-political and cultural contexts of Indian cinema, including texts like "Parasakthi: Life and Times of a DMK Film" by M.S.S. Pandian.

2. To understand the role of ideology in shaping the narratives and themes of Indian films, using "Ideology of Hindi Films" by Madhav Prasad.

3. To explore the relationship between popular cinema and Indian politics, referencing "Fingerprinting Popular Culture" by Vinay Lal and Ashish Nandy.

4. To examine the comedic elements in Indian cinema and their portrayal of authority, drawing on "An essay on the Fears of the Public Spectator" by D.R. Nagaraj.

5. To evaluate the challenges and issues faced by post-colonial cinema in India, considering "Hours in the Dark" Essays on Cinema by T.G. Vaidyanathan.

6. To study the influence of fan clubs on the reception and interpretation of Indian films, as discussed in "Cinema and the Urban Poor in South India" by Sara Dickey.

7. To analyse the representation of religious and secular themes in Hindi cinema, using "Filming the Gods" by Rachel Dwyer.

8. To explore how Indian films re-signify cultural and social norms through fashion, violence, and body politics, referencing "Kaadalan and the Politics of Re Signification" by Vivek Dhareshwar and Tejaswini Niranjana.

Learning Outcomes

1. Demonstrate a critical understanding of the socio-political and cultural contexts of Indian cinema, drawing on texts such as "The Aesthetic of Mobilization" by Madhav Prasad.

2. Analyse and interpret Indian films using theoretical frameworks from the course texts, such as "The Comic collapse of Authority" by D.R. Nagaraj.

3. Evaluate the role of ideology in shaping the narratives and themes of Indian films, as discussed in "Popular Cinema and the Culture of Indian Politics" by Vinay Lal and Ashish Nandy.

4. Engage in meaningful discussions about the complexities of Indian cinema and its impact on society, using texts like "Fashion, Violence and the Body" by Vivek Dhareshwar and Tejaswini Niranjana.

5. Produce well-reasoned and well-supported analytical essays on Indian films, drawing upon theoretical frameworks from the course texts like "The Religious and the Secular in the Hindi film" by Rachel Dwyer.

6. Develop research skills to explore and analyse scholarly works in Indian cinema studies, including texts like "Fan Clubs and Politics" by Sara Dickey.

7. Enhance communication skills through written and oral presentations on Indian cinema-related topics, referencing texts such as "The Problems of Post-Colonial Cinema" by T.G. Vaidyanathan.

1) “Parasakthi: Life and Times of a DMK Film” by M.S.S. Pandian

2)The Aesthetic of Mobilization

“Ideology of Hindi Films”

by Madhav Prasad

3) Popular Cinema and the Culture of Indian Politics

“Fingerprinting Popular Culture”

by Vinay Lal and Ashish Nandy

4) The Comic collapse of Authority:

“An essay on the Fears of the Public Spectator”

by D.R. Nagaraj.

5) The Problems of Post-Colonial Cinema

"Hours in the Dark" Essays on Cinema

by T.G. Vaidyanathan

6) Fan Clubs and Politics

"Cinema and the Urban Poor in South India"

by Sara Dickey

7) The Religious and the Secular in the Hindi film

"Filming the Gods"

by Rachel Dwyer

8) "Kaadalan and the Politics of Re Signification",

Fashion, Violence and the Body –

by Vivek Dhareshwar and Tejaswini Niranjana.

IV SEMESTER

HARD CORE- PAPERS

HC- 4.1.CULTURAL STUDIES

Course Description

This paper includes 10 seminal essays from the field of cultural studies for close reading and analyzing in the class room. These essays provide the conceptual bases for the study of cultures from a diversity of political ideologies viz. liberal, Marxist-neo Marxist, feminist- postcolonial feminist /inter -sectionalist and postmodernist perspectives. These essays will be read against the background of conceptual development of culture and the paradigm shifts this concept has undergone in the last 200 years.

Course Objectives

This paper aims to integrate the contemporary development of a new discipline called cultural studies into the literary program in view of its impact on reading practices in the literary field. It aims to give basic conceptual knowledge and definitions and the paradigm shifts. It also illuminates on the various cultural developments in our world today, and their impact on the intellectual scenario as well as lifestyle.

Expected Learning Outcomes

1. Learner will be able to understand the concept of culture and distinguish between the various ideological positions on it.

2. Learner will be able to understand the relation between culture, class, gender, ethnicity and race.

3. Learner will be able to understand and evaluate the impact of technology and capitalism on culture.

4. Learner will be able to understand and analyze the phenomenon of contemporary mass medias including news medias.

5. Learner will be able to understand and evaluate the impact of culture on human life.

6. Learner will be able to understand the group identity dynamics of culture and contemporary cultural conflicts.

7. Learner will be able to develop paradigms for the study and research of literature as a cultural phenomenon.

Unit one

1. Introduction to cultural Studies Background; shift from literary studies to cultural studies; Raymond Williams and the development of cultural studies as a discipline.

2. Theoretical under pinnings ; influences and ideological positions.

What is culture?

Raymond Williams "The analysis of culture"

Pierre Bourdieu "Symbolic power"

Unit Two

Class and culture

Raymond Willaims "Base/superstructure in Marxist theory today"

Pierre Bourdieu "Distinction"

Dick Debdige "Subculture: the meaning of style"

Unit Three

Gender, women and cultural production

Celia Lury "The rights and wrongs of culture"

Janice Radaway "Reading the romance"

Betty Friedan "Sexual Sell"

Unit Four

Contemporary culture

Walter Benjamin "The Work of Art in the Age of Mechanical Reproduction"

Stuart Hall "Encoding/decoding"

Herman Bausinger "Media Technology and Daily Life"

Popular Culture : Perspectives ; Changing attitude to popular culture ; Popular culture and ideology; The politics of popular culture; popular culture, globalization and consumption

Suggested Reading

On Culture Industry - Adorno and Horlkheimer

Defining Popular culture' - Claim Mac Cabe

Feminist Perspectives on Popular Culture'- Lana Rakov

Reifications and Utopia in Mass Culture' – Frederic Jameson

Cultural theory and Popular culture - by John Storey

Roland Barthes Mythologies

Tony Bennet Popular Culture: Themes and Issues

Pierre Bourdieu The Field of Cultural Production;

Language and Symbolic Power

Michel de Certeau The Practice of Everyday Life

Ann Douglas The Feminization of American Culture

Ann Cranny Francis Feminist Fiction: Feminist Uses of Generic Fiction

Richard Hoggart The Uses of Literacy

Raymond Williams Culture and Society

Raymond Williams The Long Revolution

Raymond Williams The Country and the City

Frederic Jameson Postmodernism or The Cultural Logic of Late Capitalism

The Political Unconscious: Narrative as a Socially Symbolic Act.

HC- 4.2. LITERARY THEORY PART-II

Course Description

This course delves into advanced literary theories and critical approaches that have shaped literary analysis in the modern era. Students will explore the works of key theorists such as Bakhtin, examine the influence of cultural materialism and the New Historicism, and engage with theories surrounding gender and sexuality, Marxism, post-colonialism, and ecological criticism.

Course Objectives

1. To understand and critically analyse the key concepts and principles of Bakhtinian theory.

2. To examine the foundational ideas of Cultural Materialism and the New Historicism and their impact on literary studies.

3. To explore the nuances of Gay and Lesbian theories in literature and culture.

4. To evaluate Neo-Marxist literary theory and its application to literary analysis.

5. To analyse the complexities of Post-colonial theories and their implications in literature.

6. To understand the fundamentals of Eco-criticism and its relationship to literary texts.

Learning Outcomes

By the end of the course, students will be able to:

1. Demonstrate a deep understanding of Bakhtinian dialogism and its relevance to literary interpretation.

2. Critically analyse texts using the principles of Cultural Materialism and the New Historicism.

3. Evaluate literary works through the lens of Gay and Lesbian theories, understanding the impact of gender and sexuality on literary production and reception.

4. Apply Neo-Marxist theory to analyse the socio-political dimensions of literary texts.

5. Critically engage with post-colonial theories, recognizing the complexities of power, identity, and representation in post-colonial literature.

6. Evaluate ecological themes in literature, applying Eco-critical approaches to analyse the relationship between literature and the environment.

7. Synthesize various theoretical approaches to produce original analyses of literary texts.

1) Bakhtin

2) Cultural Materialism, The New Historicism

3) Gay and Lesbian Theories

4) Neo – Marxist Theory

5) Post – colonial theories

6) Eco Criticism.

Suggested Reading

Marxism and Literature - Raymond Williams

Selected Subaltern Studies - ed, Ranajit Guha et. al

Prison Note Books – Antonio Gramsci

A Bakhtin Reader – (Writings of M. Bakhtin)

The New Historiaism – ed Aaram Vesser

Modern Literary Theory - ed David Lodge

Feminisms - ed Robyn R. Warhol, Diane Price Herndl

Beginning Post Modernism

Post - Colonial Theory - by Leila Gandhi

SOFT CORE PAPER

SC-4.1 SOUTH ASIAN WOMEN'S WRITING

Course description

This course introduces students to postcolonial South Asian women's writing, focusing on how women writers explore issues of identity, space and violence. It offers unique insights into meanings of gender, ideology, social conditioning and family; and testifies to women's struggle toward social and economic freedom, intellectual engagement, and social acceptance. Through readings, class discussions, and written assignments, the course is designed to foster the development of essential analytical and critical skills that students can apply to diverse historical periods and cultural frameworks.

Course objectives

1. To introduce students to post-colonial women writers of South Asia and the diaspora.

2. To learn and understand concepts of gender, space, writing, violence, diaspora etc in the south Asian context.

3. To introduce students to trends and thoughts in women writing in the South Asian diasporic context.

4. To critically engage in an understanding of South Asia, its historical, social and political atmosphere and theoretical frameworks.

5. To understand South Asian women writers, concepts, theories and their preoccupations through literary and film texts.

6. To critically examine, in particular, how poetry, short stories, novels etc by South Asian women and the diaspora offer unique insight into meanings of gender, ideology, space and violence.

7. To demonstrate how South Asian women's writings offer new models of agency and resistance to women's marginalization within patriarchal culture.

Learning outcomes

By the end of the course, students will be able

1. to demonstrate an in-depth understanding of the key social, cultural, and gender issues shaping women's lives and literary production in the post-colonial South Asian context and also the diaspora

2. to critically look at creative writing by women and understand and explain their unique insights into gender, ideology and concepts of space, writing and violence.

3. To engage, understand and demonstrate an ability to identify characteristics in South Asian women writing and the diaspora.

4. To identify the new models of agency and resistance in women's writing.

SECTION A

Introduction and Background:

South Asia – Politics /Culture/ Society - Brief Perspective

South Asian Writing – general characteristics, perspectives, themes.

Colonialism-resistance-negotiations-negations- boundaries-

Communalism-power structures-knowledge, subaltern

South Asian Women's Writing - Perspectives, themes.

Home-Space-identity-gender power

SECTION B

Fiction

Bapsi Sidhwa - Ice Candy Man /Cracking India

Kavery Nambisan - A Town Like Ours

Sunithi Namjoshi - Feminist Fables

Chitra Banerjee Divakarani - Mistress of Spice.

Poetry

Imtiaz Dharker - Purdah I

Post cards for God I

The right word

Moni Alvi - Presents from my Aunts in Pakistan

Eunice de Souza - Selections from Nine Indian Poets.

Movie - Earth

Suggested readings

Brians, Paul. Modern South Asian Literature in English(Literature as Windows to World Cultures). Greenwood, 2003.

Chatterjee, Partha- The Nation and its fragments. Colonial & Post Colonial Histories: Princeton 1993.

Digital South Asia Library, Guha, Ranjit. Ed: Subaltern studies: Writings on South Asian History and Society OU 1982-89.

Colonialism and Culture:Ed Nicholas B. Dirks. Ann Arbor. The University of Michigan Press 1992.

Forbes, Geraldine. Teaching South Asia. Internet Journal.

Jalal, Ayesha. The Sole Spokesman : Jinnah, the Muslim League and the Demand For Pakistan(Cambridge South Asian Studies). Cambridge University Press, 1985.

Jalal, Ayesha and Sugatha Bose. Modern South Asian History, Culture and Political Economy. 3rd Edition, Routledge, 2011.

Ramusack, Barbara and Antoinette Burton. Journal of Women's History. "South Asian Women; Gender and Transnationalism" Winter, 2003.

SC 4.2: Modern Indian Literatures in English and English Translation

Course Description

This course examines the development of modern Indian literatures in English and English translation. It explores key concepts, theories, and controversies surrounding Indian literature, focusing on themes such as Indianness, nationhood, modernity, tradition, caste, gender, and history as depicted in various literary works.

Course Objectives

1. To introduce students to the major concepts and theories in modern Indian literatures.

2. To analyse the representation of Indianness and the anxieties associated with it in Indian literature.

3. To explore the relationship between nation, modernity, and tradition in Indian literary texts.

4. To examine the depiction of caste and its impact on Indian society in literary works.

5. To investigate gender roles and representations in Indian literature.

6. To analyse how history is represented and interpreted in modern Indian literary texts.

Learning Outcomes

By the end of the course, students will be able to

1. Demonstrate a critical understanding of the major concepts and theories in modern Indian literatures.

2. Analyse and interpret literary texts to identify representations of Indianness and anxieties related to it.

3. Evaluate the relationship between nation, modernity, and tradition as depicted in Indian literary works.

4. Critically assess the depiction of caste and its social implications in Indian society in literary texts.

5.Analyse and critique gender representations and roles in modern Indian literature.

6. Interpret and evaluate the representation of history in modern Indian literary texts.

UNIT I : Concepts, Theories and Controversies

a) Meenakshi Mukharjee : Chapters from The Perishable Empire

Anxiety of Indianness

b) Ganesh Devy : Of Many Heroes and also selections from A Ganesh Devy Reader

Following Chapters

1)Some Indian Questions

2)History and Literary History

3)Jones and Gentaos

4) Nation in Narration

c) Harish Trivedi : From Colonial Transactions Following Chapters

d) Aijaz Ahmed : From In Theory(Introduction)

UNIT II :Nation, Modernity and Tradition

a) R. Tagore : Home and the world

b) Arundathi Roy : The God of Small Things

UNIT III : Caste

Mulk Raj Anand : Untouchable

Short stories from Writing Caste (Katha Stories)

UNIT IV : Gender

Shivaram Karanth : Sarasammana Samadhi

UNIT V : History

Amitav Ghosh – In an Antique Land

SC-4. 3. DISCOURSE ANALYSIS

Course Description

This course introduces students to the principles and methods of discourse analysis. It covers basic concepts such as sentence grammar vs. utterance grammar, text, discourse, context, presupposition, reference, inference, deixis, and scheme. The course also explores textuality, coherence, and cohesion at microstructure, macrostructure, and superstructure levels, as well as speech acts, performatives, direct and indirect speech acts, and the concept of locution, illocution, and perlocution. Additionally, it examines the politeness principle, the concept of face, face-saving and face-threatening acts, conversational analysis, speech events, holding the floor, turn-taking, power relations in conversation, and women's role in conversation. The course concludes with an analysis of oral narratives, including Labov's grammar of oral narratives.

Course Objectives

1. To understand the fundamental concepts and theories of discourse analysis.

2. To analyse and interpret different types of discourse, including written and spoken language.

3. To examine the coherence and cohesion of texts at various levels.

4. To identify and analyse speech acts and their functions in communication.

5. To understand the principles of politeness and face-saving in communication.

6. To analyse conversational structures and dynamics, including turn-taking and power relations.

7. To apply discourse analysis methods to analyse oral narratives.

Learning Outcomes

By the end of the course, students will be able to:

1. Define and explain key concepts in discourse analysis.

2. Analyse and interpret various types of discourse using discourse analysis techniques.

3. Evaluate the coherence and cohesion of texts at different levels of structure.

4. Identify and classify different types of speech acts in communication.

5. Apply the principles of politeness and face-saving in communication contexts.

6. Analyse conversational structures and dynamics in real-life interactions.

7. Apply discourse analysis methods to analyse oral narratives effectively.

1.Some basic concepts- sentence grammar vs. utterance grammar; text; discourse; context; presupposition; reference; implicative; inference; deixis; scheme; anaphora

2. Textuality; Coherence and cohesion -microstructure, macrostructure, superstructure, frame;

3. Speech acts; performatives; direct speech acts and indirect speech acts; locution, illocution and per locution;

4. Politeness principle; concept of face; face saving and face threatening acts

5. Conversational analysis; speech events; holding the floor; turn taking; power relations as expressed in conversational roles; women and conversation

6. The cooperative principle; the four maxims

7. Analysis of oral narratives; Labov's grammar of oral narratives

Suggested Reading

Brown, G. and G. Yule Discourse Analysis C.U.P. 1983

Hoey, Michael. Textual Interaction. Routledge. 2001.

Labov, William. Language in the Inner City. University of Pennsylvania Press. 1972.

Sara Mills. Discourse (The New critical idiom Series). Routledge.1997.

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POST GRADUATE M.A HINDI PRAGRAMME

SCOPE,EMPLOYABILITY,BROAD OUTCOME,PROGRAMME SPECIFIC OUTCOME AND INCOURSE OUTCOME ALL THE SEMISTER PAPERS AS PER CURRICULAM

SL.NO.	HEADING	DISCRIPTION
1.	SCOPE	The scope of Hindi post graduate programme is wide and varied. Graduate programmer is wide and varied. Graduates of the programme can find jobs in a variety of fields like : * EDUCATION: Hindi teachers are in high demand at all levels of education from primary school to university. MA Hindi graduates can teach Hindi language, literature and culture at schools, colleges and universities. They can also work as Hindi language instructors for those non Hindi people who are working in Hindi regions. * TRANSLATION: Hindi translators are in high demand in a variety of sectors including government, business, literature and education. M.A Hindi graduates can translate Hindi text into English and other Indian or foreign languages and vice versa. * RESEARCH: M.A. Hindi graduates can peruse careers in research on Hindi language, literature and culture. They can work at universities research institutions and government agencies. *MEDIA AND PUBLISHING: M.A in Hindi graduates can work as journalists, writers and editors for Hindi language newspapers,

		Magazines and websites. They can also work as translators and subtitlers for Hindi movies, web series, and television shows etc. **OTHER FIELDS:** **M.A in Hindi graduates can also find jobs in a variety of other fields such as tourism, public relations, and government services.** **The scope of the M.A Hindi graduate programme is likely to grow in the future as India becomes more integrated into the global economy; there is a growing demand for Hindi speakers and Hindi language skills.M.A Hindi graduates will be well positioned to meet this demand.** **In addition to the above,M.A Hindi graduates can also pursue higher studies and research in Hindi language specialists or experts.** **Overall, the scope of the M.A Hindi P.G Programme is wide and varied.Graduates of the programme can find jobs in a variety of fields,both in India and abroad.** **With the rapid expansion of communication media, phrases like 'world-system' and 'world-village' are taking the shape of reality in many ways. New types of needs are arising to promote trade and commerce. Keeping in view their interests, many multinational companies are increasing trade with India. Since there are more consumers or customers in the Hindi region, the position of Hindi in the organization of the economy has become relatively stronger. Meanwhile, there has also been an unprecedented expansion of information technology which is bringing about an inevitable change in language behaviour, work environment and work methodology.** **Today, multilingual computer and internet facilities are available for the preservation and promotion of the language. The number of dictionaries and encyclopedias is**

2.	EMPLOY ABILYTY	**increasing. Work is being done on Hindi grammar, construction of e-library and e-book is also in full swing. This is giving momentum and energy to Hindi. The area of use of Hindi has also increased and four crore NRIs are also associated with it. Outside India, Hindi is being used in terms of language and culture in SAARC, Gulf countries, Europe, America, Mauritius, Suriname, Fiji, Guyana, Trinidad, South Africa etc. World Hindi Secretariat has been established in Mauritius. The 11th World Hindi Conference was also held there in August 2018.** **MA Hindi course provides various opportunities in both the private and public sectors. The MA Hindi job opportunities are available for the students predominantly in the teaching and research industry. Some of the popular roles for graduates are High School Teacher, Secondary School Teacher,Content Writer, Copy Editor, Editor, Executive Assistant, Assistant Editor, etc. The MA Hindi syllabus and subjects equip and train candidates with the skill and knowledge required for the profession.** **Top Careers in Hindi** **The opportunities in the field of Hindi as a career do not end at any point. There is a plethora of options to choose from and always a scope for a change and learning something new. Here is the list of some of the top career options for graduates in Hindi:** **1) Rajbhasha Officer (Language Officer) - With Hindi being one of the official languages of India and India being the land of diverse languages, it becomes important to have a Language officer. A Hindi language officer could be bilingual or monolingual with Hindi as one the dominant languages. He/ She has to make efforts to accelerate the progressive use of Hindi for official purposes.**

		2) Editor- Columnist, sub editor or editor in chief could be a dream job of many and being a Hindi graduate provides ample opportunities to realise this dream. It is one of the most respected and lucrative jobs where one can express their heart out and read and understand by a large audience. Also the position of editor in the field or mass media or journalism is like no other. **3) Content Writer- In the era of digital knowledge, it is equally important to present that knowledge in an interesting and appealing way. Content creators/ developers/ writers collect information from various sources, filter them and then explicate in their own way. It is a huge responsibility as a content writer to provide correct information to its readers. Content writers work for a vast field of work such as journalism, media, entertainment or any such thing.** **4) School Teacher – Being a school teacher is the most cliché of a job role as a BA Hindi student. Most students opt for this and this is the safest and most desirable job of all times.** **5) Translator or Interpreter- With globalisation on its peak, it has created opportunities for development not only in the trade fields but also for translators or interpreters. Hindi Translators or interpreters work as a medium of communication between two parties who are unable to interact in each other's languages.** **6) IAS/ IPS/ IFS- Never will there be a time when job opportunities in the government sector, especially at such a reputed post will be of no interest to Indian Hindi graduates. Everyone aspires to have a respected job alongside a lucrative salary and the civil services examination gives ample opportunities to students.**

		7) Voice over Artist- As the area of entertainment is widening, the demand for voice over artists has rapidly increased. They are the professional actors with an ability to modulate the tone and personality of their voice to match the requirements and use their voices to create characters, tell stories, communicate vital information and connect with the audience. The above job roles are enough to decipher that people with such voice modulation ability can use their voice in radio, television, film, theatre and other presentations. Voice over artists may be hired for dubbing in films or advertisements to make the art more appealing. **8) Language Trainer- Just like any other trainer, the job of the language trainer is to train the students in the required language. This consists of both grammatical structure as well as the natural meaning of words. The Hindi language trainer will make it possible for the non-Hindi students to learn the language in a perfect way.** **9) Screenwriter- The production of films, documentaries, series, etc. at breakneck rate in India not only provides a platform for actors, singers or directors but also for the writers who play an equally important part. Bollywood as well as other OTT releases are dominantly Hindi as the population here demands so. This leads to a wide field of opportunities for Hindi writers to work as screenwriters, lyricists, dialogue writers and other similar ventures. Job opportunities are present in mass media, feature films, television productions or video games.** **10) Voice Associate- With the rapid increase in information and communications technology, the demand for associates who can bridge the gap is high in demand. As the major segment of the population consists of Hindi speakers, the opportunities for people who are capable of**

		conversing efficiently in Hindi are also increasing. Executives are assigned to handle the calls from the customers of their own country or any say any language they are comfortable in. Graduates in Hindi can work as voice service associates at BPOs/ Call Centres/ITES Industry and various others. **The need for translation of well-known works from international writers, blockbuster movies, advertisements, and the work of translating in courts, is peaking.** **Posts like Hindi Officer, Hindi Translator, Hindi Assistant, Manager (Official language) in different departments and units of Central and State government.** **The scope has increased with the advent of private TV and Radio channels. With the launch of Hindi versions of established magazines and the field of Hindi media, there is a need for Editors, Reporters, Correspondents, sub-editors, Proofreaders, Radio Jockeys, Anchors, etc.** **One can work in the mediums of Radio, TV, Cinema as a Script Writer, Dialogue Writer, etc. This field necessitates a natural and artistic mastery of creative writing.** **The need for translation of well-known works from international writers, blockbuster movies, advertisements, and the work of translating in courts, is peaking as you read this.** **One can earn livelihood as a freelance translator and can also set up their own translation firm. There are also opportunities for translation projects from foreign agencies. The task can be easily done through the Internet.**
3.	**BROAD OUTCOME OF THE**	**The broad outcome of the MA Hindi Programme is to produce highly skilled and knowledgeable Hindi scholars**

	PROGRAMME	**who are able to contribute to the field of Hindi studies in a variety of ways. This includes teaching, research, translation, writing, and editing.** **Specifically, the MA Hindi Programme aims to:** **1.Provide students with a deep understanding of the Hindi language, its literature, and its culture.** **2.Develop students' critical thinking and research skills.** **3.Train students in the use of modern research tools and methodologies.** **4.Prepare students for careers in Hindi studies, teaching, translation, writing, and editing.** **The MA Hindi Programme is typically a two-year program that includes coursework in Hindi language, literature, and culture, as well as a research thesis. Students may also choose to specialize in a particular area of Hindi studies, such as Hindi literature, .Hindi linguistics, or Hindi translation.** **The career scope in Hindi Graduation is wide. Below mentioned are some of the career scope of Hindi:** **1) Journalism- Journalism opens multiple opportunities for students such as those of editors, columnists, reporters and such others.** **2) Professional Writing- As the name suggests professional writing includes all the professional work related writing opportunities like content writers, creative writers, copy writers etc.** **3) Media and Entertainment- Screenwriting, speech writing, dialogues writing, song writing are all part of the media and entertainment sector.** **4) Digital Marketing- In today's world marketing holds an important place in the product manufacturing and**

4.	PROGRAMME SPECIFIC OUTCOME	distributing process. For marketing, employers would use language which is of interest in their market. 5) Civil services- There are a lot of opportunities for BA Hindi students in civil services. Ranging from one of the highest ranking official positions in India to even lower grade jobs - all are available for students. 6) Freelancing- Freelancing opens a door of unlimited opportunities. Besides, one has to be sure about their skills and know how to use them. Freelancing provides opportunities in a variety of career options and one is free to choose as per their liking and skill set. The specific outcomes of the MA Hindi programme vary Depending on the specific curriculum of the programme. However, some common specific outcomes of the MA Hindi programme include: 1.Deep understanding of the Hindi language, it's history, it's development, its literature,History of Hindi literature, and its culture. 2.Ability to read, write, and speak Hindi fluently and accurately. 3.Ability to critically analyze and interpret Hindi literary texts. 3.Ability to conduct research on Hindi language, literature, or culture. 4.Ability to translate Hindi texts into English and other languages, and vice versa. 5.Ability to teach Hindi language, literature, and cultureat schools, colleges, and universities. 6.Ability to work as Hindi language instructors for adults. 7.Ability to work asHindi translators and interpreters in a variety of industries. 8.Ability to work as journalists, writers, and editors for Hindilanguage newspapers, magazines, and websites.

5.	THE COURSE OUTCOME	9.Ability to work as translators and subtitlersforHindilanguage films and television shows. 10.Ability to pursue careers in research on Hindi language, literature, and culture. In addition to the above, the MA Hindi programme can also help students to develop a variety of other skills, such as: Communication skills Critical thinking skills Research skills Problem-solving skills Team-working skills Leadership skills These skills are valuable in a variety of careers, both inside and outside of the field of Hindi studies. The specific outcomes of the MAHindi programme can be achieved through a variety of teaching and learning methods, including lectures, tutorials, seminars, workshops, and independent study. Students are also typically required tocomplete a research thesis or project. The MA Hindi programme is a challenging but rewarding programme that can prepare students for a variety of careers in the field of Hindi studies and beyond. The course outcomes of the M.A Hindi Programme vary depending on the specific curriculum of the programme.

M.A. HINDI FIRST SEMISTER

	1.1 HARDCORE	HINDI SAHITYA KA ITIHAAS – COURSE OUTCOMES • Understand the origin of Hindi language and literature.

		• **Understand the history and development of Hindi literature.** • **Understand the basis of the clasification of Hindi literature.** • **Understand the Importance and basis of the names given to each period of Hindi literature.** • **Understanding the features of Adikaal, Bhaktikaal, Reetikaal and Adhunikkaal,in context of socio-cultural and political conditions of that period.** • **Understand the philisophy behind Hindi Literature.** • **Critically analyze and evaluate major trends and movements in the journey of Hindi literature.** • **Place Hindi writings in the historical and social Context.** • **Understand the discourse of women and dalits in Hindi literature.** • **Develop a sophisticated appreciation of Hindi literature.** • **Acquire the skills to write critically about Hindi literature.** • **Evaluate Hindi literature from past to present and using it as a lens to understand society.**
	1.2 – HARDCORE	**PRAYOJAN MULAK HINDI OR FUNCTIONAL HINDIandAnuvad– COURSE OUTCOME**

		• **Understand the uses of Hindi language in many knowledgeable fields other than literature.** • **Understand the characteristics of purpose oriented Hindi.** • **Understanding the official Language Acts of 1963, 1968 and 1976.** • **Know the importance and usage of Hindi language in trade and business sector.** • **know the emerging need of learning Hindi in the modern world.** • **Understand the applicability of Hindi in different areas of life such as official, commercial,business,scientific and technological fields.** • **Understand the importance and Scope of translation.** • **Knowing the linguistic uniqueness and special creativity which is visible in purpose oriented Hindi.** • **To understand the clarity,neutrality,objectivity and logicality are present in the language and terminology of purpose oriented Hindi.**
	1.3 - HARDCORE	**HINDI GRAMMER :** • **At the end of a module,a student can be able to demonstrate :** • **A knowledge and understanding of Hindi grammer at an appropriate level.**

		• **A level of passive and active Hindi vocabulary appropriate for an advanced learner.** • **An ability to translate english to Hindi using correct grammer and spelling.** • **an ability to understand spoken Hindi and engage in discussion and exchange of views on a broad range of topics.** • **An ability to write expository essays in Hindi on avariety of subjects.** • **Develop the effective communication skills in Hindi.**
	1.4 - SOFTCORE **1.5 - SOFTCORE**	**ADHUNIK HINDI GADYA SAHITYA** • **knowing about modern Hindi writers and their works.** • **To read about history and development of various Hindi prose.** • **understanding the different stages of Hindi prose and trends and movements of that time.** • **Know about BharatenduHarishchandr, Premchand, Ramachandrashukl and other leading writers whose writings made a strong impact on the society at that time.** • **To know about types of proses like novels,essays,stories,drama and their impact on the society.** • **Understand the philosophy behind the different streams in Hindi prose.**

	1.6 – SOFTCORE	**KARNATAKA SAMSKRUTHI AND KANNADA SAHITYA** • **Understand the history of karnataka and it's rich culture in brief.** • **Know about different arts and cultures that have made karnataka a unique in present scenario.** • **Know about special aspects of Kannada literature and their impact on cotemporary period.** • **Know about Historical places, monuments, Temples and study their sculptures, historical background .** • **Know about a brief History and stages of Kannada literature.** • **Know about prominent poets of ancient kannada .** • **Know about different trends and movements in Kannada literature.** • **Know about prominant writers, poets and other scholars who made Kannada literature and karnataka richer by their extrordinary contribution.** **ADHUNIK HINDI NATAK SAHITYA :** • **Understanding the origin and history of Hindi drama.** • **Understand the long journey of Hindi Drama and Plays.** • **Understand the different background of Hindi drama.**

	1.7 SOFTCORE	• **Understanding the Nationalism of BharatenduHarishchandr and his social concern through his plays.** • **Understand the vision of modern play writers like SarveshvardayalSaksena,MohanRakesh and Vijay Tendulkar and their concern for modern Indian society.** • **Understanding the contribution of Mohan rakesh and Vijay Tendulkar for Indian Theatre.** • **HINDI KE REKHA CHITR:** • **Understanding the various trends and movements in modern Hindi prose.** • **Understanding the Role of Mahadevi verma in Hindi literature .** • **Identifying the great contribution of Mahadevi verma both in Hindi poetry and prose.** • **Understanding the phylosophical thoughts and views of Mahadevi verma regarding her literature.** • **Understand the prose of SuryakanttripathiNirala and their importance to the contemporaraysosiety.** • **Know about Nirala' views and phylosophy through his prose.**

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		11 - SEMISTER
	1.1- HARDCORE	**HINDI SAHITYA KA ITIHAS - 2** • **Understanding the reasons of emergence of Adhunikkaal in Hindi.** • **Understanding the literary trends of Adhunikkaal.** • **Understanding the history of development of Hindi drama, short stories, novels, essays and other forms of hindi prose.** • **Knowing about the reasons behind the origin and development of emergence of literary criticism in Hindi.**
	2.2 HARDCORE	**HINDI BHASHA KA ITIHAS :** • **Knowing the linguistic history of Hindi from its originsin the ancient Indo-Aryan language to itsdevelopment through the medieval period and the colonial era.** • **Knowing about various dialects of Hindi, khariboli dialect and it's scope.** • **Knowing about Devanagari script and it's features.**

		• **Understanding the various influences on the Hindi language, including Persian, Arabic, and Sanskrit, and howthese languages have contributed to the vocabulary and grammar of Hindi.** • **To discuss the impact of technological advancements and globalization on the use and development of theHindi language.** • **Understanding the changes in the script of Hindi over time, including the adoption of theRoman script for Hindi in certain contexts.**
	2.3 -HARDCORE	**BHASHA VIGYAN:** • **Demonstrate an understanding of the basic features of language and its variations.** • **Able toAnalyse language variations, including dialects, idiolects, and social dialects.** • **Knowing to Identify and describe the branches of linguistics and their relevance to the study of language.** • **Knowing to Apply the principles of structuralism to analyse language as a system.** • **Able to Identify and describe the organs of speech and their role in producing speech sounds.** • **Able toAnalyse the sound system of Hindi, including consonants, vowels, stress, and intonation patterns.**

		• **Able to Demonstrate proficiency in using the different pronounciation.** • **Able to Analyse sentence and utterance structures, as well as text and discourse coherence.** • **Capable of Identifing and applying cohesive devices in language, including anaphoric and cataphoric cohesion, reference, substitution, ellipsis, conjunction, and lexical cohesion.**
	2.4 SOFTCORE	**ADHUNIK HINDI KAVYA :** • **Understanding the period of Chayavad and the social, cultural political reasons for the rise of chayavad.** • **Understanding the cultural conciousness of Jayashankarprasad.** • **Knowing about the contributions of Jayashankar Prasad for various trends of Hindi literature.** • **Knowing about the great personality Sumitranandan Pant and his poems**
	2.5 -SOFTCORE	**HINDI UPANYAS SAHITYA** • **Understanding the Journey of Hindi novels** • **Knowing about the emminent novelists like Bhagavathicharanverma, Nagarjun, Ushapriyamvada etc...andthiernovels.Understanding the main theme of the novel**

	2.6 - SOFTCORE	chitralekha,dukhmochanpachpankhamb elaaldivaren and their effects on the modern criticism. **HINDI KAHANI SAHITYA :** • Knowing about the different causes that leads to rise new trends in Hindi story writing. • Understanding the trends of nayikahani, akahani, yatharthvadikahani, sathottrikahani and their content. • Understanding the change in content and style of expression in short stories in different periods through the stories of Dineshvarprasad, Mamathakaliya, MannuBhandari, Nirmalverma etc..
	2.7 - SOFTCORE	**HINDI JIVANI SAHITYA:** • Understanding the development of Biography writing in Hindi and important biography writers in modern time. • Knowing about Dr. Vishnuprabhakar's biography writing '' Awaramasiha ". • Knowing about the life of through the novel “Awaaraamasiha”.
	3.1 HARD CORE	**THIRD SEMISTER** **BHARATIYA KAVYASHASTRA:{Indian Criticism}** • Understanding the concept of criticism.

	3.2 HARD CORE **3.3 HARD CORE**	• **Understanding the various types of Kavyas like Mahakavya, Khandakavya and Muktak.** • **Knowing about Alankaras, Ras, Chand and their application in kavyas.** • **Understanding the different theories on Rasa, Alankara and chandshastra.** • **Understanding the different theories of Bharat muni,Dandi, Vaman, Acharyavishvanatha, Kuntaka etc...** **HINDI PATRAKARITA:** • **Knowing about the concept and meaning of Journalism and the different types medias.** • **Understand the journey of journalism in India.** • **Understand the origin of the print, electronic and new age social medias.** • **Knowing about the technological advancement and current status in different types of medias.** • **Understanding the analysis and interpritition of news.** • **Undestand the history, journey and various dimensions of Hindi journalism.** • **Knowing about the great journalists of India and the world.** • **Improving the skill of reporting.** **SHODH PRAVIDHI :** • **Knowing about the concept, aim , scope, deapth and objectives of research.**

	3.4 SOFTCORE **3.5 - SOFTCORE** **3.6 - SOFTCORE**	• **Understanding the different methodologies of research.** • **Knowing about the history and journey of hindi research methodology.** • **Understanding the efficiency and effectveness of the on going research programmes.** **SAMAKALIN HINDI KAVYA:** • **Understanding the modern Hindi poetry and it's features.** **Knowing about contemporary Hindi poets and their poems.** **Understand the different themes of non Hindi poets and their styles of expression.** **Evaluate the qualities of modern poetry.** **Awarensee about some of the literary, critical, social and ideological preoccupations of early 20th century.** **SAMAKALEEN HINDI UPANYAS:** • **Understanding the basic structure of modern prose.** • **Understand and compare the various geners of hindi prose.** • **Understand the basic concept of novel.** • **Knowing about the origin, history and journey of hindi novel.** • **Knowing about the various themes of modern hindi novels.** • **Understanding the different streams of novels and the reasons behind it.**

	3.7-SOFTCORE **4.1 - HARDCORE**	**HINDI NIBANDH SAHITYA:** • **Unerstanding the concept of essay.** • **Knowing about different themes of essay writing and it's content.** • **Knowing about the origin and journey of hindi essay writing.** • **Knowing about prominent essay writers of hindi and their themes and style.** **HINDI EKANKI SAHITYA :** • **Understand the basic difference between drama and one act play.** • **Understand the various geners of visual literature.** • **To gain socio-cultural consciousness.** • **Knowing about the dramatical aspects of literature.** • **Understand the social and moral aspects of the society through dramas.** **ELECTIVE - SAMANYA HINDI AUR GADYA** • **Understanding the conceptual framework of Hindi.** • **Knowing about the functional hindi.** • **Knowing about the various types of letter writing in hindi.** • **Understand the communication skills in hindi.** • **Understand the concept and the importance of Translation.** • **Knowing about the modern oneact plays in Hindi and their themes.**

		FOURTH SEMISTER - **PASHCHATYA KAVYASHASTRA:** • **Understand the origin and development of western poetics.** • **Knowing about the western tradition and thoughts of various western crirics.** • **Understanding the different western literary scholars and their theories.** • **Develop the ability to critically evaluate Hindi literature.**
	4.2-HARDCORE	**MADHYAKALEEN HINDI KAVYA:** • **Understanding the medieval hindi poetry in context of social, cultural and political background.** • **Knowing about the role played by the poets of bhaktikaal in the field of literature and culture of India.** • **Understanding the progressive nature of prominent poet and saint Kabeerdas and his contribution to the society.** • **Knowing about Ram bhakti and krishna bhakti poetry of Tulasi das and surdas by relating it with their phylosophy.**
	4.3 HARDCORE	**HINDI ALOCHANA :** • **Acquiring the knowledge about the cocept, origin, scope andthe importance of Criticism in modern time.** • **Knowing about the notable Indian and western critcs and their different critical views relating to different aspects of poetry.**

	4.4 - SOFTCORE **4.5**	• **Knowing about the emminent Critics of Hindi and their views about the retationship between society and the literature.** • **Understanding the journey of Hindi alochana from ancient time to modern era.** **SAMAKALEEN HINDI SAHITYA:** • **Aquiring the knowledge about contemporary hindi literature.** • **Understanding the literary works of Mamatha kaliya, Kashinath singh and Bhishma sahani.** • **Understanding the socio cultural aspects in contemporary literary works in Hindi.** • **DESSERTATION:** • **Identify, explain, compare, and prepare the key elements of a researchproposal/report.** • **Perform literature reviews using print and online databases;** • **Carry out a substantial research-based project** • **Perform literature reviews using print and online databases;** • **Plan, engage in, an independent and sustained critical investigation and evaluation of a chosen research topic relevant to environment and society.** • **Systematically identify relevant theory and concepts, relate these to appropriate methodologies and evidence, apply**

	4.6	appropriate techniques and draw appropriate conclusions. • Engage in systematic discovery and critical review of appropriate and relevant information sources. • Appropriately apply qualitative and/or quantitative evaluation processes to original data. • Understand and apply ethical standards of conduct in the collection and evaluation of data and other resources. **BHARATIYA SAHITYA :** • Knowing about the literary works done in various Indian languages. • Aquire a huge knowledge about the wellknown authors of India who have contributed to Indian literature. • Knowing about the awardees of jnanapeetha and the their literary works. • Understanding about the socio-cultural aspects in aindia through these literary works.

Department of Kannadabharathi

First Semester

Hard Core:

1. Ancient Kannada Literature
2. Linguistics and Chandassu.

Literature and Interdisciplinary Studies.

Soft Core

1. Folk Studies: Basic Principles.
2. Modern Kannada Literature: romanticism- Part-1
3. Folk Studies: Kannada Folk Literature: poetry
4. Modern Kannada Literature: Romanticism- Part-2

Secon Semester

Hard Core

1. Medieval Kannada Literature.
2. Research Methodology

Soft Core

1. Story of Folk Studies
2. Modern Kannada Literature: Progressive period Part-1.

Soft Core

1. Story of Folk Studies
2. Modern Kannada Literature: Progressive period Part-1.
3. Folk Studies- Theater and prose.
4. Modern Kannada Literature: Progressive Period Part-2
5. Elective Paper for the other department: Ancient and medieval Kannada Literature.

Third Semester

Hard Core

1. Modern Kannada Literature: poetry, Short story and Fiction
2. Comparative poetics.

Soft Core

1. Folk Science: Karnataka tribes and village goddess.
2. Modern Kannada Literature Part-1
3. Theories of Folk Studies
4. Inter Elective.
5. Folk Studies: Kannada Folk Literature: Poetry
6. (One who studying modern Literature they can opt. folk study.
   Same rule apply to Folk Students)

Fourth Semester

Hard Core

1. Modern Kannada Literature: Drama, Criticism.
2. Literary theories.

Soft Core

1. Folk Studies Kannada- folk arts.

2. Modern Kannada Literature: Dalith and Bandaya Literature Part-1
3. Folk Studies: Modern concepts.
4. Modern Kannada Literature: Dalitha and Bandaya Literature Part -2
5. Dessertation.

Vision

To Negotiate with the Modern and Traditional Knowledge's Regarding Kannada Literature and Culture

Mission

* To Create Knowledge Base Regarding
* Kannada Literature and Other Disciplines.
* Kannada Language, Literature and The Mass Media
* Drama and Short Films.
* Field work on literature, culture and Society.
* Folk Literature, Folk Arts and Local Culture.

KUVEMPU UNIVERSITY

P.G. Department of Studies & Research in Sanskrit

(Sahyadri College Campus, Shivamogga-577203)

POST GRADUATE M.A. SANSKRIT PROGRAMME

SCOPE, EMPLOYABILITY, BROAD OUTCOME, PROGRAMME SPECIFIC OUTCOME AND IN COURSE OUTCOME OF ALL THE SEMESTER PAPERS SEPERATELY AS PER CURRICULUM

Sanskrit language has a rich heritage of knowledge-systems and educational values. It has stood the test of time for millenniums and has given precious wealth of knowledge to society at large. It is an earnest need of the hour to disseminate the knowledge of Sanskrit learning to one and all in a systematic and enriching manner. The Department was started in the year 1993. The students are constantly assisted to improve their communication, analytical and writing skills through special lectures, seminars and workshops with the collaboration of Samskrita Bharati, Bengaluru, every year state level elocution competition and Sanskrit speaking workshops are organized. The department has established an excellent rapport with Sanskrit scholars of the two Sanskrit villages viz., Matturu and Hosahalli. These activities enable the students to have wider and higher intellectual attainments. The students are become an expert in the field of Translation studies and techniques to meet the expectations of the employability wherever it is possible. The students are understand the basic aspects of Sanskrit language, Vedic and Classical Sanskrit literature and they get acquainted with the most famous works in Sanskrit literature, which is not only reflect poetic excellence but also depict contemporary society and highlight human values.

SCOPE

The scope of the MA Sanskrit Post-Graduate programme is wide and varied. Graduates of the programme can find jobs in a variety of fields, including:

Education: Sanskrit teachers are in high demand at all levels of education, from primary school to university. MA Sanskrit graduates can reach Sanskrit language, literature and culture at schools, colleges and universities. They can also work as Sanskrit language instructors for adults.

Translation: Sanskrit translators are in high demand in a variety of industries, including government, business and education, MA Sanskrit graduates can translate Sanskrit texts into English and other languages and vice versa. They can also work as interpreters in Sanskrit-speaking programmes.

Media and Publishing: MA Sanskrit graduates can work as journalists, writers and editors for Sanskrit language newspapers, magazines and websites. They can also work as translators and subtitlers for Sanskrit-language films and television shows.

Research: MA Sanskrit graduates can pursue careers in research on Sanskrit language, literature and culture. They can work at universities, research institutes and government agencies.

Other fields: MA Sanskrit graduates can also find jobs in a variety of other fields, such as tourism, public relations and government service.

The scope of the MA Sanskrit graduate programme is likely to grow in the future. As India becomes more integrated into the global economy, there will be a growing demand for Sanskrit speakers and Sanskrit-language skills. MA Sanskrit graduates will be well-positioned to meet this demand.

In adition to the above, MA Sanskrit graduates can also pursue higher studies and research in Sanskrit language and literature. They can also opt to become Sanskrit language specialists or experts.

Overall the scope of the MA Sanskrit graduate programme is wide and varied. Graduates of the program can find jobs in a variety of fields, both in India and abroad.

EMPLOYABILITY

Employability: The employability status of the course MA Sanskrit is good. Graduates of the program can find jobs in a variety of fields, including education, translation, media and publishing, research, and other fields.

The demand for Sanskrit teachers is high at all levels of education, from primary school to university. MA Sanskrit graduates can teach Sanskrit language, literature, and culture at schools, colleges, and universities. They can also work as Sanskrit language instructors for adults. Sanskrit translators are also in high demand in a variety of industries, including government, business, and education.MA Sanskrit graduates can translate Sanskrit texts into English and other languages, and vice versa. They can also work as interpreters in Sanskrit-speaking countries.

MA Sanskrit graduates can also work as journalists, writers, and editors for Sanskrit-language newspapers, magazines, and websites. They can also work as translators and subtitlers for Sanskrit-language films and television shows.

MA Sanskrit graduates can also pursue careers in research on Sanskrit language, literature, and culture. They can work at universities, research institutes, and government agencies. In addition to the above, MA Sanskrit graduates can also find jobs in a variety of other fields, such as tourism, public relations, and government service.

The employability status of the course MA Sanskrit is likely to grow in the future. As India becomes more integrated into the global economy, there will be a growing demand for Sanskrit speakers and Sanskrit-language skills. MA Sanskrit graduates will be well-positioned to meet this demand..

Here are some tips for MA Sanskrit graduates to improve their employability:

Gain experience in teaching, translation, writing, or editing. This can be done through internships, volunteer work or freelance work.

Develop their skills in modem research tools and methodologies.

Network with other Sanskrit professionals and organizations. Stay up to date on the latest developments in the field of Sanskrit studies.

By following these tips, MA Sanskrit graduates can increase their chances of finding employment in their chosen field.

BROAD OUTCOME OF THE PROGRAMME:

The broad outcome of the MA Sanskrit Programme is to produce highly skilled and knowledgeable Sanskrit scholars who are able to contribute to the field of Sanskrit studies in a variety of ways. This includes teaching, research, translation, writing, and editing.

Specifically, the MA Sanskrit Programme aims to:

1.Provide students with a deep understanding of the Sanskrit language, its literature, and its culture.

2.Develop students' critical thinking and research skills.

3. Train students in the use of modern research tools and methodologies.

4.Prepare students for careers in Sanskrit studies, teaching. translation, writing, and editing.

The MA Sanskrit Programme is typically a two-year program that includes coursework in Sanskrit language, literature and culture, as well as a research thesis. Students may also choose to specialize in a particular area of Sanskrit studies, such as Sanskrit literature, Sanskrit linguistics or Sanskrit translation.

Graduates of the MA Sanskrit Programme are well-prepared for careers in a variety of fields, including:

1.Teaching Sanskrit at the secondary or post-secondary level.

2.Conducting research on Sanskrit language, literature, or culture.

3.Translating Sanskrit texts into English or other languages.

4.Writing and editing Sanskrit-language materials.

5. Working in Sanskrit-language media and broadcasting.

The MA Sanskrit Programme also helps to promote the study and appreciation of Sanskrit language and culture. Sanskrit is a Classical language spoken by thousands of people around the world, and it has a rich and vibrant literary and cultural tradition. The MA Sanskrit Programme helps to ensure that this tradition continues to be studied and enjoyed by future generations.

PROGRAMME SPECIFIC OUTCOME

The specific outcomes of the MA Sanskrit **programme vary depending on the specific curriculum of the programme. However, some common specific outcomes of the MA Sanskrit programme include:**

Deep understanding of the Sanskrit language, its literature, and its culture.

1.Ability to read, write, and speak Sanskrit fluently and accurately.

2.Ability to critically analyse and interpret Sanskrit literary texts.

3.Ability to conduct research on Sanskrit language, literature or culture.

4.Ability to translate Sanskrit texts into English and other languages, and vice versa.

5.Ability to teach Sanskrit language, literature, and culture at schools, colleges, and universities.

6.Ability to work as Sanskrit language instructors for adults.

7.Ability to work as Sanskrit translators and interpreters in a variety of industries.

8.Ability to work as journalists, writers, and editors for Sanskrit - language newspapers, magazines, and websites.

9.Ability to work as translators and subtitlers for Sanskrit - language films and television shows.

10.Ability to pursue careers in research on Sanskrit language, literature, and culture.

In addition to the above, the MA Sanskrit programme can also help students to develop a variety of other skills, such as:

Communication skills

Critical thinking skills

Research skills

Problem-solving skills

Team-working skills

Leadership skills

These skills are valuable in a variety of careers, both inside and outside of the field of Sanskrit studies.

The specific outcomes of the MA Sanskrit programme can be achieved through a variety of teaching and learning methods, including lectures, tutorials, seminars, workshops and independent study. Students are also typically required to complete a research thesis or project.

The MA Sanskrit programme is a challenging but rewarding program that can prepare students for a variety of careers in the field of Sanskrit studies and beyond.

COURSE OUTCOME

The course outcomes of the MA Sanskrit programme vary depending on the specific curriculum of the programme

1. **Programme Specific Outcome- Outcome of each Course (paper)**

First Semester

Expected study: The student is introduced to Padyakavya and Anuvada, Roopakas, Vyakarana - Prosody and major meters with Alankarashastra and Darshanashastra.

Expected outcome: The student shall be conversant with major classical poems and poetic form. The student shall be able to appreciate Vyakarana and prosody and varied meters of Samskrita kavya and also Alankarashastra and Darshanashastra.

HC 1.1 Padyakavya and Anuvada

This paper aims to get the students acquainted with the classical Sanskrit Poetry. It intends to give an understanding of literature, through which students will be able to understand the poetic nuances. They develop the ability to use language in a descriptive way. The course also seeks to help the students negotiate the text independently with the help of proficiency of Sanskrit language, grammar and comprehend the meaning in more than one language. Acquire comprehensive knowledge of translation methods and techniques.

HC 1.2 Study of Sanskrit Roopakas

To get knowledge about Drushyakavyas**.** To understand the socio-cultural history through ancient regional literature in Sanskrit Rupakas. To get acquainted with the most famous Dramas in Sanskrit literature, which is not only reflect poetic excellence but also depict contemporary society and highlight human values.

HC 1.3 Vyaakarana and Chhandas

Learn the basics of Sanskrit grammar through Laghu Sidhdhantakaumudi based 'Sanjna, Sandhi, Vibhaktyartha and Samasa' and also learn the applications of Panini's Sutras.

SC 1.1 Special Alankara-1

Know about the aims, essential resources, definition and main types of poetry and Alankara on the basis of Jayadevas Chandraloka to get the complete information regarding Alankara Shastra.

SC 1.2 Special Darshana-1

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Darshanashastra to get the complete information regarding Darshana Shastra.

SC 1.3 Special Alankara-2

Know about the aims, essential resources, definition and main types of poetry and Alankaras on the basis of Ruyyakas Alankara Shastra to get the complete information regarding Alankara Shastra.

SC 1.4 Special Darshana-2

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Eshwarakrishnas Sankhyakarika to get the complete information regarding Darshana Shastra.

Second Semester

Expected study: The student is introduced to Gadyakavya and Essays in Sanskrit, Dramaturgy, Vyakarana and Shuddhikaumudi and major meters of Alankarashastra and Darshanashastra.

Expected outcome: The student shall be conversant with major classical prose form. The student shall be able to appreciate Vyakarana and Shudhdhikaumudi and also Alankarashastra and Darshanashastra.

HC 2.1 Gadyakavyam & Essays in Sanskrit

The student is introduced to Gadyakavya and classical Sanskrit poetry, Essays in Sanskrit with examples. To get acquainted with the Ethical and Moral Values in Ancient and Modern Sanskrit stories.

HC 2.2 Dramaturgy

Teaching of dramatic composition needs a lot of involvement of teachers and students, as it is a practical oriented learning.The students also learn the theoretical aspects related to the production of the play. The concepts like Rasa, Bhava and Abhinaya are blended into the teaching-learning of the play.

HC 2.3 Vyaakarana

Learn the basics of Sanskrit grammar through Laghu Sidhdhanta Kaumudi based on 'Ajanta and Halanta Prakaranas' and also learn the applications of Panini's Sutras with Shudhdhikaumudi.

SC 2.1 Special Alankara-3

Know about the aims, essential resources, definition and main types of the poetry and Alankara on the basis of Vamanas Kavyalankarasutravritti to get the complete information regarding Alankara Shastra.

SC 2.2 Special Darshana-3

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Nyayasutra of Goutama to get the complete information regarding Darshana Shastra.

SC 2.3 Special Alankara-4

Know about the aims, essential resources, definition and main types of the poetry and Alankara on the basis of Kuntakas Vakroktijeevita to get the complete information regarding Alankara Shastra.

SC 2.4 Special Darshana-4

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Charvaka, Baudhdha and Jaina Darshanas to get the complete information regarding Darshana Shastra

Elective: 2-1 Teaching of Sanskrit –I

Students from the various subjects can also opt Sanskrit open electives like Ayurvediya Vaidyakiya Subhashitas and Sanskrit Basic Grammar.

Third Semester

Expected study: The student is introduced to Veda and Vedic Literature, Upanishat, Geeta and major meters of Alankarashastra and Darshanashastra and also Research Methodology & Manuscriptology.

Expected outcome: The student shall be conversant with Veda and Vedic Literature, Upanishat and Geeta and major meters of Alankarashastra and Darshanashastra and also Research Methodology & Manuscriptology

HC 3.1 Veda and Vedic Literature

Learn Samhita, Brahmanas, Aranyakas Upanishads of Vedic literature to get the information regarding Vedic suktas. To understand the basic aspects of Vedic Literature. Student is introduced to history of Vedic literature and gains an understanding of Vedas, epics and puranas. To get the knowledge of ethical values and Comparative study between Vedic & Laukik Sanskrit literature so on.

HC 3.2 Upanishat and Geeta

Student shall study Vedanta, Bhagavadgita and Sankhya Phylosophy, along with certain Upanishads and certain major portions of Bhagavadgita. Students shall study modern Sanskrit literature and history of Indian

linguistics. The great messages of Upanishads and Bhagavadgita shall bring holistic development of personality in the student.

SC 3.1 Special Alankara-5

Know about the aims, essential resources, definition and main types of poetry and Alankara on the basis of Dhvanyaloka of Anandavardhana to get the complete information regarding Alankara Shastra.

SC 3.2 Special Darshana-5

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Sadanandas Vedantasara to get the complete information regarding Darshana Shastra. Student studies Dvaita Vedanta and Vishishtadvaita Vedanta. student shall be conversant with Vedanta darshanas

SC 3.3 Special Alankara-6

Know about the aims, essential resources, definition and main types of poetry and Alankara on the basis of Sahityadarpana of Vishwanatha to get the complete information regarding Alankara Shastra.

SC 3.4 Special Darshana-6

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Vishnutatvavinirnaya to get the complete information regarding Darshana Shastra.

SC 3.5 Research Methodology & Manuscriptology

Students are inculcated in Research Methodology and is made to undertake a research project in 4th semester. Student shall also study and trained in Manuscriptology.

Elective 3-1 Teaching of Sanskrit-II

Students from other subjects can also opt Sanskrit open electives like Ayurvediya Hitopadesha and Sanskrit basic grammar.

Fourth Semester

Expected study: The student is introduced to Vedanga and Vedic Literature and Smriti's, Linguistics and Laukika Nyayas and major meters of Alankarashastra and Darshanashastra and also Research Methodology & Manuscriptology with Dissertation

Expected outcome: The student shall be conversant with Vedanga and Vedic Literature and Smriti's, Linguistics and Laukika Nyayas and major meters of Alankarashastra and Darshanashastra and also Research Methodology & Manuscriptology with Dissertation

HC 4.1 Vedanga and Smruti

Learn Samhita, Brahmanas, Aranyakas Upanishads of Vedic literature with Vedangas to get the information regarding Vedangas. Special study of Nirukta to understand the basic aspects of Vedic Literature. Students are introduced to history of Vedic literature and gains an understanding of Vedas, and Smrutis. Special study of Manusmriti to get the knowledge of Ethical values and Comparative study between Vedic & Laukik Sanskrit literature so on.

HC 4.2 Linguistics and Laukika Nyayas

Student shall gain knowledge of Linguistics and Laukika Nyayas of Sanskrit literature and shall gain a progressive understanding of Indian linguistics.

SC 4.1 Special Alankara-7

Know about the aims, essential resources, definition and main types of poetry and Alankara on the basis of Auchitya vichara charcha of Kshemendra to get the complete information regarding Alankara Shastra.

SC 4.2 Special Darshana-7

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Yatindramata Deepika to get the complete information regarding Darshana Shastra. Student studies Dvaita Vedanta and Vishishtadvaita Vedanta and they shall be conversant with Vedanta darshanas.

SC 4.3 Special Alankara-8

Know about the aims, essential resources, definition and main types of poetry and Alankara on the basis of Kavyaprakasha of Mammata to get the complete information regarding Alankara Shastra.

SC 4.4 Special Darshana-8

Know about the aims, essential resources, definition and main types of Darshanas on the basis of Viveka Chudamani of Shri Shankaracharya & Panchadashi of Vidyaranya (Tatvaviveka Prakarana) to get the complete information regarding Darshana Shastra.

4.5 DISSERTATION/PROJECT REPORT

The course outcomes of MA Sanskrit Dissertation/Project Report:

Students are inculcated with Research Methodology and made a Research project.

• Demonstrate in-depth knowledge of a specialized topic in Sanskrit literature or language

• Apply research skills to gather, analyse, and interpret data

• Write a clear, concise, and well-organized dissertation or project report

• Present the findings of the research in a clear and effective manner

• Contribute to the existing body of knowledge on Sanskrit literature or language

In short, the dissertation or project report is an opportunity for students to demonstrate their mastery of Sanskrit studies and to make a contribution to the field.

POST GRADUATE M.A. URDU PROGRAMME

SCOPE, EMPLOYABILITY, BROAD OUTCOME, PROGRAMME SPECIFIC OUTCOME AND IN COURSE OUTCOME ALL THE SEMESTER PAPERS SEPERATELY AS PER CURRICULUM

Sl. No.	Heading	Description
1	SCOPE	**The scope of the MA Urdu post-graduate programme is wide and varied. Graduates of the program can find jobs in a variety of fields, including:** **Education:** Urdu teachers are in high demand at all levels of education, from primary school to university. MA Urdu graduates can teach Urdu language, literature, and culture at schools, colleges, and universities. They can also work as Urdu language instructors for adults. **Translation:** Urdu translators are in high demand in a variety of industries, including government, business, and education. MA Urdu graduates can translate Urdu texts into English and other languages, and vice versa. They can also work as interpreters in Urdu-speaking countries. **Media and publishing:** MA Urdu graduates can work as journalists, writers, and editors for Urdu-language newspapers, magazines, and websites. They can also work as translators and subtitlers for Urdu-language films and television shows. **Research:** MA Urdu graduates can pursue careers in research on Urdu language, literature, and culture. They can work at universities, research institutes, and government agencies. **Other fields:** MA Urdu graduates can also find jobs in a variety of other fields, such as tourism, public relations, and government service. The scope of the MA Urdu post-graduate programme is likely to grow in the future. As India becomes more integrated into the global economy, there will be a growing demand for Urdu speakers and Urdu-language skills. MA Urdu graduates will be well-positioned to meet this demand. In addition to the above, MA Urdu graduates can also pursue higher studies and research in Urdu language and literature. They can also opt to become Urdu language specialists or experts. Overall, the scope of the MA Urdu post-graduate programme is wide and varied. Graduates of the program can find jobs in a variety of fields, both in India and abroad.

2	**EMPLOYABILITY**	The employability status of the course MA Urdu is good. Graduates of the program can find jobs in a variety of fields, including education, translation, media and publishing, research, and other fields. The demand for Urdu teachers is high at all levels of education, from primary school to university. MA Urdu graduates can teach Urdu language, literature, and culture at schools, colleges, and universities. They can also work as Urdu language instructors for adults. Urdu translators are also in high demand in a variety of industries, including government, business, and education. MA Urdu graduates can translate Urdu texts into English and other languages, and vice versa. They can also work as interpreters in Urdu-speaking countries. MA Urdu graduates can also work as journalists, writers, and editors for Urdu-language newspapers, magazines, and websites. They can also work as translators and subtitlers for Urdu-language films and television shows. MA Urdu graduates can also pursue careers in research on Urdu language, literature, and culture. They can work at universities, research institutes, and government agencies. In addition to the above, MA Urdu graduates can also find jobs in a variety of other fields, such as tourism, public relations, and government service. The employability status of the course MA Urdu is likely to grow in the future. As India becomes more integrated into the global economy, there will be a growing demand for Urdu speakers and Urdu-language skills. MA Urdu graduates will be well-positioned to meet this demand. Here are some tips for MA Urdu graduates to improve their employability: Gain experience in teaching, translation, writing, or editing. This can be done through internships, volunteer work, or freelance work. Develop their skills in modern research tools and methodologies. Network with other Urdu professionals and organizations. Stay up-to-date on the latest developments in the field of Urdu studies. By following these tips, MA Urdu graduates can increase their chances of finding employment in their chosen field.
3	**BROAD OUTCOME OF THE PROGRAMME**	The broad outcome of the MA Urdu Programme is to produce highly skilled and knowledgeable Urdu scholars who are able to contribute to the field of Urdu studies in a variety of ways. This includes teaching, research, translation, writing, and editing. **Specifically, the MA Urdu Programme aims to:** 1.Provide students with a deep understanding of the Urdu language, its literature, and its culture. 2.Develop students' critical thinking and research skills. 3.Train students in the use of modern research tools and methodologies.

		4.Prepare students for careers in Urdu studies, teaching, translation, writing, and editing. The MA Urdu Programme is typically a two-year program that includes coursework in Urdu language, literature, and culture, as well as a research thesis. Students may also choose to specialize in a particular area of Urdu studies, such as Urdu literature, Urdu linguistics, or Urdu translation. **Graduates of the MA Urdu Programme are well-prepared for careers in a variety of fields, including:** 1.Teaching Urdu at the secondary or post-secondary level 2.Conducting research on Urdu language, literature, or culture 3.Translating Urdu texts into English or other languages 4.Writing and editing Urdu-language materials 5.Working in Urdu-language media and broadcasting The MA Urdu Programme also helps to promote the study and appreciation of Urdu language and culture. Urdu is a major language spoken by millions of people around the world, and it has a rich and vibrant literary and cultural tradition. The MA Urdu Programme helps to ensure that this tradition continues to be studied and enjoyed by future generations.
4	**PROGRAM ME SPECIFIC OUTCOME**	**The specific outcomes of the MA Urdu programme vary depending on the specific curriculum of the programme. However, some common specific outcomes of the MA Urdu programme include:** Deep understanding of the Urdu language, its literature, and its culture. 1.Ability to read, write, and speak Urdu fluently and accurately. 2.Ability to critically analyze and interpret Urdu literary texts. 3.Ability to conduct research on Urdu language, literature, or culture. 4.Ability to translate Urdu texts into English and other languages, and vice versa. 5.Ability to teach Urdu language, literature, and culture at schools, colleges, and universities. 6.Ability to work as Urdu language instructors for adults. 7.Ability to work as Urdu translators and interpreters in a variety of industries. 8.Ability to work as journalists, writers, and editors for Urdu-language newspapers, magazines, and websites. 9.Ability to work as translators and subtitlers for Urdu-language films and television shows. 10.Ability to pursue careers in research on Urdu language, literature, and culture. In addition to the above, the MA Urdu programme can also help students to develop a variety of other skills, such as: Communication skills

		Critical thinking skills Research skills Problem-solving skills Team-working skills Leadership skills These skills are valuable in a variety of careers, both inside and outside of the field of Urdu studies. The specific outcomes of the MA Urdu programme can be achieved through a variety of teaching and learning methods, including lectures, tutorials, seminars, workshops, and independent study. Students are also typically required to complete a research thesis or project. The MA Urdu programme is a challenging but rewarding program that can prepare students for a variety of careers in the field of Urdu studies and beyond.
5	**COURSE OUTCOME**	**The course outcomes of the MA Urdu programme vary depending on the specific curriculum of the programme.**
	M.A URDU FIRST SEMESTER	
	HARD CORE 1.1 CLASSICAL URDU POETRY	**MA Urdu paper Classical Urdu Poetry course outcomes:** • Understand the history and development of classical Urdu poetry. • Critically analyze and evaluate classical Urdu poems. • Place classical Urdu poetry in its historical and social context. • Develop a sophisticated appreciation of classical Urdu poetry. • Acquire the skills to write critically about classical Urdu poetry.
	1.2 URDU PROSE	**MA Urdu paper Urdu Prose course outcomes:** • Understand the history and development of Urdu prose. • Critically analyze and evaluate Urdu prose writings. • Place Urdu prose writings in their historical and social context. • Develop a sophisticated appreciation of Urdu prose. • Acquire the skills to write critically about Urdu prose.
	1.3 HISTORY OF URDU LITERATURE	**MA Urdu paper History of Urdu Literature course outcomes:** • Understand the historical development of Urdu literature. • Critically analyze and evaluate major trends and movements in Urdu literature. • Place Urdu literature in its historical and social context. • Develop a sophisticated appreciation of Urdu literature. • Acquire the skills to write critically about Urdu literature and its history.

	SOFT CORE 1.1 SHIBLI NOMANI	**MA Urdu paper Shibli Nomani course outcomes:** • Understand the life and works of Shibli Nomani. • Critically analyze and evaluate Nomani's contributions to Urdu literature, Islamic scholarship, and education. • Place Nomani's work in its historical and social context. • Develop a sophisticated appreciation of Nomani's work. • Acquire the skills to write critically about Nomani's work.
	1.2 SIR SYED AHMED KHAN	**MA Urdu paper Sir Syed Ahmed Khan course outcomes:** • Understand the life and works of Sir Syed Ahmed Khan. • Critically analyze and evaluate Khan's contributions to Urdu literature, Islamic scholarship, and education. • Place Khan's work in its historical and social context. • Develop a sophisticated appreciation of Khan's work. • Acquire the skills to write critically about Khan's work.
	1.3 MEER TAQI MEER	**MA Urdu paper Meer Taqi Meer course outcomes:** • Understand the life and works of Meer Taqi Meer. • Critically analyze and evaluate Meer's poetry. • Place Meer's poetry in its historical and social context. • Develop a sophisticated appreciation of Meer's poetry. • Acquire the skills to write critically about Meer's poetry.
	1.4 MIRZA GHALIB	**MA Urdu paper Mirza Ghalib course outcomes:** • Understand the life and works of Mirza Ghalib. • Critically analyze and evaluate Ghalib's poetry. • Place Ghalib's poetry in its historical and social context. • Develop a sophisticated appreciation of Ghalib's poetry. • Acquire the skills to write critically about Ghalib's poetry. Ghalib's poetry is known for its complex and sophisticated treatment of themes such as love, loss, faith, and the nature of reality. His work has had a profound influence on Urdu literature and culture, and continues to be studied and enjoyed by readers around the world.
	M.A URDU SECOND SEMESTER	
	HARD CORE 2.1 MODERN URDU POETRY	**Upon successful completion of the MA Urdu paper Modern Urdu Poetry, students will be able to:** 1.Understand the chronological development of modern Urdu poetry. 2.Analyze the life sketch, literary trends, style, and literary significance of important modern Urdu poets. 3.Critically appreciate the aesthetic and critical aspects of modern Urdu poetry. In brief, the course outcomes are to enable students to develop a deep understanding of the history, development, and significance of modern Urdu poetry.
	2.2 PERSIAN LANGUAGE	**Upon successful completion of the MA Urdu paper Persian Language and Literature, students will be able to:** 1.Gain a comprehensive knowledge of the Persian language and its literature.

	AND LITERATURE	2.Develop critical thinking, analytical thinking, and linguistic competence. 3.Read, write, and communicate effectively in Persian. 4.Analyze and interpret the evolution of Persian literature and the growth of its popular genres in terms of social, political, historical, national, cultural, and literary backgrounds. In brief, the course outcomes are to enable students to develop a profound understanding of the Persian language and literature, both in terms of its historical development and its contemporary significance.
	2.3 DASTAN NOVEL AND NOVELETTE	**MA Urdu paper Dastan Novel and Novelette:** 1.Understand the history and significance of these genres in Urdu literature. 2.Analyze different types and styles of Dastans, Novels, and Novellas in Urdu. 3.Critically appreciate their aesthetic and social values.
	SOFT CORE 2.1 SPECIAL STUDY OF ALLAMA IQBAL	**MA Urdu paper Special Study of Allama Iqbal:** 1.Understand Iqbal's life, works, and thought. 2.Analyze his poetry and philosophy in context. 3.Critically appreciate his aesthetic and intellectual significance. 4.Apply Iqbal's ideas to contemporary issues.
	2.2 SPECIAL STUDY OF FAIZ AHMED FAIZ	**MA Urdu paper Special Study of Faiz Ahmed Faiz :** 1.To develop a deep understanding of the life and works of Faiz Ahmed Faiz, one of the greatest Urdu poets of the 20th century. 2.To critically analyze and evaluate Faiz's poetry in terms of its themes, style, and significance. 3.To place Faiz's poetry in the context of the progressive movement in Urdu literature and the broader social and political milieu of his time. 4.To develop a sophisticated appreciation of the aesthetic and literary qualities of Faiz's poetry. 5.To acquire the skills to write critically and informatively about Faiz's poetry and Urdu literature in general.
	2.3 TRANSLATION OF URDU LITERATURE	**MA Urdu paper Translation of Urdu Literature:** 1.To develop a deep understanding of the theory and practice of literary translation. 2.To acquire the skills to translate Urdu literature into English and vice versa, with due regard to the nuances of both languages and cultures. 3.To produce translations that are accurate, fluent, and idiomatic. 4.To develop a critical understanding of the challenges and rewards of literary translation. 5.To reflect on the role of translation in promoting cultural understanding and exchange. In addition to these general outcomes, students may also be expected to develop specific knowledge and skills related to the translation of particular genres of Urdu literature, such as poetry, fiction, and drama.

	2.4 URDU DRAMA NIGARI	**MA Urdu paper Urdu Drama Nigari:** 1.Understand and apply the theory and practice of Urdu drama writing. 2.Write original Urdu plays with due regard to all elements of drama. 3.Produce plays that are both artistically and technically proficient. 4.Develop a critical understanding of Urdu drama genres and styles. 5.Reflect on the role of drama in society and its potential to promote change.
	2.5 URDU AFSANA (OPEN ELECTIVE)	**MA Urdu paper Urdu Afsana as Open Elective Paper course outcomes:** 1.Understand and appreciate the Urdu short story (afsana). 2.Critically analyze and evaluate Urdu afsana 3.Place Urdu afsana in their historical and social context. 4.Develop a sophisticated appreciation of Urdu afsana. 5.Acquire the skills to write critically about Urdu afsana.
	M.A URDU THIRD SEMESTER	
	HARD CORE 3.1 LITERARY CRITICISM	**MA Urdu paper Urdu Literary Criticism course outcomes:** • Understand the history and development of Urdu literary criticism. • Critically analyze and evaluate different schools and approaches to Urdu literary criticism. • Apply different critical theories and frameworks to the analysis of Urdu literary works. • Develop a sophisticated appreciation of the different critical perspectives on Urdu literature. • Acquire the skills to write critically about Urdu literary criticism and Urdu literature in general. Urdu literary criticism is a diverse and vibrant field, with a rich history and tradition. The study of Urdu literary criticism can help students to develop a deeper understanding of Urdu literature, as well as the critical tools and frameworks necessary to analyze and evaluate literary works in general.
	3.2 TARSEEL-E-AAMMA	**MA Urdu paper Urdu Tarseel-e-Aamma course outcomes:** • Understand the history and development of Urdu mass communication in the Indian subcontinent. • Critically analyze and evaluate the different forms of Urdu mass media. • Study the role of Urdu mass media in society and its impact on culture and politics. • Develop the skills to produce Urdu media content. • Acquire the skills to critically analyze and evaluate Urdu media content. Urdu mass communication is a vital part of the Indian media landscape. It plays an important role in informing and educating the public, as well as in promoting Urdu language and culture. The study of Urdu mass communication can help students to develop a deeper understanding of the Indian

		media landscape, as well as the skills and knowledge necessary to work in the Urdu media industry.
	3.3 RESEARCH METHODOLOGY	**MA Urdu paper Urdu Research Methodology course outcomes:** • Understand the different types of research in Urdu studies. • Develop the skills to design and conduct Urdu research projects. • Learn how to collect, analyze, and interpret Urdu data. • Write research papers and reports in Urdu that are clear, concise, and well-organized. • Become familiar with the ethical guidelines for research in Urdu studies. In addition to these general outcomes, students may also be expected to develop specific knowledge and skills related to the study of particular research methods or techniques. For example, students may be required to learn how to use a particular research software program, or how to conduct a particular type of interview.
	SOFT CORE 3.1 MASNAVI	**MA Urdu paper Urdu Masnavi course outcomes:** • In-depth knowledge of the history and major texts of Urdu Masnavi • Understanding of the various techniques used in Masnavi poetry • Ability to read, understand, and enjoy Urdu Masnavi poems • Knowledge of the authors of Urdu Masnavi and their contributions to Urdu literature • Appreciation of the major trends in Urdu Masnavi poetry In short, the course aims to provide students with a comprehensive understanding of Urdu Masnavi poetry, its history, its techniques, its major works, and its authors.
	3.2 GHAZAL	**MA Urdu paper Urdu Ghazal course outcomes:** • In-depth knowledge of the history and major texts of Urdu Ghazal • Understanding of the various techniques used in Ghazal poetry • Ability to read, understand, and enjoy Urdu Ghazal poems • Knowledge of the authors of Urdu Ghazal and their contributions to Urdu literature • Appreciation of the major trends in Urdu Ghazal poetry In short, the course aims to provide students with a comprehensive understanding of Urdu Ghazal poetry, its history, its techniques, its major works, and its authors.
	3.3 SAHER LUDHIYANVI	**MA Urdu paper Urdu Sahir Ludhiyanvi course outcomes:** • In-depth knowledge of Sahir Ludhiyanvi's life, works, and contributions to Urdu literature • Understanding of Sahir Ludhiyanvi's unique poetic style and techniques • Ability to read, understand, and appreciate Sahir Ludhiyanvi's poetry

		• Knowledge of the major themes and concerns of Sahir Ludhiyanvi's poetry • Appreciation of Sahir Ludhiyanvi's place in the history of Urdu literature In short, the course aims to provide students with a comprehensive understanding of Sahir Ludhiyanvi's poetry and its significance in Urdu literature.
	3.4 PARVEEN SHAKIR	**MA Urdu paper Urdu Parveen Shakir course outcomes:** • In-depth knowledge of Parveen Shakir's life, works, and contributions to Urdu literature • Understanding of Parveen Shakir's unique poetic style and techniques • Ability to read, understand, and appreciate Parveen Shakir's poetry • Knowledge of the major themes and concerns of Parveen Shakir's poetry • Appreciation of Parveen Shakir's place in the history of Urdu literature In short, the course aims to provide students with a comprehensive understanding of Parveen Shakir's poetry and its significance in Urdu literature.
	3.5 URDU GHAZAL (OPEN ELECTIVE)	**MA Urdu paper Urdu Ghazal Open Elective course outcomes:** • To introduce students to the Urdu Ghazal, a major form of Urdu poetry • To provide students with a basic understanding of the history, structure, and themes of the Ghazal • To develop students' ability to read, understand, and appreciate Urdu Ghazal poems • To familiarize students with some of the most important Urdu Ghazal poets and their works In short, the course aims to provide students with a basic understanding of the Urdu Ghazal, its history, its form, its themes, and its major poets. It is an Open Elective course, which means that it is open to students from all disciplines, regardless of their prior knowledge of Urdu.
		M.A URDU FOURTH SEMESTER
	HARD CORE 4.1 MODERN TRENDS	**MA Urdu paper Modern Trends course outcomes:** • In-depth knowledge of the major trends, movements, and writers in Urdu literature after 1857 • Understanding of the social, political, and cultural forces that shaped modern Urdu literature • Ability to read, understand, and appreciate modern Urdu literature • Knowledge of the critical and theoretical approaches to modern Urdu literature • Appreciation of the place of modern Urdu literature in the global literary canon In short, the course aims to provide students with a comprehensive understanding of modern Urdu literature, its history, its major trends, its writers, and its critical reception.

	4.2 ARABIC LANGUAGE AND LITERATURE	**MA Urdu paper Arabic Language and Literature course outcomes:** • A comprehensive understanding of the history and development of the Arabic language and literature • A deep knowledge of the major Arabic literary texts and genres • An ability to read, understand, and appreciate Arabic literature in its original language • A critical awareness of the different theories and approaches to the study of Arabic literature • An appreciation of the place of Arabic literature in the world literary canon In short, the course aims to provide students with a comprehensive understanding of Arabic language and literature, its history, its major works, its genres, and its critical reception.
	SOFT CORE 4.1 DAKHNI LITERATURE	**MA Urdu paper Dakhni Literature course outcomes:** • In-depth knowledge of the history and major texts of Dakhni literature • Understanding of the unique linguistic and cultural features of Dakhni literature • Ability to read, understand, and appreciate Dakhni literary texts • Knowledge of the major poets and writers of Dakhni literature • Appreciation of the place of Dakhni literature in the history of Urdu literature In short, the course aims to provide students with a comprehensive understanding of Dakhni literature, its history, its major works, its authors, and its significance in Urdu literature.
	4.2 TANZ-O-MIZAH	**MA Urdu paper Tanz-o-Mizah course outcomes:** • In-depth knowledge of the history and development of humor and satire in Urdu literature • Understanding of the various techniques and genres of humor and satire • Ability to read, understand, and appreciate Urdu humor and satire • Knowledge of the major humorists and satirists of Urdu literature • Appreciation of the role of humor and satire in Urdu culture and society In short, the course aims to provide students with a comprehensive understanding of humor and satire in Urdu literature, its history, its techniques, its major works, and its authors.
		The course outcomes of MA Urdu paper Urdu Maktoob Nigari (Urdu Letter Writing): • In-depth knowledge of the history, forms, and styles of Urdu letter writing • Understanding of the various types of Urdu letters, including personal, professional, official, and literary letters

	4.3 URDU MAKTOOB NIGARI	• Ability to write clear, concise, and effective Urdu letters • Knowledge of the different rhetorical devices and techniques used in Urdu letter writing • Appreciation of the role of letter writing in Urdu culture and society In short, the course aims to provide students with a comprehensive understanding of Urdu letter writing, its history, its forms, its styles, and its significance in Urdu culture and society.
	4.4 ADABI TEHRIKEN	**The course outcomes of MA Urdu paper Adabi Tehriken (Urdu Literary Movements):** • In-depth knowledge of the major literary movements in Urdu literature • Understanding of the social, political, and cultural forces that shaped these movements • Ability to identify and analyze the characteristics of different literary movements • Knowledge of the major writers and works associated with each movement • Appreciation of the place of literary movements in the history of Urdu literature In short, the course aims to provide students with a comprehensive understanding of literary movements in Urdu literature, their history, their major characteristics, their writers, and their significance in Urdu literature.
	4.3 DISSERTATION/ PROJECT REPORT	**The course outcomes of MA Urdu Dissertation/Project Report:** • Demonstrate in-depth knowledge of a specialized topic in Urdu literature or language • Apply research skills to gather, analyze, and interpret data • Write a clear, concise, and well-organized dissertation or project report • Present the findings of the research in a clear and effective manner • Contribute to the existing body of knowledge on Urdu literature or language In short, the dissertation or project report is an opportunity for students to demonstrate their mastery of Urdu studies and to make a contribution to the field.

Kuvempu University

Faculty of Arts

School of Social Sciences

Economics

History and Archeology

Political Science

Social Works

Sociology

Master of Arts (Economics) Program Outcome

1. Demonstrate knowledge of theories, policies, and empirical findings of economics.
2. Engage in scientific inquiry, critical thinking, using quantitative and qualitative methods.
3. Access and extract data from multiple sources, analyse and interpret the results using quantitative and qualitative tools.
4. Demonstrate competence in written and oral communication and convincingly present arguments with virtual tools.
5. Apply knowledge of economics for team building and create entrepreneurial initiatives for livelihood and social development.

Master of Arts (Economics) Program Specific Outcomes

1. Apply theories, models, and tools of Economics to analyze socio-economic issues and formulate viable solutions.
2. Undertake scientific enquiry and research to resolve socio-economic problems
3. Demonstrate professional competencies to investigate socio-economic issues, extracting qualitative and quantitative data, critically examining its impacts for resource allocation, distribution, and exchange.
4. Engage in reflective thinking leading to self-learning and lifelong learning.
5. Forge sustainable linkages with communities, thereby giving a boost to civic engagement.

I Semester

Paper Title – 1.1 (H): Micro Economic Analysis

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Analyze consumer behavior for utility maximization.
2. Evaluate firm's production functions in the short-run and long-run.
3. Apply pricing and output decisions in diverse market structure.
4. Evaluate theories of firms for revenue and welfare maximization.
5. Analyze alternative criteria in welfare economics.

Paper Title – 1.2 (H): Economics of Growth and Development

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Demonstrate knowledge of growth and development models and applicability.
2. Evaluate the development issues prevailing in developing countries.
3. Analyze the growth models and its applicability to developing countries.
4. Interpret the development strategies for internalizing for development.
5. Assess the issues concerning economic development.

Paper Title – 1.3 (H): Mathematical Methods for Economists

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Apply set theory and mathematical function in building economics models.
2. Evaluate average and marginal utility, revenue, cost, product, and price functions using differential calculus for optimal decision making.
3. Apply minima and maxima with and without constraints for optimization.
4. Evaluate revenue maximization and cost minimization using integral calculus.
5. Apply matrix algebra for optimizing production and pricing decisions.

Paper Title – 1.4 (S): Financial Institutions and Markets

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Assess systematic and unsystematic risks associated with securities and make investment decisions.
2. Examine portfolio of assets using fundamental and technical tools.
3. Describe sources for company finance and financial leverage through the support of merchant banks, public issue, and credit syndication.
4. Demonstrate the knowledge about working of financial markets (stocks, debts, derivatives, currency market and commodities markets).
5. Identify the functions of financial intermediation and financial system - financial markets, financial assets, financial institutions, financial services, and financial regulations.

Paper Title – 1.5 (S): Economics of Social Sector

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. The course aims to acquaint and familiarize students with the Economics of social sector.
2. The units incorporated in this course provide an analysis of issues at the theoretical level and also with regard to specificity of issues prevailing in the Indian context.
3. The Implications of Sarva Shiksha Abhiyan (SSA), Rashtriya Madyamika Shikshana Abhiyan (RMSA) to the issues amd concerns of various Social Sectors in India.

II Semester

Paper Title – 2.1 (H): Macro Economic Analysis

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand national income estimates and social accounting.
2. Analyze the consumption and investment functions and multiplier.
3. Evaluate the classical and Keynesian models using IS-LM framework.
4. Analyze the trade-off between inflation and unemployment.
5. Assess open macroeconomic models for achieving internal and external balance.

Paper Title – 2.2 (H): Statistical Methods for Economists

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Examine the characteristics of grouped and ungrouped data statistical data and apply measures of central tendency and dispersion
2. Assess the relationship between variables and how independent variable is associated with the dependent variable
3. Solve some business problems using discrete and continuous probability distributions
4. Employ different sampling methods for designing and selecting a sample from a population using basic principles of sampling and estimation
5. Decide which inferential statistics tool can be applied in a real-life situation.

Paper Title – 2.4 (S): Agricultural for Economics

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Demonstrate knowledge of agricultural theories for economic development.
2. Analyze the risks and uncertainties in agriculture to support development of agriculture.
3. Evaluate policies for pricing and marketing of agricultural products.
4. Evaluate the sources of agricultural finance.
5. Assess the challenges facing agriculture in international trade negotiations.

Paper Title – 2.6 (S): Karnataka Economy

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Develop knowledge of economic position in Karnataka Economy
2. Be informed about present trends in major sectors of Karnataka Economy.
3. To evaluate measures taken by Government of Karnataka to solve the issues.
4. To check proper functioning of financial institutions and measures taken by government of Karnataka to resolve the issue of regional imbalance
5. To check credit and financial facilities available in Karnataka and also Regional disparities with respect to causes, extent and special committees framed to remove it.

Paper Title – 2.8 (E): Rural Development

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. To study the basics of rural development such as characteristics, problems, theories and programmes of rural development.
2. Able to understand features and issues through various theories and try to solve problems of rural areas through appropriate schemes / programmes.
3. Be encouraged for active participation and expansion of infrastructural activities in rural areas to achieve rural development.
4. To enable the students to take active participation in main stream development process in rural areas with adequate information and skills development.
5. To understand the rural infrastructure in present scenario

III Semester

Paper Title – 3.1 (H): Public Economics

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. The students would learns of the feature the federal structure and financial relationship among them.
2. The course would develop the analytical ability of students to distinguish between beneficial and detrimental effects of a government policy and their effect on macroeconomics framework of an economy.
3. It will helps students to critically analyse the fiscal reforms and policy choices of the government in developed and developing countries.

Paper Title – 3.2 (H): Computer Applications in Economic Analysis

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Demonstrate the usage of computers and how computers are essential components in learning, business and society.
2. Employ proficiency in the use of word processing to produce professional-looking documents
3. Create and format spreadsheet and carry out inferential statistical analysis using data analysis tool and graphically display the result
4. Use multimedia presentations skills to capture ideas in outline form and convert them into visuals and encourage learning
5. Illustrate sound conceptual knowledge of networking, digital ecosystem and on demand computing resource.
6. Describe the fundamental elements of database, data warehousing and data mining.

Paper Title – 3.3 (S): Research Methodology

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Demonstrate knowledge about scientific inquiry in social science research.
2. Organize systematic review of literature to identify research gaps and frame research objectives.
3. Demonstrate knowledge to use appropriate research designs in carrying out research.
4. Compose data using different methods and analyze them for inferences.
5. Compile a systematic research report defending the arguments.

Paper Title – 3.5 (S): Environmental Economics

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Apply economic theory to the management of the environmental and natural resources.
2. Understand the role of economic theory in solving environmental and resource problems.
3. Design appropriate environmental policies and analyze the effects and merits of existing or proposed policies
4. Discuss an impact of environmental policies
5. Examine the impact of national and local environment policies on the global economy

Paper Title – 3.6 (S): Demography

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. To gain knowledge about demographic theories in economic activities.
2. To identify the composition and dynamics of population across the world
3. To know the composition and dynamics of population across the world.
4. To understand the concept of urbanization
5. To aware the population policy in present scenario

Paper Title – 3.7 (S): Managerial Economics

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. The students would be trained about economic application of economic theory.
2. It would facilitate students learning by allowing students to see how economics can be used in decision making.
3. It would help students in knowing how managerial economics can be treated as a special branch of economics.

Paper Title – 3.9 (E): Indian Economy

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. To have knowledge about the issues in Indian Economy like planning, poverty, unemployment etc
2. To know about relationship between monetary policy, fiscal policy and economic development.
3. To know about framework of policy making for the development of Indian economy
4. To know about the preparation of budgeting and its utilization for Indian economy.

IV Semester

Paper Title – 4.1 (H): International Economics

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Demonstrate knowledge about international trade theories.
2. Evaluate factor price equalization due to international trade.
3. Analyze factors contributing intraindustry trade.
4. Assess the gains from international trade.
5. Evaluate the trade policy for protection and tariff.

Paper Title – 4.1 (H): Time Series Data Analysis

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. To provide hands on training to the students to analyse primary and secondary data using appropriate statistical tools – using the R software
2. To comprehend the application of ANOVA usage with one way procedure.
3. Learn how to apply simple and multiple regression for econometric analysis.
4. To understand and comprehend the output summary in R - in case of regression diagnostics, tests of significance and logistic regression.

Paper Title – 4.5 (S): Indian Economic Policy

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Develop ideas of the basic characteristics of Indian economy, its potential on natural resources
2. Understand the importance, caused and impact of population growth and its distribution, translate and relate them with economic development
3. It will result in comprehensive understanding of Indian economy
4. Student will be able to understand govt. policies and sectoral programmes

Paper Title – 4.6 (E): Industrial Economics

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Demonstrate knowledge about theories of industrialization.
2. Evaluate the role of industry for economic development.
3. Analyze the factors contributing to industrial location.
4. Evaluate factors contributing to industrial productivity and efficiency.
5. Internalize means for industrial dispute and settlement.

Broad outcome of the Course:

The Department of History & Archaeology offers two basic components. One is History and another is Archaeology. There are few Hard core papers in both the units. But after studying some Hard core papers I the Soft core the students have the choice to pursue their interest either in History or in Archaeology Field. Hence they gain skill in various Subjects of their choice.

Programme Specific Outcome:

The Students who wants to pursue papers in History Component studies papers like Modern Karnataka, Research Methodology, Contemporary South Asia –SAARC nations or Regional History helps them in taking Competitive Exams like IAS or KAS etc other than entering the teaching Field.

Whereas the students pursuing the papers in Archaeology studies papers like Art and Architecture, Epigraphy, Numismatics Archives etc help them to get jobs in Archaeological Survey of India as Assistant Archaeologist or they can pursue jobs in State Archaeology or in Various public or Private Museums and in Heritage Department of in Tourism Sectors and also they can join Teaching field.

Course Outcome:

So either the students of History Component or the Student who study Archaeology component before they get their PG Degree are aware of what field they can continue. For Example if the students wants to pursue his career in the field of Archaeology they are already exposed to different branches of Archaeology so they are aware of in which branch they can further pursue their Career. For Example as an Archaeologist or Epigraphist or as Archive keeper or as Curators in the Museum or in Heritage Department, because the overall papers offered in the Department gives a clear picture.

M.A. in Journalism and Mass Communication

Program Specific and Course Specific Outcomes

Program Specific Outcomes:

After the successful completion of the program M.A. in Journalism and Mass Communication, students will be able to:

1. Understand the emerging trends in the field of journalism and mass communication
2. Develop the skills to work in print, electronic and digital media industry
3. Produce multimedia content including journals, video, audio, animation and graphic design.
4. Engage in entrepreneurial ventures related to journalism and mass communication, public relations and manage print and electronic media organization.
5. Possess knowledge about media laws and policies.
6. Adapt to rapidly changing media landscapes and demonstrate innovation in their journalistic practices by continuous up-skilling and self-learning abilities.
7. Adhere to ethical standards, including accuracy, fairness, and objectivity while creating and distributing media content.
8. Use modern tools and equipments involved in the production of multimedia content
9. Take-up scientific and objective research studies in the fields of Journalism, Mass Communication and allied subjects.
10. Become responsible media academicians, researchers, professionals with global vision.

Semester I

Paper: HC 1.1: Communication Theories

Student learning course outcomes

After successful completion of this course students will be able to:

1. Explain the process and nature of communication
2. Understand the characteristics of various forms of communication
3. Evaluate and explain various models of communication
4. Apply different national and international theories of communication
5. Use communication skills, theories and models in real-life communication situations

Paper: HC 1.2: Reporting

Student learning course outcomes

After successful completion of this course students will be able to:

1. Define news and understand the elements, news values and structure of news report.
2. Use various techniques of gathering information and writing news.
3. Identify various news sources along with their management.
4. Understand different types of reporting
5. Accurately report any given event for various forms of media

Paper: HC 1.3: Editing

Student learning course outcomes

After successful completion of this course students will be able to:

1. Learn the basic principles of editing and understand the process of editing for various platforms.
2. Apply the principle of editing, including fact-checking, language correction, and news story rewriting, to produce accurate and polished news content
3. Create various types of headlines, including news and feature headlines, using established techniques
4. Use page designing softwares to design and layout newspapers
5. Make effective sense of language skills and translation.

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Paper: SC 1.1: Development of Media

Student learning course outcomes

After successful completion of this course students will be able to:

1. Elaborate on the development of printing technology over the period of time.
2. Trace the glorious history of journalism.
3. Enhance understanding of the origin and growth of the print, electronic and web media.
4. Recognize the contributions of renowned journalists of the country.
5. Trace the technological advancements in print, electronic and web media.

Paper: SC 1.2: Advertising

Student learning course outcomes

After successful completion of this course students will be able to:

1. Learn basic concepts of advertising
2. Know about the role and importance of advertising in media
3. Know about advertising agencies and their functions.
4. Design and develop advertisements for various media.
5. Plan and execute an advertising campaign.

Paper: SC 1.3: Science Communication

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the basic concepts of science journalism
2. Gain knowledge about scientific developments and technological innovations
3. Understand the sources of science and technology news
4. Know the techniques of science reporting for various media
5. Examine the contents of science publications.

Semester II

Paper: HC 2.1: Communication Research

Student learning course outcomes

After successful completion of this course students will be able to:

1. Learn the basic concepts of research and communication research.
2. Gain knowledge about the need, role, importance, functions and ethics of research.
3. Develop and use various tools of data collection.
4. Apply various techniques of data analysis methods using different statistical tools.
5. Learn the process of writing research report.

Paper: HC 2.2: Radio Broadcasting

Student learning course outcomes

After successful completion of this course students will be able to:

1. Explain different types of radio broadcasting and their characteristics.
2. Explain the evolution of radio broadcasting in India.
3. Describe the organizational structure of All India Radio and the functions of various departments.
4. Use microphones and operate sound recording equipments.
5. Write scripts for different kinds of radio programs

Paper: HC 2.3 Introduction to Television Production

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the essential elements of television production techniques.
2. Undertake TV production independently.
3. Write various types of television scripts
4. Understand production stages and the role of crew members
5. Handle camera operations and compositions

Paper: SC 2.1: Media Management

Student learning course outcomes

After successful completion of this course students will be able to:

1 Explain the nature, scope and principles of media management.

2 Identify the economics of mass media.

3 Critically analyze the economic and societal impact of different kinds of media ownership

4 Explain the characteristics of different media organizations

5 Impart practical knowledge about media marketing strategies

Paper: SC 2.2: Feature Writing and Photojournalism

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the differences between feature writing and news writing.
2. Obtain the skills of writing various contents for the magazines.
3. Understand the techniques of professional photography.
4. Learn the components and types of digital camera
5. Learn the tools and techniques of photo editing

Paper: EL 2.1: Media and Society

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the characteristics of various mass media
2. Examine the media ownership and control
3. Analyse the media coverage for burning issues like religion and gender.
4. Understand the role of mass media in development.
5. Know the impact of mass media on society

Paper: EL 2.2: Radio, Television and the Internet

Student learning course outcomes

After successful completion of this course students will be able to:

1. Trace the history of Radio, Television and Internet
2. Prepare different types of radio programmes.
3. Write radio and TV program scripts
4. Explain the techniques of the interview.
5. Critically analyse the current trends in Radio and Television broadcasting

Paper: HC 3.1: Media Law and Ethics

Student learning course outcomes

After successful completion of this course students will be able to:

1. Be aware of legal aspects of the media and its values.
2. Have an overview of recent changes and future challenges of media regulation
3. Understand media ethics
4. Classify and explain various media laws and their implications
5. Trace the important provisions of RTI, IT and cyber laws.

Paper: HC 3.2: Television Journalism

Student learning course outcomes

After successful completion of this course students will be able to:

1. Trace the evolution of television journalism
2. Demonstrate proficiency in the stages of television program production, including pre-production, production, and post-production
3. Operate wide range of production equipments and accessories in TV studio setups
4. Generate creative content for television, including news bulletin scripts and entertainment program
5. Adapt to new trends in TV production, such as 3D graphics, web streaming, and AI-based anchoring and others.

Paper: SC 3.1: Media and Environment

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the major environmental issues
2. Know the techniques of reporting environmental issues for various media
3. Value the role of NGOs for environmentalism.
4. Utilize media for different promotional activities for protecting environment.
5. Commit themselves to work for sustainable development

Paper: SC 3.2: Film Studies

Student learning course outcomes

After successful completion of this course students will be able to:

1. Trace the origin and development of world and Indian cinema
2. Understand various film movements and theories.
3. Review the contribution of selected film makers
4. Critically review a film
5. Identify recent trends in Indian, world and regional cinema

Paper: SC 3.3: Folk Media

Student learning course outcomes

After successful completion of this course students will be able to:

1. Explain the characteristics and relevance of folk media
2. List major folk forms of Karnataka and India
3. Explain the role of folk media as communication tool
4. Identify the problems faced by folk artists
5. Identify the role of agencies which use folk media for development communication

Paper: EL 3.1: Writing for Print Media

Student learning course outcomes

After successful completion of this course students will be able to:

1. Know the fundamentals of writing
2. Identify news values and news sources.
3. Know the techniques of gathering information and writing news.
4. Understand different types of writing as report, features, articles, columns, editorials etc.
5. Review film, book and drama.

Paper: EL 3.2: Intercultural Communication

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the concept of culture
2. Know the barriers to intercultural communication
3. Understand media as culture manufacturing industry
4. Identify sources of Indian culture
5. Examine folk culture heritage of India

Paper: HC 4.1: Development Communication

Student learning course outcomes

After successful completion of this course students will be able to:

1. Explain the concept and indicators development.
2 Elaborate different models, strategies and barriers of development communication
3. Identify the alternative developmental communication method
4. Report development issues
5. Understand the problems and hurdles in development communication.

Paper: HC 4.2: Digital Media

Student learning course outcomes

After successful completion of this course students will be able to:

1. Explain devices and importance of digital technology.
2. Create digital contents for various platforms.
3. Explain the roles, functions and applications of various social media platforms
4. Use new media platforms to create journalistic contents in an ethical and responsible manner
5. Create content for new media, including the use of keywords, search engine optimization, hashtags, content management systems (CMS), hyperlinks, and search engine tools.

Paper: SC 4.1: Corporate Communication

Student learning course outcomes

After successful completion of this course students will be able to:

1. Explain the concept of corporate communication and its importance
2. Elaborate the process of public relations
3. Identify and apply the tools of public relations
4. Describe the ethical aspects related to Public Relations
5. Explain the role and functions of PR agencies

Paper: SC 4.2: Political Communication

Student learning course outcomes

After successful completion of this course students will be able to:

1. Understand the basics of Political communication.
2. Develop the extensive knowledge about regional and national political issues
3. Understand the ethical and legal aspects of covering political issues
4. Know the role of mass media as political actor
5. Know the role of digital media in political image making

Paper: SC 4.3: Technical Writing

Student learning course outcomes

After successful completion of this course students will be able to:

1. Differentiate between technical writing and other forms of writing
2. Identify the techniques of writing different technical documents
3. Understand qualities and responsibilities of technical writers
4. Understand the process of technical writing
5. Know the technical editing process

DEPARTMENT OF POLITICAL SCIENCE (Programme Outcomes)

The Department has collaborations with different reputed academic institutions, at the national level. ISU (Indian Study Unit, Bangalore) And CESS (Centre for Educational and Social Studies) to organise Seminars and Conferences. Collaboration with Chanakya University, Bangalore; and Karnataka State Rural Development and Panchayath Raj University. Through this Training programmes and workshops are frequently organized for the elected representatives and officials of Grama/Taluka Panchayats under the aegis of Shri. Abdul Nazeer Sab Chair and Shri. Shantaveri Gopala Gowda Chair sanctioned by the Government of Karnataka. M.A. in Political Science and Diploma in Panchayati Raj courses are also offered through distance mode.

Program specific outcomes

The Program MA in Political Science offers a wide range of courses including the open electives which make the program flexible by allowing students to pursue their interested course in other departments there by catering to further their interests. Students after finishing the PG program in Political Science are actively pursuing their careers primarily in Civil Service, as well as other competitive exams, and also involved in Research. The programme is focused on orienting the students to the relationship between text and context, self, society and polity.

Course outcomes

Political Science PG course Multi-disciplinary studies in the social sciences. Through the course students develop a reflexive awareness of the complexity of the society, and the functioning of the polity and inculcate the skills for understanding the problems and thinking about the remedies, in both Society and Polity. MA programme in Political Science envisages its students as compassionate, engaged researchers and active learners committed to scientific temperament. Graduates from our programme are thus taught to think across disciplines and to ask questions from multiple vantage points while maintaining a firm Political Science 'grounding' when exploring specific research issues. the ability to analyse and predict socio-political phenomena based on the study of existing socio-political determinants and past experiences. This goal is achieved by training students in the different methods and tools of investigation such as empirical research methods, survey research, and data analysis of subject responses. And also by group studies, and discussions. Students clear eligibility tests like NET, KSET, and also secure various positions like Police, Teachers, lecturers, administrators, political analysts, and lawyers.

MASTER OF SOCIAL WORK (MSW)

Program Specific and Course Specific Outcomes

The achievement of outcomes and attributes delineated in qualification descriptors is the result of students' engagement in the learning process throughout the entirety of a study program. The term 'programme' denotes the comprehensive curriculum pursued by learners culminating in the conferment of a qualification. Individual programs of study are characterized by specified learning outcomes that must be realized for the conferral of a designated degree. These program outcomes are congruent with the pertinent qualification descriptors and encompass both subject-specific proficiencies and generic competencies, including globally applicable skills.

Attainment of these skills and competencies is imperative for students enrolled in a particular program of study to demonstrate eligibility for the Degree qualification. The program outcomes, with a discernible emphasis on knowledge and skills, are designed to equip students for advanced academic pursuits, professional endeavours, and civic responsibilities. Moreover, they serve to ensure the uniformity of learning levels and academic benchmarks across diverse educational institutions, offering a comprehensive overview of the competency levels of graduates emerging from a given program of study.

PROGRAM OUTCOME.

PO1. Attainment of advanced qualifications and descriptors, showcasing demonstrated proficiency through immersive fieldwork training.

PO2. Facilitation of students' comprehensive understanding of the historical, philosophical, ethical, and functional dimensions of the social work profession, alongside its interconnections with other disciplines in the social sciences.

PO3. Provision of comprehensive knowledge concerning both fundamental and supplementary methodologies in the field of professional social work and its practical foundations.

PO4. Integration of skill development and entrepreneurial competencies into the postgraduate curriculum.

PO5. Cultivation of research and analytical capabilities through the completion of a dedicated dissertation as an independent academic pursuit.

PO6. Adaptation to the evolving socio-cultural landscape by reconfiguring subject-specific coursework tailored to students' needs.

PO7. Integration of fieldwork as an indispensable component of the curriculum, offering students opportunities for practical experience across diverse settings.

PO8. Cultivation of emerging professionals characterized by strong communication skills and a commitment to self-motivated, lifelong learning. Emphasis is placed on acquiring and refining skills relevant to their field of social work.

Program Specific Outcomes:

After the successful completion of the program MASTER OF SOCIAL WORK (MSW), students will be able to:

PSO 1. Academic Expertise:
Demonstrate comprehensive knowledge and understanding of social work disciplines.
Apply academic expertise to address complex social issues effectively.

PSO 2. Social Commitment:
Display a strong dedication to social causes and contribute to positive social change.
Advocate for social justice and the well-being of diverse populations.

PSO 3. Teamwork & Leadership:
Work collaboratively within diverse teams to address social challenges.
Demonstrate leadership skills in fostering positive change and innovation.

PSO 4. Value-Oriented:
Uphold ethical principles and values in all professional endeavors.
Promote social work practices that align with ethical standards.

PSO 5. People-Centered:
Prioritize the needs and rights of individuals and communities.
Implement people-centered interventions with empathy and cultural sensitivity.

PSO 6. Professional & Personal Development:
Pursue continuous professional development and personal growth.
Embrace a reflective and self-aware approach to enhance professional effectiveness.

PSO 7. Evidence-Based Research Aptitude:
Utilize evidence-based research methods to inform social work practice.
Contribute to the development of knowledge and best practices in the field.

Semester I

PAPER: HC-SW- 1.1: INTRODUCTION TO PROFESSIONAL SOCIAL WORK

Student learning course outcomes

After successful completion of this course students will be able to:

1. To understand history and evolution of social Work profession, both in India and the West.
2. To develop insights into the origin and Development of Ideologies and Approaches to social Change.
3. Demonstrate theories, approaches and models of Social Work in practice field
4. Develop attitude towards different dimensions of social problems
5. Identify oneself as professional Social Worker
6. Apply the skills of Social Work in the major fields of Social Work

PAPER: HC-SW 1.2: SOCIAL CASE WORK

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Acquire a comprehensive understanding of case work as a method of social work.
2. Enhance knowledge of basic concepts, tools, and techniques in case work, both for problem-solving and developmental work.
3. Develop practical skills in social case work, including effective communication, observation, listening, interviewing, and home visits.
4. Acquire skills in building and sustaining a professional relationship with clients, addressing conflicts, and utilizing case work tools such as supportive techniques and counseling.
5. Acquire job-oriented skills relevant to case work practice in various settings, including medical and psychiatric settings, family and child welfare settings, community settings, industries, and correctional institutions.
6. Develop the ability to apply case work principles and techniques to different clientele groups.
7. Become a proficient social work practitioner in case work, demonstrating competence in utilizing psycho-social, functional, problem-solving, crisis theory, family intervention, behavioral modification, and holistic approaches.
8. Cultivate a positive attitude towards working with individuals and families, demonstrating empathy, warmth, genuineness, and non-possessive professionalism.
9. Develop a reflective attitude towards professional conflicts and dilemmas that may arise in the process of working with individuals.

PAPER: HC-SW 1.3: SOCIAL GROUP WORK

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Understand the importance of group as a unit of social work intervention.
2. Develop insights into social group work as a primary method of social work.
3. Gain knowledge about stages of group formation.
4. Inculcate various principles, values, ethics and skills of group development.
5. Equip with knowledge and skills applied by social worker in group settings.
6. Develop practical skills in social group work practice,
7. Acquire job-oriented skills to apply social group work methods in various settings.
8. Become a proficient social work practitioner in social group work.
9. Cultivate a positive attitude towards the importance of group work in social settings and its role in individual development.
10. Develop an attitude of sensitivity and responsiveness to the needs of individuals within the group context.

PAPER: HC SW-1.4: HUMAN GROWTH AND DEVELOPMENT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop the understanding of human development from conception to later life stages.
2. Apply theories of human development in social work practice.
3. Acquire critical understanding of personality traits & types for solving client' s problems.
4. Demonstrate the requisite skills for providing services to clients with mental health issues and abnormal behaviors during various stages of life span.

PAPER: SC SW -1.5A: COMMUNICATION SKILLS FOR SOCIAL WORKERS

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Understand the fundamental communication skills essential for effective social work practice.
2. Incorporate necessary communication skills into the social work process.

3. Apply theoretical knowledge to social work practice by demonstrating professional communication skills.
4. Demonstrate basic communication skills in establishing effective helping relationships.
5. Apply basic helping skills and comprehend non-verbal communication cues.
6. Manage time effectively in a professional setting, including report and letter writing.
7. Utilize information technologies and practice effective telephone communication.

PAPER: SC SW -1.5 B: PERSONAL AND PROFESSIONAL GROWTH

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop a profound understanding of self, emphasizing self-esteem, self-image, and self-acceptance.
2. Acquire skills in assertive behaviour, recognizing the significance of emotions and emotional intelligence.
3. Develop strategies for professional success, reputation building, and maintaining personal well-being.
4. Apply personal values to professional styles for effective engagement.
5. Acquire knowledge in social phenomena, conditions, and problems.
6. Exhibit professional behaviour, utilizing agency supervision for growth.
7. Demonstrate competence in presenting and writing for professional audiences.
8. Make ethical decisions, avoid malpractice, enhance self-awareness, and contribute to the positive image of social work.

PAPER: HC-SW 1.6: SOCIAL WORK PRACTICUM-I (CONCURRENT FIELD WORK)

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Exposed to different fields of Social Work
2. Understand the role of professional Social Worker in a structured
3. agency
4. Understand and reflect on diverse needs and problems of the target
5. groups
6. Appraise on the theoretical framework, approaches, models and
7. practices
8. Develop positive framework about the profession.

SECOND SEMESTER

PAPER: HC-SW- 2.1: COMMUNITY ORGANIZATION

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop theoretical understanding on Community Organization as a method Social Work
2. Exposed to the theories, models and approaches of Community Organization.
3. To understand the relationship of community organization with other methods of social work.
4. Instill the skills of working with communities.
5. Practice Community Organization as a method of Social Work in the field.

PAPER: HC-SW- 2.2: SOCIAL WORK RESEARCH AND STATISTICS

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop the theoretical understanding of Social Work Research.
2. Employ suitable research design and formulate research hypothesis.
3. Adopt suitable sampling technique, tool and method of data collection.
4. Identify appropriate statistical tests for data analysis and gain insights for data interpretation.
5. Assess the effectiveness of Social work intervention.
6. Understand major Research strategies and linkages theory with the practice.
7. Develop an ability to conceptualize, formulate and conduct simple Research projects.

PAPER: HC-SW- 2.3: SOCIAL ACTION, NETWORKING AND ADVOCACY

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop theoretical understanding on Social Action as a method Social Work
2. Apply Social Action as a method of Social Work.
3. Understand and address various inequalities in resource distribution and utilization and challenge the status-quo.
4. To understand various social movements in India.
5. Demonstrate knowledge of network structures and interventions for social workers.
6. Comprehend the concept of advocacy as a powerful tool in social work.

7. Understand the significance of coalition building and network development in social work advocacy.
8. Identify and analyze the link between protest movements and development work.
9. Apply effective strategies for building coalitions and networks in advocacy efforts.
10. Apply acquired networking skills in professional social work settings.

PAPER: HC-SW-2.4: COUNSELING: THEORY AND PRACTICE

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Gain a clear definition and insight into the elements and characteristics of counseling
2. Apply foundational knowledge in counseling to real-world social work scenarios.
3. Integrate philosophical, sociological, and psychological principles into the counseling process.
4. Demonstrate a holistic understanding of counseling that considers the dignity of individuals, societal influences, and psychological aspects.
5. Set and pursue goals in counseling sessions, aligning with the broader objectives of social work practice.
6. Demonstrate proficiency in applying various counseling approaches to address diverse problem situations.
7. Apply group counseling techniques in addressing specific issues.
8. Gain practical insights into counseling within different settings, including family counseling centers, family courts, mental health centers, HIV/AIDS counseling, child guidance clinics, correctional institutions, de-addiction and rehabilitation centers, and educational institutions.
9. Develop the ability to adapt counseling strategies to meet the unique challenges presented by different settings.
10. Demonstrate effective counseling practices tailored to specific contexts, contributing to positive outcomes for individuals and groups in diverse environments.

PAPER: SC-SW- 2.5A: PUBLIC HEALTH AND SOCIAL WORK

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Comprehend the concept of public health, including its various components.
2. Evaluate the changing perspectives of healthcare, comparing traditional and modern healthcare systems.

3. Gain knowledge in health and disease concepts, public health, and preventive medicine.
4. Understand indicators of health to effectively address the health aspects of individuals, groups, and communities.
5. Develop skills to generate awareness and provide counseling services for individuals and groups.
6. Assess the impact of national health policies and programs.
7. Understand current health schemes in India and their implications on public health.
8. Apply social work methods and techniques to meet community health needs in the country.
9. Identify the role of social workers in training healthcare service providers and their contribution to community health.
10. Evaluate the contributions of international and national organizations towards achieving community health goals.
11. Understand the role of social action and advocacy in the field of health, promoting positive change and addressing health-related issues.

PAPER: SC-SW -2.5B: DEVELOPMENT PARADIGMS FOR THE EMPOWERMENT OF MARGINALIZED.

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Gain conceptual clarity of marginalization and Social Exclusion
2. Develop insights into various forms of marginalization and exclusion in India
3. Develop analytical skills to assess socio-economic indices of marginalization, including poverty, isolation, deprivation, exploitation, discrimination, and educational backwardness.
4. Analyze constitutional safeguards and agencies working for the development of Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), and minorities.
5. Evaluate various social movements for the empowerment of marginalized communities in India
6. Develop proficiency in social work intervention for the empowerment of marginalized communities, applying principles of human rights and equality.
7. Cultivate a sensitive attitude towards the issues of marginalization and social exclusion of SCs, STs, OBCs, and minorities.
8. Recognize the need for and significance of social work intervention in addressing the unique challenges faced by each marginalized community.
9. Understand and appreciate the ideologies, views, and contributions of historical figures.
10. Recognize the significance of transforming these ideologies into professional practice, particularly in the context of indigenous social work in India.
11. Understand the role of civil society in development of various communities
12. Integrate social work skills and knowledge to work with marginalized communities

PAPER: HC-SW-2.6: Social Work Practicum - II (Concurrent Field work and Social work camp)

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Oriented to develop professional traits in relevant field of Social Work.
2. Understand about the functioning of structured Social Work agency.
3. Gain experiences as a budding professional Social Worker in issue based settings.
4. Develop Skills in organizing programs for the stakeholders.
5. Demonstrate skill in undertaking independent mini research project.
6. Gain first-hand experience of rural or tribal life, fostering a deeper understanding of its dynamics.
7. Analyse and appreciate the cultural, social, and economic aspects of the chosen community.
8. Gain first-hand experience of rural or tribal life, fostering a deeper understanding of its dynamics.
9. Analyse and appreciate the cultural, social, and economic aspects of the chosen community.
10. Apply social work principles in a real-world context, addressing challenges and facilitating positive change.
11. Demonstrate ethical decision-making, cultural sensitivity, and adaptability in diverse community settings.
12. Gain first-hand experience of rural or tribal life, fostering a deeper understanding of its dynamics.
13. Analyse and appreciate the cultural, social, and economic aspects of the chosen community.
14. Engage in reflective practice, evaluating personal and professional growth during the camp experience.

PAPER: OEC-E-1: LIFE SKILLS FOR QUALITY LIVING.
(Open electives Course to be offered to the other department)

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Expose to understand about self and coping techniques in difficult situation.

2. Equips thinking skill and problem solving attitude.
3. Facilitates in understanding communication in relationship management.
4. Enables to manage emotion and stress management techniques.
5. Demonstrate proficiency in combining thinking skills, social skills, and coping skills to enhance overall life skills.
6. Engage in reflective practices to assess personal growth in thinking, social interactions, and coping mechanisms.
7. Equips the life management skills, problem solving techniques and decision making skills.
8. Utilize acquired life skills to enhance personal well-being and contribute positively to social and professional environments.

III SEMESTER

PAPER: HC-SW- 3.1: SOCIAL POLICY, LEGISLATION AND HUMAN RIGHTS

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop an understanding of social policy with reference to Constitution of India
2. Incorporate the knowledge of different planning theories and paradigms in approaching the planning process
3. Evaluate various development plans and policies
4. Understand and integrate policies and programs for the development and welfare of public
5. Establish relationship between social policy, planning and development.
6. Analyze and evaluate the impact of human rights on individuals and communities.
7. Demonstrate the ability to critically assess human rights violations and advocate for justice.
8. Apply human rights principles in professional practice, considering civil and political as well as socio-economic and cultural dimensions.
9. Advocate for human rights within various social work settings, contributing to the creation of just and inclusive societies.
10. Empower clients and communities by fostering an understanding of their rights and supporting their ability to assert those rights.

PAPER: HC-SW- 3.2: MEDICAL AND PSYCHIATRIC SOCIAL WORK

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop the understanding of health and social work in medical settings.
2. Develop insights into functions of medical social work and its place in social work.
3. Acquaint with various principles of medical social work for solving client' s problems.
4. Equipped with necessary skills for medical social work in diverse settings and advocacy.
5. Develop theoretical understanding on hospital administration as a field of social work.
6. Awareness about mental health and mental illness and its classifications.
7. Get exposure about psychiatric social work and community health and health education.
8. Understand the psycho-social aspects of mental disorders, demonstrating the ability to conduct thorough assessments.
9. Gain a comprehensive understanding of therapeutic applications.
10. Understand the matrix of community-based rehabilitation by WHO, exploring its application in different settings.
11. Cultivate an empathetic and sensitive approach towards individuals with mental health challenges.
12. Develop an attitude of respect, understanding, and non-judgmental acceptance in the context of psychotherapy and rehabilitation.
13. Integrate psychiatric assessment and therapeutic approaches seamlessly into social work practice.

PAPER: HC-SW- 3.3. HUMAN RESOURCES MANAGEMENT AND DEVELOPMENT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Learn skill, knowledge and attitudes required of a successful HR professional.
2. Understand the need to have suitable skills and knowledge for the practice of industrial relations and labour welfare.
3. Acquire managerial, interpersonal and negotiation skills.
4. Update with the latest trends in strategic business and industrial setup.
5. Develop the competence to evolve the problem-solving approaches by applying conceptual and behavioural skills.
6. Gain knowledge about the compensation management and its implementation.
7. Apply Quality Management Systems and tools for the effective functioning of the organization.
8. Evaluate and adopt best HR audit procedures, usage of suitable HR software & Become HR analyst.
9. Analyze the climate and culture of the organization and plan strategies to strengthen team work.
10. Synthesis the contribution of leaders and initiate innovative HR practices.

PAPER: HC-SW- 3.4: RURAL, URBAN AND TRIBALCOMMUNITY DEVELOPMENT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop theoretical understanding on the dimensions of Rural and Tribal Development.
2. Trace the diverse problems faced by the people belong to the Rural and Tribal Community.
3. Develop an attitude and positive frame of mind set to work with the people belong to the Rural and Tribal Community.
4. Exposed to the social welfare schemes, policies and programmes for Rural and Tribal Development.
5. Apply Social Work principles, methods and approaches for the development of Rural, Tribal and Urban Communities.
6. Develop theoretical understanding on the dimensions of Urban Community Development.
7. Exposed to the living conditions of the people belonged to the slum areas.
8. Critically reflect on the welfare schemes, policies and programmes for Urban Community Development.
9. Undertake innovative programmes benefiting the residents of rural, tribal and urban centres.

PAPER: SC-SW -3.5A: ORGANISATIONAL BEHAVIOUR AND ORGANISATIONAL DEVELOPMENT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Learn the importance of human behavior in organizational setup.
2. Students will be able to comprehend the individual behaviour and the dynamics involved.
3. Understand the significance of effective leadership and qualities of a leader.
4. Acquire leadership skills to observe various types of groups and deal with them effectively
5. Apply psychological test to assess the various organizational variables.
6. Apply various motivation techniques for organizational effectiveness.
7. Apply different motivational programme based on the needs of the HR and the organization.
8. Evaluate and plan for employee well-being programmes.
9. Equip with the strategies to resolve various organizational problems.

PAPER: SC-SW -3.5B: SOCIAL ENTREPRENEURSHIP AND SUSTAINABLE DEVELOPMENT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Acquire a comprehensive understanding of sustainable development, including its concept, nature, goals, and characteristics.
2. Demonstrate knowledge of the history and significance of sustainable development and its relevance in a globalizing world.
3. Identify and analyze key issues related to sustainable development.
4. Apply knowledge to assess and address challenges in sustainable development.
5. Develop strategies for better sustainable development, considering initiative standards and challenges.
6. Cultivate a sense of responsibility and accountability towards sustainable development goals.
7. Foster an attitude of global awareness, recognizing the interconnectedness of sustainable development issues.
8. Demonstrate the ability to take initiative in promoting sustainable development.
9. Develop and implement strategies that contribute to better sustainable development outcomes.
10. Collaborate effectively with diverse stakeholders to promote sustainable practices.
11. Develop theoretical understanding on the aspects of Social Entrepreneurship
12. Critically reflect on the interventions of the Social Entrepreneurship
13. Demonstrate professional traits of innovative thinking leading to Social Entrepreneurship
14. Develop skills for Social Marketing in relevant field of intervention
15. Create innovative Social Business benefiting the needy.

PAPER: HC-SW 3.6: Social Work Practicum– III (Concurrent Field Work)

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Exposure to different settings will foster an open-minded and adaptable attitude towards diverse populations and situations.
2. Exposure to practical social work settings will prepare students for professional practice by bridging the gap between theory and application.
3. Students will adhere to professional standards and ethics in their interactions and interventions.

4. Students will exhibit an ability to apply theoretical knowledge and information acquired in the classroom to real-world situations during concurrent fieldwork.
5. The students will gain practical insights into social work practices, community dynamics, group dynamics, and organizational tasks.
6. The concurrent fieldwork will enhance their understanding of intervention skills and their application in reality situations.
7. Students will hone their intervention skills by actively participating in community, group, and organizational tasks.
8. Practical experience will contribute to the development of effective communication, interpersonal, and problem-solving skills.
9. Organizing awareness programs will showcase their leadership, planning, and community engagement skills.
10. Engaging in case work will cultivate a compassionate and non-judgmental attitude towards individuals and families facing challenges.
11. Organizing awareness programs will instill a sense of social responsibility and advocacy.
12. Students will grasp the professional practices and ethical considerations within different agencies and organizations.
13. Students will adhere to professional standards and ethics in their interactions and interventions.
14. Develop Professional self as trained Social Worker in the relevant field.

Open Elective Course to be offered to the other Departments

PAPER: OEC E-3: MENTAL HEALTH AND COUNSELLING

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Students will demonstrate a comprehensive understanding of mental health.
2. Knowledgeable about various theories such as Behavioral, Cognitive, and Psychodynamic, students will analyze their application in mental health practice.
3. Students will acquire knowledge about the causes, effects, and treatment modalities of mental health issues.
4. Comprehensive knowledge of principles, skills, and techniques of counseling will be demonstrated.
5. Students will develop critical thinking skills in evaluating the characteristics of mentally healthy individuals and applying them to real-world scenarios.
6. Analytical skills will be evident as students assess the applicability of different theories in mental health promotion.
7. Students will develop skills in identifying, understanding, and proposing suitable treatment modalities for various mental health disorders.
8. Students will develop an empathetic and non-judgmental attitude towards individuals with

varying mental health statuses.

9. An open-minded and receptive attitude towards diverse theoretical approaches will be cultivated.
10. Application of counseling principles, skills, and techniques in individual, group, and family counseling sessions will demonstrate their practical proficiency.
11. Students will exhibit competence in selecting and applying appropriate counseling approaches based on client needs.

IV SEMESTER

PAPER: HC-SW-4.1: MANAGEMENT OF WELFARE AND DEVELOPMENT ORGANIZATIONS

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop skills in managerial & administrative processes and programs delivery.
2. Implement successful programmes, monitoring and evaluation.
3. Create organizational structure for management and development services.
4. Understand the importance of financial management in social welfare administration.
5. Acquire knowledge about Results-Based Management in program and project planning.
6. Understand the strategic management of nonprofit organizations, including skills and strategies.
7. Apply skills to manage the development and welfare services.
8. Cultivate a value-oriented approach towards Social Welfare Administration.
9. Develop a positive attitude towards public service and an understanding of governmental welfare structures.
10. Prepare students for roles in Social Welfare Administration.
11. Equip students with practical knowledge for establishing and managing developmental organizations.
12. Equip students with skills necessary for effective program management, documentation, and public relations roles in welfare and development organizations.

PAPER: HC-SW-4.1: LABOUR LEGISLATIONS AND INDUSTRIAL RELATIONS

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Gain conceptual understanding of social security
2. Comprehend the significance of social security for labour welfare
3. Understand various social security laws and labour legislations in India
4. Evaluate various approaches of labour welfare
5. Develop skills of labour welfare officer
6. Get motivation to occupy the key positions in labour department of central and state governments
7. Understand the prerequisites to establish and run the factory and to engage contract labourers, ensure the provisions to workers
8. Gain knowledge on the provisions pertaining to shops and establishments, plantation labour and its application, prohibit and regulate child labour
9. Ensure social security to the applicable employees, understand the methods of calculation, exposure on online enrolment and claims, get acquainted with the competent authorities
10. Adhere to statutory compliances.

PAPER: SC-SW-4.3.A: PROJECT MANAGEMENT FOR PARTICIPATORY DEVELOPMENT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Acquire a solid theoretical foundation in project preparation and implementation, understanding various stages and characteristics of development projects.
2. Gain insights into Participatory Rural Appraisal (PRA) techniques and their application in formulating a project proposal.
3. Develop practical skills in participatory project planning, utilizing PRA techniques,

interviews, observation, problem analysis, and statement formulation.

4. Apply Logical Framework Approach (LFA) to design projects, including setting goals, specifying activities, estimating time and cost, and creating a detailed operational plan.
5. Acquire job-oriented skills in resource mobilization, fund raising, budgeting, financial management, and accounting procedures for effective project implementation.
6. Develop competence in personnel management, including selection, training, coordination, supervision, and reporting.
7. Become a proficient social work practitioner in the context of project management for participatory development, contributing to positive social change.
8. Apply project implementation strategies, including time estimation, resource estimation, and critical path methods (CPM) for effective intervention.
9. Cultivate a positive attitude towards participatory study and assessment of situations, embracing the principles and tools of PRA techniques.
10. Develop a research-oriented temperament, exploring current trends in project preparation and implementation.
11. Gain skills in drafting project proposals for fundraising, project reports, and progress reports.
12. Develop the ability to create comprehensive project evaluation reports, aligning with the needs and purposes of evaluations.

PAPER: SC-SW-4.3.B: EMPOWERMENT OF WOMEN, CHILD AND CORRECTIONAL SOCIAL WORK

Student learning course outcomes.
After successful completion of this course students will be able to:

1. Acquire a comprehensive understanding of feminist concepts and theories, and engage in discussions on various women's issues.
2. Demonstrate knowledge of the issues related to the empowerment of women and children, including legal frameworks and interventions in correctional settings.
3. Develop skills in applying social construction of gender theories to analyze and address gender discrimination, stereotyping, and roles.
4. Apply social work strategies for women's empowerment, focusing on enhancing women's voices, promoting economic empowerment, and addressing violence.
5. Gain job-oriented skills for social work practitioners in areas such as child welfare, women's empowerment, and correctional social work.
6. Understand and appreciate the legal frameworks and policies related to women and children, aligning with practical job requirements.

7. Become a proficient social work practitioner in the domains of women's empowerment, child welfare, and correctional social work.
8. Apply social work intervention strategies in correctional settings, utilizing theoretical knowledge and practical skills.
9. Cultivate a positive attitude towards understanding and addressing women's issues, fostering empathy and sensitivity.
10. Develop an attitude of commitment to the empowerment of women, children, and effective intervention in correctional settings.
11. Demonstrate awareness and appreciation of social work strategies for women's empowerment, including enhancing women's voices and promoting economic empowerment.
12. Acquire knowledge of constitutional provisions and international conventions related to children's rights.
13. Demonstrate skills in social work intervention for child development and welfare, adhering to NASW standards and understanding alternate care models.
14. Develop skills in social work intervention in correctional settings, including institutional and non-institutional treatments.

PAPER: HC-SW-4.4: DISSERTATION / RESEARCH PROJECT

Student learning course outcomes.

After successful completion of this course students will be able to:

1. To develop ability to initiate and conduct research.
2. Students will acquire in-depth knowledge of research methodologies, empirical evidence-based research, and their application in the field of social work.
3. Develop a profound understanding of the chosen field of specialization and the relevant literature.
4. To develop research Skills of identifying and selecting a research area and preparing research proposal.
5. Develop advanced research skills, including the ability to formulate research proposals, design data collection tools, and conduct ethical and effective data collection.
6. Analyse and interpret data using appropriate statistical or qualitative methods, demonstrating proficiency in research analysis.
7. Gain practical, job-oriented experience in conducting independent research relevant to the field of social work.
8. Develop skills that are directly transferable to various job settings, enhancing employability in research-oriented roles.
9. Apply social work principles and ethics throughout the research process, ensuring the protection of participants and the integrity of the study.

10. Demonstrate an understanding of how research findings can inform and improve social work practice in specific areas of specialization.
11. To understand ethical considerations of research.
12. Effectively present a study proposal, demonstrating the ability to articulate the research problem, objectives, and proposed methodology.

PAPER: HC-SWP- 4.5: FIELD WORK PRACTICUM - IV (CONCURRENT FIELD WORK)

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Develop advanced intervention skills through hands-on experience in working with communities, groups, and individuals/families.
2. Enhance organizational skills by managing tasks within the agency setting, applying classroom knowledge to practical situations.
3. Cultivate a positive and professional attitude towards social work practice in real-world settings.
4. Develop empathy, cultural sensitivity, and adaptability when working with diverse communities and individuals.
5. Apply theoretical knowledge gained in the classroom to real-life situations, demonstrating the ability to bridge the gap between academia and professional practice.
6. Engage in social work practice for two days every week, honing practical skills and gaining valuable experience in the field.
7. Acquire job-relevant skills and competencies, enhancing employability in the social work sector.
8. Develop a comprehensive understanding of social work practice, making graduates well-prepared for diverse roles within the field.
9. Enhance communication skills through regular interaction with communities, groups, and individuals, fostering effective engagement and collaboration.
10. Demonstrate the ability to communicate professionally and ethically in a social work context.
11. Develop problem-solving skills by addressing real-life challenges faced by communities and individuals during fieldwork.
12. Apply creative and innovative solutions to overcome obstacles encountered in the agency setting.
13. Engage in reflective practice, critically evaluating personal and professional experiences during the fieldwork.
14. Demonstrate an understanding of the impact of interventions, allowing for continuous improvement and growth.

15. Adhere to ethical standards and principles in social work practice, ensuring the protection of clients' rights and maintaining professional integrity.

PAPER: HC-SWP- 4.6: SOCIAL WORK PRACTICUM - V (PRACTICUM AND BLOCK PLACEMENT)

Student learning course outcomes.

After successful completion of this course students will be able to:

1. Use the block placement as an opportunity for career building, networking, and understanding the practical aspects of the chosen field.
2. Identify and pursue areas of interest within the specific agency to inform future career choices.
3. Acquire advanced theoretical knowledge and practical insights by participating in interventions during the block placement.
4. Apply theoretical concepts learned in earlier semesters to real-world situations within the specific agency setting.
5. Cultivate a professional attitude towards social work, demonstrating ethical behavior, responsibility, and commitment during the block placement.
6. Develop a positive attitude towards continuous learning and adapting to the dynamic challenges of the specific agency.
7. Gain exposure to the functioning and operations of a specific agency, allowing for a deeper understanding of its goals, policies, and impact on the community.
8. Develop a comprehensive understanding of the professional environment within industries, hospitals, agencies, or movement settings.
9. Exhibit professional behavior, including effective communication, teamwork, and time management, during the block placement.
10. Demonstrate adaptability and flexibility in navigating diverse and dynamic professional environments.
11. Apply social work theories and methods in a specific agency setting, addressing the unique challenges and opportunities presented by that context.
12. Demonstrate competence in social work practice within industries, hospitals, agencies, or movement settings.
13. Enhance job-oriented skills by actively participating in interventions for a minimum of 30 days within a reputed organization related to the student's interest.
14. Develop professional preparedness for future job situations through practical experience and exposure during the block placement.

KUVEMPU UNIVERSITY

Department of Post Graduate Studies and Research in Sociology

Jnanasahyadri, Shankaraghatta-577 451

Scope and Outcome of the Course

The Masters (MA) Programme in Sociology at Kuvempu University is designed to equip students with the knowledge and skills that will make them engaged citizens of the world capable of critical thinking and reflective action. The unique approach of the programme is its focus on orienting students to the relationship between text and context, self and society, and the past and present. Over the course of their programme students develop a reflexive awareness of the historicity of the society. And the ability to locate the history of the discipline within the sociology of knowledge production. The MA programme in Sociology envisages its students as compassionate, engaged researchers and active learners committed to principles of social justice. Graduates from our programme are thus taught to think across disciplines and to ask questions from multiple vantage points while maintaining a firm sociological 'grounding' when exploring specific research issues.

Further, Masters of Sociology would be able to orient themselves and contribute in making public policies in view development of Tribal, Women, Rural and Marginalised groups. Important outcome of the courses is that students of Sociology for understanding research, jobs in college/ University / Research institutions, various Government department and NGO,s as well as for various competitive examinations.

Outcome of each Course (Paper)

HC-1.1: Foundations of Sociological Traditions

Scope and Outcome of the Course:

After studying this course, the learners will be able to:

- Understand the linkage between the social changes in the economic and social systems and the emergence of discipline of Sociology.
- Know the theoretical foundations of Sociology on which edifice of modern Sociological theories are built; and develop insights for understanding the later developments in sociological theory.
- Develop critical thinking, analytical ability to interpret the social scenario around.
- Learn the historical, socio-economic and intellectual forces in the rise of Sociological Theory.
- Understand the selected Sociological Theories.

HC-1.2: Methods in Social Research

Scope and Outcome of the Course:

This course aims to provide;

- An understanding of the nature of social phenomena, the issues involved in social research and the ways and means of studying social reality.
- Study of research methods as a means of understanding social reality.
- Exposure to the fundamentals of various research techniques and methods.
- Introduction to the philosophical foundations of Social Research.
- Acquaintance with the quantitative and qualitative strategies of research.

HC-1.3: Perspectives on Indian Society

Scope and Outcome of the Course:

After studying this course, the learners will be able to:

- Understand the diversities and unity in Indian Society
- Know the major segments in society, the traditions, continuities and changes taking place in Indian society;
- Understand various theoretical perspectives to comprehend Indian Society.
- The sociological perspective on Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

SC-1.4: Society and Education

Scope and Outcome of the Course:

After completion of this course, learners will be able to:

- Understand the interface between education and society.
- Understand the major concepts, theoretical approaches and development of sociology of education.
- Get acquainted with the approaches and contributions in sociology of education
- Get acquainted with the alternative educational programmes in India

SC-1.5: Sociology of Social Movements

Scope and Outcome of the Course:

After completion of this course, the learners will be able to:

- Look at the Social Movements from Sociological Perspective.
- Understand the dynamics of social movements and their role in the social change and transformation in India.
- To introduce the students to the role of social movements in social transformation
- To help them understand the various approaches to the study of Social Movements.

SC-1.5: Society in Karnataka

Scope and Outcome of the Course:

After completion of the course one will be able to:

- Enhance Sociological knowledge about the Local and Regional context of Karnataka.
- Acquaint students with the changing trends in Karnataka with special reference to Development processes and caste politics
- Learn about the unique cultures in Karnataka

SC-1.5: Social Demography

Scope and Outcome of the Course:

After completion of this course, the learners will be able to:

- To acquaint the students with basic demographic concepts and theories of population growth.
- To understand the influence of Population on Social Phenomena.
- To acquaint students the demographic features and trends of Indian Society vis-a-vis world population.
- To understand population control in terms of social needs.
- To appreciate population control measures and their implementation.

HC-2.1: Development of Sociological Theories

Scope and Outcome of the Course:

The course intends;

- To familiarise the students with the social, political, economic and intellectual contexts in which sociology emerged as a distinctive discipline.
- To help students gain an understanding of some of the classical contributions in sociology, and their relevance to its contemporary concerns.
- Know the theoretical foundations of Sociology on which edifice of modern Sociological theories are built; and develop insights for understanding the later developments in sociological Theory.
- Develop critical thinking, analytical ability to interpret the social scenario around.
- Learn the historical, socio-economic and intellectual forces in the rise of sociological theory.

HC-2.2: Social Statistics

Scope and Outcome of the Course:

After the completion of the course the student will be familiar with;

- The statistical values of the Numerical Data
- The methods of calculating the Central Tendencies of the data
- The Dispersion values of the data
- The Correlation between the variables
- The use of Computers in Social Research

HC-2.3: Social Stratification and Social Mobility

Scope and Outcome of the Course:

After the completion of this course the student will understand:

- The Nature of Inequalities in the Society
- The dynamics of Social Groupings and Discrimination
- The modes of Social improvement people use in their life time
- The theories behind the Social Stratification and Mobility

SC-2.4: Gender and Society

Scope and Outcome of the Programme:

After completion of this course, the learners will be able:

- To introduce the students to the debate on the determination of Gender Roles.
- To orient the students regarding theories of Gender relation in Indian society.
- To trace the evolution of Gender as a category of social analysis.
- To introduce the basic concepts of Gender and Gender Inequality
- To analyze the Gendered nature of major social institutions
- To understand the challenges to Gender Inequality

SC-2.5: Globalization and Society

Scope and Outcome of the Course:

After the completion of this course the student will;

- The students an overview of the emergence of Globalization from socio-historical and political - economic context.
- To understand the different socio-cultural consequences of Globalization.
- Know the agencies that promote the process
- Understand the impacts of Globalisation on different spheres of Social life
- Analyse the Indian experience of Globalisation

SC-2.5: Sociology of Tribes

Scope and Outcome of the Course:

After the completion of this course the student will;

- To provides a comprehensive history on categorization of the 'Tribal' society.
- To understand the demographic features, social structure and cultural patterns.
- To understand the problems of tribal people and the welfare policies.

SC-2.5: Crime and Society

Scope and Outcome of the Course:

The course is designed to achieve the following objectives:

- To acquaint the students with the changing profile of crime and criminals
- To equip them with the emerging perspectives of crime causation with particular stress on sociological explanations
- To sensitize them to the emerging idea of correction, its types and measures to prepare them for professional roles of correctional agents in agencies of criminal justice administration system.
- To acquaint the students with recent advances in correctional measures and programmes; alternatives to imprisonment; and its implications for crime control and prevention
- To demonstrate knowledge about theoretical perspectives on crime.
- To sensitize the students about causes, social dimensions, consequences and measures to control crime.

EL- 2.6: Sociology of Social Disorganization

Scope and Outcome of the Course:

The course is designed to achieve the following objectives:

- To equip the student the concept of deviant behavior leading to social disorganization, forms, theoretical foundations and criminal activities which he encounters in real life situations.
- To orient knowledge about theoretical perspectives on crime.
- To sensitize the students about causes, social dimensions, consequences and measures to control crime.

EL- 2.6: Invitation to Sociology

Scope and Outcome of the Course:

The main objectives of this course are:

- To understand the basic principles in sociology
- To acquaint with the basic concepts in sociology
- To know the origin and development of sociology
- To understand the social processes in social relations

HC-3.1: Modern Sociological Theories

Scope and Outcome of the Course:

This course is intended

- To introduce the students to the schools and thought that has dominated Sociology in the later half of the 20th century.
- The course will examine the theoretical relevance and analytical utility.
- To develop the analytical abilities of the students.

HC-3.2: Sociology of Development

Scope and Outcome of the Course:

The course is designed to achieve the following objectives:

- To provide conceptual and theoretical understanding of development as it has emerged in Sociological Literature.
- To offer an insight into the ways in which social structure impinges on development and development on social structure
- To address in particular in Indian experience of development with special focus on SE India.
- To prepare the students for professional careers in the field of development planning.
- To provide an understanding of the alternate trends and paths of development
- To understand the contemporary socio-economic framework of development in India

HC-3.3: Rural and Urban Sociology

Scope and Outcome of the Course:

This course is designed;

- To provide sociological understanding of rural and urban society in India
- To acquaint students with basic concepts in rural and urban studies
- To analyze rural and urban problems in India
- To provide knowledge of rural and urban governance.
- To impart sociological skills to reconstruct rural institution and rural development programmes to plan, monitor and evaluate rural development programmes.
- To develop the understanding of students regarding the linkages between urban and rural reality

HC-3.4: Sociology of Marginalized Groups

Scope and Outcome of the Course:

This course helps the student

- To focus on the segments of the population which have lived on the margins of society and which have not received adequate attention.
- To sensitize students to the significance of the sociological study of Dalits, tribal communities and nomadic castes and tribes.
- To focus on groups and communities which have suffered extreme poverty, deprivation and discrimination over a long period of time.

SC-3.5: Social Psychology

Scope and Outcome of the Course:

After the completion of this course a student will be able to

- Understand the basic concepts in social behavior
- Understand the dynamics of social behavior in relation to the social institutions
- Analyze the processes of motivation, perception and attitude formation
- Comprehend the forces behind the crowd and mob behavior
- Know the factors behind the social discrimination

SC-3.5: Sociology of Health and Sanitation

Scope and Outcome of the Course:

The content of the course will enable the students:

- To sensitize students to health related issues
- To understand the issues related to public health and social medicine
- To understand the role of the State in the healthcare in India
- To make aware the health and sanitation conditions in India
- To understand the social aspects of sanitation and social ordering

SC-3.5: Sociology of Disaster and Social Crisis

Scope and Outcome of the Course:

The main objectives of this course are;

- To introduce students to sociological examination of disasters.
- To understand the disasters are fundamentally social events that reflect the way that live and structure our communities and societies.
- To create awareness regarding the Natural Disasters and Disaster Management.
- To understand the historical development of India's Disaster Management policy.

EL-3.6: Contemporary Social Issues

Scope and Outcome of the Course:

The course seeks

- To go beyond the commonsense understanding of the prevailing social issues and problems in order to project them into their structural context; to focus on the structural linkages and interrelationships.
- To sensitize the students to the emerging social issues and problems of contemporary India, to enable them to acquire sociological understanding of these issues and problems
- Empower them to deal with these issues and problems and to serve as change agents both in governmental and non-governmental organizations
- The sociological perspective on Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

EL-3.6: Social Entrepreneurship

Scope and Outcome of the Course:

The course intends to provide

- Training to be an entrepreneur or to enlarge job prospects of the individual.
- Promoting the development of personal qualities specific training that are relevant to entrepreneurship,
- Offering early knowledge of and contact with the world of business, entrepreneurial attitudes and skills and some understanding of the role of entrepreneurs in the community
- Raising students' awareness of self-employment as a career option

HC-4.1: Modern Social Theories

Scope and Outcome of the Course:

This course is intended

- To introduce the students to the substantive, theoretical and methodological issues which have shaped the sociological thinking.
- To understand the theoretical relevance and analytical utility of the theoretical perspectives in understanding social structure and change.
- To develop the understanding of major sociological perspectives.
- To develop the analytical abilities of the students.
- To develop research orientation of the students with the understanding of major theoretical perspectives.

HC-4.2: Social Gerontology

Scope and Outcome of the Course:

The objectives of this course are

- To study the profile of changes in the age composition of different societies and to study various implications of the increasing ageing population.
- To study and to know the ways of accommodating the aged population in the main streams of family and community life and to see how far they would be useful in modern society.
- To study various strategies, programmes and measures adopted in a modern society to bring about psychological, sociological and economic rehabilitation of elderly people.
- To make the members of incoming generations aware of stresses and strains created by economic dislocation and physical disabilities for elderly people and to generate in them positive and respectful attitudes towards them.

HC-4.3: Project Work

Scope and Outcome of the Course:

Research skills are very important for sociological analysis. Through this course, in addition to the theoretical input, an opportunity is given to the students to acquire research skills by undertaking a research project as a part of the academic activity. This project course will help to:-

- Develop the ability to conceptualize and conduct simple research projects.
- Learn to assess the research studies and findings.
- Develop the skills for library work and documentation for research.
- Develop favorable attitudes for the integration of research and theory.
- Develop logical thinking and critical analysis.

SC-4.4: Political Sociology

Scope and Outcome of the Course:

The major objectives of teaching this course are:

- To acquaint the students with the nature and functioning of political system(s), and the political processes.
- To generate in the minds of students an awareness of their status and role as citizens of the state.
- To make the students aware of the prerequisites of sound democratic political system and its vulnerability.
- To study the relationship between society and polity
- To study the contemporary Socio-Political challenges in India

SC-4.5: Social Policy and Planning

Scope and Outcome of the Course:

The course is designed to achieve the following objectives:

- The objectives of this paper are to Gain knowledge of policy analyses and the policy formulation process.
- To acquire skills in critical analysis of social policies and plans.
- To develop an understanding of social policy in the perspective of national goals as stated in the constitution, particularly with reference to Fundamental Rights and the Directive principles of state policy.

SC-4.5: Industrial Sociology

Scope and Outcome of the Course:

The course is designed to achieve the following objectives:

- To understand the, human organization in the industry and how the work is being organized in an industrial organization
- How the labour is abstracted in the industrial work process
- How the issue between labour and management is constructed and how the labour welfare measures are implemented will be the rationale for the P.G. student of Sociology
- It also equips the students to prevent and to settle industrial problems.

SC-4.5: Sociology of Environment

Scope and Outcome of the Course:

The main objectives of the course are;

- To make the students aware of the meaning of Environment and its relationship with society.
- To understand the changing environment and modes of living in different ecological conditions.
- To develop holistic approach among students to feel man environment relationship taking into account technology and socio cultural facts.
- To acquaint students technological conditions and its impact on social organization of society.

Sd/-
(Prof. M. Gurulingaiah)
Chairman
Dept of Sociology
Kuvempu University
Shankaraghatta

Kuvempu University

Faculty of Commerce

School of Business studies

Commerce

MBA

MBA-HRM

MBA-TTA

M.COM (Master of Commerce) Program and Course Outcome.

Program Specific Outcomes

After successful completion of the program, students will be able to:

1. Acquaint with a coherent set of logical principles and a general frame of reference for evaluation and development of sound accounting practices and also to enable them to understand the important contemporary issues in Accounting, and the Tools for analysis and interpretation of Financial Statements.
2. Understand the conceptual and practical applicability of various techniques of Financial Management in different segments of business.
3. Conversant with the concept of Corporate Tax Laws and also their implications on Tax Planning and Management
4. Learn functioning of financial markets, their structure and functioning of different players of financial markets
5. Acquaint working knowledge of insurance to the students to enable them to translate the principles into practice.
6. Aware of the concepts, techniques and practices of human resource development and capable of applying the principles and techniques as professionals in organizations they work for.
7. Design and implement strategic cost management programme and system.
8. Learn various techniques of analysis used in investment decisions, portfolio analysis and efficient portfolio management.
9. Learn foundations of credit management, its processes and performance evaluation.
10. Describe the importance of E-Commerce, E-Commerce Strategies, Technology and Application of Information Technology in Business
11. Contribute to the development of innovative and creative scientific knowledge, technology development and creators of entrepreneurs and self-sustainable individuals.
12. Become efficient accountants, tax consultant, entrepreneur, auditor in the field of corporate industry, banks, and financial institutions.

I Semester

Paper Title - HC101: ORGANIZATIONAL THEORY AND BEHAVIOUR

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

Acquaint familiarization with Individual, Interpersonal, and Group-Related perspectives in Organizational Behavior along with the Recent Developments.

Paper Title- HC102: MANAGERIAL ECONOMICS FOR BUSINESS DECISIONS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -
Improve managerial decision-making in the framework of a firm or organization by enabling the students to expose and analyze their acquired knowledge in Managerial Economics and aid in taking up managerial responsibilities.

Paper Title-HC103: ACCOUNTING THEORY AND ANALYSIS

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Acquaint themselves with a coherent set of logical principles and a general frame of reference for the evaluation and development of sound accounting practices and also to enable them to understand the important contemporary issues in Accounting and provide awareness regarding the latest developments in the field of accounting.

Paper Title- HC104: ADVANCED FINANCIAL MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

Understand the conceptual and practical applicability of various techniques of Financial Management in different segments of business.

Paper Title- SC101: ADVANCED MANAGEMENT ACCOUNTING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Acquire adequate knowledge about different aspects of Management Accounting and to equip them with the requisite competence to use them in managerial decisions.

Paper Title– SC102: FINANCIAL MARKETS AND SERVICES

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understandconceptual framework of the functioning of financial markets, their structure, and the functioning of different players of financial markets.

Paper Title- SC103: CREDIT MANAGEMENT IN BANKS

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Expose to the foundations of credit management, its processes, and performance evaluation.

Paper Title- SC104: PRINCIPLES AND PRACTICES OF INSURANCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Havea working knowledge of insurance to the students to enable them to translate the principles into practice.

II Semester

Paper Title –HC201: BUSINESS ENVIRONMENT AND GOVERNMENT POLICY

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand business environment prevailing in India and other parts of the world, and their implications for the business.

Paper Title- HC202: ADVANCED MARKETING MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the conceptual framework of Marketing and its connection with various strategies of Marketing in achieving Organizational Goals.

Paper Title- HC203: BUSINESS AND CORPORATE TAXATION

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Conversant with the concept of Corporate Tax Laws and also their implications on Tax Planning and Management and to familiarize them with the latest provisions of Indian Corporate Tax Laws and related Judicial Verdicts.

Paper Title- HC204: ADVANCED COST MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Apply principles and techniques of cost in decision-making situations.

Paper Title- SC201: INVESTMENT MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand various investment avenues and a general frame for the valuation of investable securities.

Paper Title - SC202: ADVANCED AUDITING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:
Gain expert knowledge of current auditing practices and procedures and apply them in auditing engagements.

Paper Title - SC203: SUPPLY CHAIN MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:
Understand the conceptual framework of Supply Chain Management and its application in management.

Paper Title - SC204: MANAGERIAL COMMUNICATION

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the different aspects of Communication Skills.

III Semester

Paper Title-HC301: E-COMMERCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Become familiar with E-Commerce, E-Commerce Strategies, Technology, and Application of Information Technology in Business.

Paper Title-HC302: OPERATIONS RESEARCH

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Develop an understanding of the application of Operations Research Techniques for optimal managerial decisions.

Paper Title-HC303: BUSINESS RESEARCH METHODOLOGY

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Have knowledge and skills related to conducting research related to business and familiarize the students with the technicalities of executing a research assignment.

Paper Title-SC301: HUMAN RESOURCE MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the conceptual framework of Human Resource Management and its application in decision-making.

Paper Title- SC302: BUSINESS ETHICS AND CORPORATE GOVERNANCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand ethical issues related to business and good governance necessary for the long-term survival of the business.

Paper Title-SC301E: INDIAN ACCOUNTING STANDARDS (IND AS) – I

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Become familiar with the Corporate Financial Reporting Standards as notified by the Ministry of Corporate Affairs, GoI., and Imparting Advanced Accounting Knowledge and Skills.

Paper Title - SC 302E: INDIRECT TAXATION– I (GST)

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand basic concepts of GST, develop the knowledge about the provisions under the Act, impart idea about levy, collection of tax, tax credit and explain the application of GST in business practices.

Paper Title - SC303E: RISK MANAGEMENT AND FINANCIAL DERIVATIVES

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the concepts and use of Derivatives in Risk Management.

Paper Title - SC304E: INDIAN BANKING SYSTEM

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Have knowledge of fundamental concepts of Banking, its operation, and innovations in the Banking Sector.

Paper Title - SC305E: MANAGEMENT OF LIFE INSURANCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand various dimensions of life insurance and the IRDA regulations regarding the management of life insurance.

Paper Title - SC306E: CONSUMER BEHAVIOUR AND MARKETING RESEARCH

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand consumer behavior and different aspects of marketing research.

IV Semester

Paper Title -HC401: INTERNATIONAL BUSINESS

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand and figure out the issues of international business in world economy.

Paper Title-HC402: ENTREPRENEURSHIP DEVELOPMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand foundations and different dimensions of Entrepreneurial Development.

Paper Title-HC403: PROJECT REPORT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

The primary objective of making the students to involve in the project work is to expose them to the practical field. The study is a plethora of Principles, Canons, Rules and Regulations, Theories and Tenets in the class-room set-up. In order to understand the versatility of the same in application, they are enthused to take up project work. The industry-related, farm-related, field-related and business-related problems may be chosen for the study. Thus the findings of the study would help the problem encounters to solve them.

Paper Title - SC401 – SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Equip themselves by understanding advanced analytical tools, models, and financial theory necessary for making sound investment decisions and optimum portfolio choices as well as understanding the paradigms by which financial securities are valued.

Paper Title – SC402: STRATEGIC MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Have knowledge of tools of strategic planning and evaluation, to enable them to understand the theoretical foundations of Strategic Management and Develop an idea about the strategy formulation process

Paper Title - SC401E: INDIAN ACCOUNTING STANDARDS (IND AS) - II

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the IFRS converged Indian Accounting Standards as notified by the Ministry of Corporate Affairs, GoI, and to equip the learner to understand the applications of accounting in the Corporate Sector and recent developments.

Paper Title - SC402E: INDIRECT TAXATION – II (GST AND CUSTOMS)

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the principles underlying the Indirect Taxation Statutes (concerning Goods and Services Tax Act, Customs Act) and their impact on business decision making.

Paper Title - SC403E: GLOBAL BUSINESS FINANCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

The Objective of this course is to make the students to acquaint with the International Financial Management in order to assist the MNCs in respect of International Financial matters.

Paper Title- SC404E –: INTERNATIONAL BANKING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

To acquaint the students with different aspects of International Banking.

Paper Title - SC405E: MANAGEMENT OF NON-LIFE INSURANCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Have a working knowledge of Non-life Insurance Products and Companies and Reinsurance as a risk management tool.

Paper Title - SC406E: SERVICES MARKETING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Undestand different perspectives and concepts of Services Marketing and to help them achieve conceptual clarity to develop skills for applying to business problems.

Paper Title - EL201: E-BANKING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand current developments in the banking industry concerning the application of electronics in banking to promote self-service retail banking.

Paper Title - EL202: PERSONAL FINANCIAL PLANNING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand disciplines about different personal financial plans for investment, tax, retirement, etc.

Paper Title - EL301: STOCK MARKETS

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand stock market, different types of stock market instruments and fundamentals of indices, such as SENSEX and NIFTY.

Paper Title - EL302: MICRO FINANCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

Understand the Indian Micro Finance Sector and its contribution for women empowerment and financial inclusion.

KUVEMPU UNIVERSITY

DEPARTMENT OF M B A

Sl. No	Semester	Subject	Outcomes
I Semester			
01	**I Semester**	**Management Process And Practices**	This subject is going to provide foundation for understanding basic management concepts and to familiarize with current management practice.
02	**I Semester**	**Accounting For Managers**	The outcome of this subject is to provide insights to the students about postulates, principles and techniques of accounting and utilization of financial and accounting information for planning, decision making and control.
03	**I Semester**	**Business Communication**	The outcome of this subject is to familiarize the students with the nature and scope of business communication, the facets of modern day communication, tools and communication strategies used by the organization in routine and crisis management, orient the importance and role of technology in communication
04	**I Semester**	**Quantitative Techniques**	The outcome of this subject is to make the students familiar with some basic statistical techniques. The main focus however is in their applications in business

			decision making.
05	**I Semester**	**Organizational Behavior**	The outcomes of this subject are to familiarize the students with basic concept of behavioral processes in the organization and its effectiveness.
06	**I Semester**	**Managerial Economics**	The outcome of this subject will be, educating the students regarding micro economics, exposes the tools of economics and its managerial applications, concepts in resource allocation, pricing policies and practices in present scenario.
07	**I Semester**	**Production And Operations Management**	The outcomes of this subject will be acquainting the students with the basic of production and operations management.
II Semester MBA			
09		**HUMAN RESOURCE MANAGEMENT**	The objective of this course is to sensitize students to the various facets of Managing people and create an understanding of the various policies and Practices of Human Resources Management.
10		**MARKETING MANAGEMENT**	The purpose of this course is to develop an understanding of the underlying Concepts, strategies and issues involved in the Marketing of products and Services.
11		**FINANCIAL MANAGEMENT**	The Purpose of this course is to acquaint the students with the Broad framework of financial decision- making in a business Unit.
12		**RESEARCH**	this course at orienting the

		METHODOLOGY	students with the basic concepts of research, methodology adopted for pursuing effective research, nature and scope of contemporary research, quantitative tools used by the researcher in the process of analyzing the data, technology and its aid in the research process, and report writing techniques.
13		**MANAGEMENT SCIENCE**	The objective of this course is to develop an understanding of basic Management science techniques and their role in managerial decision making.
14		**LEGAL ASPECTS OF BUSINESS**	The Course is designed to assist the students in understanding basic laws affecting the operations of a business enterprise.
15		**MANAGEMENT INFORMATION SYSTEM AND COMPUTER APPLICATIONS**	To acquaint the students with the fundamentals of Management information system, Computers and 'C' Programming.
III Semester			
16		**ENTREPRENEURIAL DEVELOPMENT AND MANAGEMENT OF MSMES**	To expose the students to the various aspects of Entrepreneurship and to make students to understand the concept, process and development project management in MSMEs.
17		**BUSINESS ETHICS AND CORPORATE GOVERNANCE**	The purpose of this paper is to provide an insight on ethical concepts and Corporate Governance in Business.
18		**CONSUMER**	The basic objective of this

		BEHAVIOUR & CRM	course is to develop an understanding about the consumer decision making process and its applications in marketing function of firms.
19		**INDIAN FINANCIAL SYSTEMS**	The Course aims to provide an insight into the Financial Markets and Systems in India, the functions and activities of these institutions, Financial Markets and their infrastructure, Participants in Financial Markets and Systems, Regulatory framework governing the activities of the Financial Markets,
20		**Training and Management Development**	The purpose of this paper is to provide an in-depth understanding of the role of Training in HRD and to enable the course participation to manage the training systems and processes.
21		**SALES, LOGISTICS MANAGEMENT AND RETAILING**	To provide deep inputs into Sales Distribution and Retailing Management.
22		**ADVANCED CORPORATE FINANCE**	this course aims to provide knowledge on valuation of business enterprises, to make students understand the various models of value based management, and to give insight on various forms of corporate restructuring.

23		**INDUSTRIAL RELATIONS AND LABOUR LEGISLATION**	To foster in-depth knowledge and understanding the legal framework and policy framework governing Industrial relations and labor management.
24		**ADVERTISING AND BRAND MANAGEMENT**	The objective of this course is to acquaint the students with concepts, techniques and give experience in the application of concept for developing an effective Advertising program and in depth knowledge regarding the theory and practice of Brand Management.
25		**SECURITY ANALYSIS & PORTFOLIO MANAGEMENT**	this course aims at orienting the students with various fundamentals of investment and investment management, skills involved in the process of profiling and selecting an appropriate investment mix,
26		**PERFORMANCE MANAGEMENT**	The objective of this course is to equip students with comprehensive knowledge and practical skills to improve their ability for performance management in their organizations.
27		**MANAGEMENT SKILLS**	To provide an overall view of management and its universal application with skills required.
IV Semester			
28		**STRATEGIC MANAGEMENT AND BUSINESS POLICY**	This course aims impart skills with the concepts and practical applications of Strategy formulation, implementation and control. To instill a comprehensive

			and step-wise understanding of the principles of strategy formulation and competitive analysis. Understand the factors that act as precedent for establish both domestic as well as strategies for success in global environment
29		**INTERNATIONAL BUSINESS**	Course aims at providing students an opportunity to have insight in to international business and environmental factors.
30		**RURAL MARKETING MANAGEMENT**	To lay an emphasis on the incorporation of Rural and facilitate the students to update their knowledge with regard to diversified range of issues and problems on marketing products and services in rural markets strategies to manage the real world situation and have insight into agricultural marketing
31		**CORPORATE TAX PLANNING**	Objectives of this course is to provide adequate knowledge of various concepts and their applications relating to direct tax laws with a view to integrating the relevance of their laws with financial planning and management decisions.
32		**STRATEGIC HUMAN RESOURCE MANAGEMENT**	This paper is designed to foster the strategic approach to HRM practices that would enable best possible probabilities of success in

			implementing HR strategies.
33		**BUSINESS AND SERVICE MARKETING**	The objective of this course is to lay foundation for an understanding of the complex dimensions of the industrial marketing and to develop insights into emerging trends in the service sector developing economy and tackle issues involved in the management of services on national basis
34		**FINANCIAL DERIVATIVES**	This course aims at orienting the students with financial engineering Indian and global markets towards creating effective risk management strategies, evolution of derivatives, concepts and application of derivatives, strategies for optimizing investment performance through derivatives, and valuation of contracts and application of derivatives in effective management of market performance
35		**ORGANIZATIONAL DEVELOPMENT AND CHANGE MANAGEMENT**	To introduce and to impart the requisite knowledge for handling organization development process and the major issues associated with it.

36		**INTERNATIONAL FINANCIAL MANAGEMENT**	This course aims at orienting the students on global business environment and international markets, Financial Infrastructure in Global environment, Management of Global Financial Activities, Risk Management in Global financial environment, and to provide knowledge and skills for hedging foreign currency risks.
37		**INTERNATIONAL HUMAN RESOURCE MANAGEMENT**	The objective of the course is to understand the trends in International Human Resource Management and its implications to managing human resource in the globalized economy.
38		**Elective-II Entrepreneurial Development and MSME**	To expose the students to the various aspects of Entrepreneurship and to make students to understand the concept, process and development project management in MSMEs.

KUVEMPU UNIVERSITY

DEPARTMENT OF M B A

Course: MBA (HRM)

Sl. No	Semester	Subject	Outcomes
I Semester			
01	**I Semester**	**Human Resource Management**	Students will gain awareness of the many aspects of people management as well as a comprehension of the many HRM policies and practices.
02	**I Semester**	**Principles and Practices of Management**	The subject is enabling the students with base level of management to corporate level of administration with the theory and practices of the management principles.
03	**I Semester**	**Organizational Behavior**	The outcome of this subject is to make reflecting the behavioral aspects at individual level and at company level and also the students can equip with the behavioral process.
04	**I Semester**	**Quantitative Techniques for HR**	The students will familiarize with the mathematical tools and the statistical techniques and also the use of its applications in major business decision making.
05	**I Semester**	**Personality Development and Communication Skills**	The outcome of this subject is to make the students avail with the skills and knowledge required for their personality development.
II Semester			
06	**I Semester**	**Business Ethics and Corporate Governance**	The outcomes of this subject resulted in having the insights about the ethical and moral values among the students and also it realizes the students about their moral duties towards individuals, groups and corporates.
07	**II Semester**	**Research Methodology**	The outcome of this subject will be, students are aware about the applications of the statistical and analytical tools in the social science research and it provides the practical insights about the research and its methodology.
08	**II Semester**	**Managerial Economics**	The outcomes of this subject, the students will be acquainted with the

			micro level managerial perspectives to manage the demand, supply, market equilibrium, etc. factors and its influence on the Human Resource decisions.
09	**II Semester**	**Strategic Human Resource Management**	This subjected resulted to see the strategic approach to HRM practices that would enable best possible probabilities of success in implementing HR strategies among the students.
10	**II Semester**	**Organizational Development**	The students will be well equipped with the required knowledge and skills for handling the development process and major issues associated with the individual and organization.
III Semester			
11	**III Semester**	**Compensation Management**	This subject promotes the understanding among the students about the issues such as rewarding the human resources in the corporate sector, public sector and other organization and the students will be imparted with the skill sets about the designing, analyzing, and restructuring of the total reward system in organization based on the strategies, policies and employee contribution.
12	**III Semester**	**Industrial relations and Labour Legislation**	The outcome of the subject resulted with the deep knowledge among the students about the policy framework which governs the industrial relations and labour management, and also the legal aspects related to the labors.
13	**III Semester**	**Interpersonal Processes and Counselling**	Students will learn about a variety of methods to counselling and the interpersonal process. They will also be expected to use three therapeutic strategies in each approach, critique different approaches, and gain the ability to apply these ways on a range of populations.
14	**III Semester**	**Computer Applications in HR**	It makes students to expose with the information technology and applications of the computers in the field of management especially related to the Human Resources.
15	**III Semester**	**Human Resource Accounting and Auditing**	Students will learn about accounting principles and HR audits, which will equip them with skills necessary to

			maintain management control over HR as well as accountability and responsibility.
IV Semester			
16	**IV Semester**	**Personnel Assessment, Taxation and Salary Computation**	Students will have a thorough understanding of the theories, procedures, and computations pertaining to salary computation, taxation, and personal assessment.
17	**IV Semester**	**HRM in Manufacturing and Services Industry**	Students will learn about the manufacturing and services sectors, their significance, and many and distinctive HR management techniques used by these sectors.
18	**IV Semester**	**Training and Management Development**	By this subject student will thorough about the functions of training in HRD and they get the tools they need to manage the training procedures and systems.
19	**IV Semester**	**International Human Resource management**	Students will comprehend the current developments in international HRM and how they affect HRM practices in the increasingly interconnected global economy. .

KUVEMPU UNIVERSITY

DEPARTMENT OF M B A

Expected Outcomes of First Semester MBA

The First semester curriculum activity is designed to create a sense of understanding about the basic management topics and to gain knowledge about the contemporary issue of management which is significant for a management student to excel in corporate sector. The First semester is an insight to the basic management stream which includes holistic learning from economics,quantitative techniques and accounting for managers. The semester is designed so as to inculcate the basic management traits among the students which can act as an effective platform to transform them as per the needs of the market. The first semester lays downs the basic platform for the management students so as to acquire basic management skills which can develop the best attributes of management among the students.

Expected Outcomes of Second Semester MBA

This semester is structured to provide insights about various functional departments of the management.The students are stimulated to have practical insights about the organization operations in detailed way. The semester inculcates the various contemporary trends prevailing in the functional areas of management and makes the students realize the potential of thisfunctional areas of management in value creation for stakeholders of the business. The course is designed in the holistic approach to address the issues like application of various models in business decision making and motivating the students to learn about business law and there applications in undertaking rational business decisions.

Expected Outcomes of Third Semester MBA

The second year of the programme is to motivate the students to have specialized competencies in various functional department of management. The course is designed by keeping the challenges faced in the various specialized field of management and there application in solving the complex business problems. The semester provides an practical insight about the opportunity and risk associated with entrepreneurship. The semester is structured some of the basic ethical issues which are the necessitate variables for achieve higher success in the organization.

Expected Outcomes of Fourth Semester MBA

This final semester is designed by keeping an insight about the global application of management principles and challenges faced by the functional managers. The semester creates a sense of interest and understanding among the management students to learn the diverse skill matrix in specialized areas of management which can cater the growing need of the corporates to maximize the stakeholders value. The semester helps in transforming the traits of students with an insight on the global management practices .This semester address the growing needs of the functional departments of the management and inculcates the best global management practices among the management students.

Expected Outcomes of First Semester MBA (HRM)

The First semester is designed to infuse the basic practices of human resource management. This includes the impact of Quantitative Techniques, application of managerial economics and understanding the human psychology through organizational behavior. The course further makes students understand the attributes of personality development and role of personality development in creating holistic growth of students. The students are provided with basic skills of people management with the objective of inculcating best practices among the students.

Expected Outcomes of Second Semester MBA (HRM)

This semester is structured to provide valuable insights for the development of students in the field of Human Resource Management. The students are motivated for practical learning through various case studies and role plays to proactively understand the application of class room learning into real market situations. The course is designed with the objective to make student more understandable about the contemporary issue of Human Resource Management.

Expected Outcomes of Third Semester MBA (HRM)

The market driven forces have created lot of challenges on the part of the young management aspirants to inculcate ethical norms in their behavior which is the objective behind framing the third semester academic curriculum. Students are made to understand the basic operations of technology with subjects like Computer applications. To cater the specific needs of the stream various papers like training and development, strategic Human Resource Management

are offered for this semester. The students are made to understand the impact of various variables responsible for employee retention through effective reward management policies.

Expected Outcomes of Fourth Semester MBA (HRM)

The final semester of the programme is designed to give insight to the student about various taxation regime which is necessity for the student of Human Resource Management.The students are given important insights about the various present-day issues in International Human Resource Management. The students are strived to inculcate the best human resource practiceswhich not only create value for employees but are able to solve the emerging problems in the stream of Human Resource Management.

MBA Course Outcome

The Two Year programme of Master of Business Administration is designed to cater the needs of the market and provide valuable management practices and values to the young aspirants so as to cater the need of the organization and development the requisite traits for starting their own enterprises. The Department has always been striving to inculcate the best management practices among the young aspirants of management with the objective of creating value for the various organizational stakeholders. The Department has always have best corporate interface which makes the student to know, learn and develop various dynamic skills demanded in the real market.This programmeis instrumental to bridges the gap between what the students have and where the students should go in the future.The Department frequently organizes seminar,management fest,workshop so as to develop the students from holistic point of view. These efforts of the department is fostering the student's growth and making them competitive to face the various challenges, and efforts of the department through by the MBA programme is reflecting on the students.

MBA (HRM) Outcome

This course is with objective of meeting the growing demands of the students in the field of Human Resource Management. The Department is always committed to identify the contemporary issues in the field of Human Resource Management with the objective of inculcating the best Human Resources traits among the individuals .Students are made to understand the dynamic need of the market, based on which the Institute designs various special lecturing and workshop to keep the balance between the demand of the market and the class room learning of the students. The course has been designed in such a way that

students are able to handle any of the problems or uncertainties which might exist in the real market. The students are made to learn, train and develop the best of management practices. The Institute is very concerned about developing value based education hence role of morality;character and Discipline are vibrant area of the Department. This Programmes enables the students to have all such qualities which are needed for the people management as well as self in the grounds of the corporate environment and as well as at their work place.

Kuvempu University

Dept. of PG Studies and Research in Tourism Administration

Jnanasahyadri, Shankaraghatta - 577451

MBA – TTM Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

- Industry Knowledge and Understanding: Gain a comprehensive understanding of the tourism and hospitality industry, including its various sectors, trends, and challenges.
- Management Skills: Develop management and leadership skills specific to the tourism sector, including strategic planning, organizational behaviour, and financial management.
- Tourism Policy and Planning: Acquire knowledge and skills related to tourism policy development and strategic planning to contribute to sustainable tourism practices.
- Marketing and Promotion: Learn effective marketing strategies and techniques to promote tourism destinations, products, and services, including digital marketing and destination branding.
- Cultural and Heritage Tourism: Explore the significance of cultural and heritage tourism, understanding its role in destination development, preservation, and community engagement.
- Research and Analysis: Develop research skills to analyse tourism trends, market demand, and consumer behaviour, enabling evidence-based decision-making in the industry.
- Event Management: Understand the planning and execution of tourism-related events, conferences, and festivals to enhance destination attractiveness and visitor experiences.
- Technology in Tourism: Explore the role of technology in the tourism industry, including e-commerce, digital platforms, and data analytics, to stay current with industry advancements.
- Internship and Practical Experience: Provide opportunities for hands-on experience through internships, fieldwork, or industry placements, allowing students to apply theoretical knowledge in real-world settings.
- Entrepreneurship and Innovation: Encourage an entrepreneurial mindset and innovation in developing new tourism products, services, or business models.
- Global Perspective: Foster a global perspective by examining international tourism trends, understanding the impact of globalization, and appreciating cultural diversity in the tourism context.

These objectives aim to equip students with a well-rounded skill set and knowledge base, preparing them for leadership roles in the dynamic and diverse field of tourism administration. It's important to note that specific objectives may vary across institutions and programs.

Semester I

Paper Title: HC 101- Principles and Practice of Tourism

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to provide an orientation about the fundamental concepts and theories of tourism to the aspirants. This will give an overview of functioning of tourism industry and its linkages with allied and associated organizations
- Gain the fundamental knowledge on the key concepts and principles related to tourism, including its definition, components, and the role it plays in the global economy.

- Understand the principles of destination management, including destination competitiveness, development, and the coordination of various stakeholders in the tourism value chain.
- Recognize and appreciate the importance of cultural sensitivity in tourism, understanding the impact of cultural differences on visitor experiences and destination management.
- Demonstrate a comprehensive understanding of the tourism industry, including its various sectors such as hospitality, transportation, attractions, and destination management.

Paper Title: HC 102 - Tourism Products and Resources of India

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to provide the concept of tourism products and resources. The students would be able to identify the tourism resources and able to convert them as products.
- Able to understand the physical geographical features of India and its role in tourism development.
- Identify and describe the diverse tourism products available in India, including cultural, historical, natural, and adventure tourism offerings.
- Understand the significance of different tourist attractions and landmarks in India.
- Explore and analyze the tourism resources of India, encompassing natural landscapes, wildlife, historical monuments, and cultural heritage.
- Develop cultural sensitivity and awareness of the diverse traditions, languages, and lifestyles across various regions of India. And recognize the importance of preserving and promoting cultural heritage for tourism.

These course outcomes aim to equip students with a holistic understanding of India's tourism landscape, enabling them to contribute effectively to the sustainable development and management of tourism products and resources in the country

Paper Title: HC 103 – Principles of Service Management

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to give details about the principles and applications of different management theories in various business establishments, particularly in travel and tourism industry.
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- Understand the basic concepts and principles of management and explore the historical development of management theories.
- Explore the various components and considerations in designing services for optimal performance.
- Identify and describe the four primary functions of management: planning, organizing, leading, and controlling. And understand how these functions are interconnected and essential for organizational success.
- Explore different organizational structures and their impact on organizational efficiency.
- Understand the challenges and benefits of managing diverse teams in a global context.

Paper Title: HC 104 – Tourism and Hospitality Marketing

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

The main objective of the course is to give basic idea about the theories of hospitality marketing and its application in tourism and allied tourism industries. Students are given direction to formulate marketing plans and promotional approaches to tourism and other related organizations

- Tourism marketing course typically aim to provide students with a comprehensive understanding of the principles, strategies, and practices involved in promoting and managing tourism-related products and services.
- Develop a solid understanding of the tourism industry, including its structure, components, and key players.
- Analyze and comprehend the factors influencing consumer behavior in the context of tourism, including motivations, preferences, and decision-making processes.
- Explore strategies for marketing tourism destinations, including branding, positioning, and the development of marketing campaigns to attract visitors.
- Explore the complexities of marketing in the global tourism market, including cultural considerations, international trends, and global competition.
- Develop practical skills such as designing marketing campaigns, creating promotional materials, and utilizing technology tools for tourism marketing.

Paper Title: HC 105 – Travel Agency and Tour Operation Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

After the successful completion of the course, the students would be able to understand the operations of travel and tourism organizations and develop skills required to manage such organizations.

- Understand the structure, trends, and dynamics of the travel and tourism industry.
- Gain insights into the various sectors, including transportation, accommodation, and attractions.
- Develop skills in business planning, organization, and management specific to travel agencies and tour operations.
- Understand the process of designing and developing travel packages and tour itineraries.
- Understand the role of online platforms, reservation systems, and other technological tools.
- Identify and assess potential risks in the travel industry and learn strategies for risk mitigation and crisis management.

Paper Title: SC 101A: Tour Planning, Operations and Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- Course aim to provide students with a comprehensive understanding of the tourism industry and equip them with the necessary skills to plan, operate, and manage successful tours.
- Gain knowledge about the structure, components, and trends of the global tourism industry.
- Develop skills to plan and design various types of tours, considering factors such as destination selection, itinerary development, and target audience preferences.
- Understand the importance of market research and customer segmentation in tour planning.
- Understand about budgeting, financial planning and cost control measures and financial sustainability in the tourism business.
- Learn how to manage customer expectations and address concerns to enhance overall satisfaction.
- Familiarize with the use of technology in tour planning and management, including online booking systems, digital marketing, and data analytics.

Paper Title: SC 102A - Event Management and MICE Tourism

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- This course is designed for empowering the students to understand, plan and organize various events and MICE activities.
- Explore the different types of events, including corporate events, conferences, exhibitions, and special events.

- Understand the key components of successful event management, such as budgeting, logistics, and timeline management.
- Explore the concepts and dynamics of Meetings, Incentives, Conferences, and Exhibitions (MICE) tourism.
- Understand the significance of MICE tourism in the broader context of the travel and tourism industry.
- Understand the role of technology in event management, including event registration systems, virtual events, and event apps.
- Develop skills in building and maintaining relationships with various stakeholders, including clients, vendors, and sponsors.

Paper Title: SC 101B - Airline Operations and Management

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- Explore the history and evolution of the airline industry, including key milestones and developments.
- Explore international and national aviation regulations, safety standards, and compliance requirements.
- Learn about the day-to-day operations of airlines, including flight planning, scheduling, and maintenance activities.
- Gain insights into the management of airline fleets, including aircraft selection, acquisition, and retirement strategies.
- Study the economic factors influencing the airline industry, including pricing strategies, cost structures, and revenue management.
- Learn about emergency response procedures, risk management, and the role of regulatory bodies in ensuring safety standards.
- Explore how technology impacts various aspects of airline operations, from reservations systems to in-flight services.

Paper Title: SC 102B - Hospitality Operations and Management

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- Gain a comprehensive understanding of the various sectors within the hospitality industry, including lodging, food and beverage, events, and tourism.
- Develop practical skills related to the day-to-day operations of hospitality establishments, such as front office management, housekeeping, food service, and customer service.
- Present course is aim to equip students with the knowledge and skills necessary to effectively manage the front desk and related operations in a hotel setting.
- Develop excellent customer service skills to enhance guest satisfaction and build positive relationships with guests.
- Learn to manage reservation systems effectively, including both manual and computerized systems, to optimize room occupancy and revenue.

Semester II

Paper Title: HC 201 - Tourism and Hospitality Legislation in India

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to give details about the legislations applicable to travel and tourism industry. Analyzing the relevance of existing business laws related to tourism and Environment and to find the gaps. Being aware of the ethical principles to be followed in tourism by the stakeholders.

- Gain a comprehensive understanding of the legal framework governing the tourism and hospitality industry in India.
- Explore key statutes, regulations, and policies that impact the operation of businesses in the sector.
- Familiarize students with the various compliance requirements that businesses in the tourism and hospitality sector must adhere to.
- Discuss the legal framework related to environmental and sustainability practices within the tourism and hospitality industry.
- Examine laws and regulations related to consumer protection within the tourism and hospitality sector.
- Discuss the legal framework related to environmental and sustainability practices within the tourism and hospitality industry.

Paper Title: HC 202 - Tourism Destinations of India

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The main outcome of the course is to understand, identify and evaluate the tourism products and resources of India. It enables the students to prepare domestic tour itineraries and preparing circuits.
- Gain a comprehensive understanding of the tourism industry in India, including its historical development, current status, and future trends.
- Identify and analyze prominent tourist destinations in India, covering both popular and emerging locations.
- Explore the role of cultural preservation and sustainable tourism in maintaining the integrity of heritage sites.
- Examine the unique features, attractions, and cultural aspects of each destination.

Paper Title: HC 203 - Organizational Behavior and HRM

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The main objective of the course is to provide an orientation about the fundamental concepts, theories and practices of organizational behavior and Human Resource Management in general and especially in travel and tourism industry.
- Explore the psychological and sociological foundations of individual behavior in organizations.
- Examine personality, perception, attitudes, and motivation to understand how individuals behave in the workplace.
- Understand how organizational culture shapes individual and group behavior.
- Understand the functions of HRM, including recruitment, selection, training, and development.
- Analyse the process of organizational change and development.

Paper Title: HC 204 - Travel and Transport Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The objective of the course is to provide an insight to various travel and transpiration system used in tourism sector. After the successful completion of the course, the students would be able to manage various travel and transportation organizations.
- Familiarize students with various modes of transportation such as air, land, and water transport.
- Explore transportation systems, infrastructure, and their impact on travel management.
- Introduce students to the principles of travel management, including planning, organization, and coordination of travel services.
- Keep students updated on the latest trends, technologies, and innovations in the travel and transport sector.

Paper Title: HC 205 - Study Tour and Viva Voce Examination

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The objective of the study tour is to give exposure to the students about attractions and resources available at a tourist destination of repute.

Paper Title: SC 201A - Tourism Destinations of India

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The main outcome of the course is to provide a comprehensive idea about the tourism destinations of India and the students would be able to prepare domestic tourism itineraries and tour packages.
- Gain insight into the overall tourism industry in India, including its size, scope, and contribution to the economy.
- Identify and analyse the major tourist destinations in India, including popular historical, cultural, natural, and recreational sites.
- Explore the rich cultural diversity and heritage of India and understand how it contributes to the attractiveness of tourist destinations.
- Study the geographical and environmental factors that influence the development and sustainability of tourism destinations in India.

Paper Title: SC 202A-Tourism Destinations –North America, South America and Europe

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The main objective of the course is to understand the spatial geography of the world in order to better acquainted with global perspectives of the worldwide tourism destinations. It also helps the students to get an insight into the travel regulations, tourist itinerary, and develop their role as travel professionals.
- The course focused on North America, South America, and Europe would typically cover a range of topics to provide students with a comprehensive understanding of the tourism industry in these regions.
- To explore and appreciate the diverse cultures, traditions, and histories of the countries within North America, South America, and Europe.
- To identify and discuss current trends and preferences in the tourism industry within these regions.

Paper Title: SC 201B - Airport Operations and Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

- The course is designed to inculcate the students about the procedure of Airport handling and Airline Management.
- Gain a comprehensive understanding of airport infrastructure, including terminals, runways, taxiways, and other key components.
- Familiarize students with national and international regulations and standards governing airport operations, safety, and security.
- Explore the relationships between airlines and airports, including airline requirements for airport services and facilities.
- Study the principles of airport planning and design, considering factors such as capacity, efficiency, and environmental impact.

- Gain insights into ground handling operations, services provided to aircraft on the ground, and coordination with ground service providers.
- Understand the environmental impact of airport operations and explore strategies for sustainable airport management.

Paper Title: SC 202B - Hotel Front Office Operations and Management

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- This course would provide a theoretical and practical exposure about the front office operations of a hotel.
- Gain a comprehensive understanding of the front office's crucial role in the overall operations of a hotel.
- Develop excellent customer service skills to effectively handle guest inquiries, complaints, and requests.
- Master the procedures involved in welcoming guests, processing check-ins, and efficiently handling check-outs.
- Explore strategies for building and maintaining positive relationships with guests to encourage repeat business and positive reviews.
- Understand basic sales techniques to upsell rooms and hotel services to maximize revenue.
- Develop effective time management skills to handle multiple tasks efficiently in a fast-paced environment.

Semester III

Paper Title: HC 301: Tourism Policy, Planning and Development

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The course aims to give a comprehensive idea about the tourism planning and developmental theories and its application.
- Aimsto develop the conceptual knowledge, systems, alternative forms and trends of tourism and destination development.
- Givesa comprehensive knowledge about the concepts and approaches of tourism policy framework.
- Aimsto provide the historical developments of tourism planning in India, National Action Plan, National and the states' tourism policy.
- Provides the fundamentals of tourism planning, concepts and strategies to understand the importance of planning at different levels of tourism destinations.
- It aims to provide the socio-cultural, and environmental friendly aspects of eco and sustainable tourism.

Paper Title: HC-302: International Tourism Geography

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The primary objective of the course is to give a comprehensive idea about international tourism destinations and tourism trends.
- To get insight into the global tourism trends present, past and future across the world. Also informs the diversification of tourism products, global emerging tourism trends and changing dimensions of tourism.
- Aims to provide the conceptual knowledge, growth, development, contemporary issues, challenges and opportunities of international tourism destinations.

- To understand the physical and human geography to know the interrelationship between tourism and geography and impacts of weather and climate on tourism destinations.
- To impart knowledge of physical geography, tourism potential, and travel formalities of countries in Asia and Oceania.
- To impart knowledge of physical geography, tourism potential, and travel formalities of countries in Europe and Africa.
- To impart knowledge of physical geography, tourism potential, and travel formalities of countries in North, Central, and South America.

Paper Title: HC-303: Research Methodology in Tourism and Hospitality

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to provide the methods of research and report writing in the field of tourism and travel industry.
- It aims to understand the basic concepts and theoretical aspects of research methods and methodology.
- It provides an idea of review of literature to identify the research question, scale, design a questionnaire, sample methods and formulate hypothesis.
- The course also aims to provide the students with qualitative research methods to analyse the data.
- Aims to provide the students with quantitative research methods to analyse the data.
- Aims to train the students to understand the data coding, analysis and writing a final report of the research area.

Paper Title: HC-304: Financial Management and Accounting

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The course would help the students to acquaint oneself with the fundamental principles of accounting, enabling them to analyse and interpret the financial statements and also providing expertise in applying accounting techniques and finance strategies in the field of tourism activities.
- Aims to give a knowledge of basic concepts of financial accounting to tackle the challenges of accounting standards in tourism and hospitality industry.
- To prepare the students to get the basic idea of preparing final accounts in travel agency and hotel accounting.
- Aims to prepare the students to analyse of the financial statements and interpretation.
- It imparts the knowledge of cost accounting, preparation of cost sheet, and budget.
- It aims to learn the financial management systems to work in the travel agencies and hotels of large scale.

Paper Title: SC-301A: GDS and Computer Reservation System

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to orient the Amadeus/SABRE/ Galileo software used for services booking. After the successful completion of the course the students would be able to do air fare quote, PNR creation and issue of air ticket through Amadeus, SABRE/Galileo software.
- Aims to introduce the basics of GDS/CRS such as encoding, decoding, flight availability and selling air segments.
- Aims to provide the elements and optional elements of PNR and creation of PNR during the flight bookings.

- Aims to impart the knowledge of required travel formalities of passport and visa for international travel.
- To make the students to learn about the itinerary printing along with the issuing tickets and hotel room booking, confirmation and cancellation procedures.

Paper Title: SC-302A: Tourism Destinations –Asia, Australia and Africa
Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main learning objective of the course is to make the students understand the geography and tourism in Africa, Asia, and Australia. Also helps the students to familiarize with the current tourism trends and prospects.
- Aims to provide the knowledge of tourism geography, popular tourist destinations, itinerary preparation and travel documentation in Africa.
- Aims to provide the knowledge of tourism geography, popular tourist destinations, itinerary preparation and travel documentation in Middle East.
- Aims to provide the knowledge of tourism geography, popular tourist destinations, itinerary preparation and travel documentation in Asia.
- Aims to provide the knowledge of tourism geography, popular tourist destinations, itinerary preparation and travel documentation in Indian Sub-continent.
- Aims to provide the knowledge of tourism geography, popular tourist destinations, itinerary preparation and travel documentation in Australia.
- Aims to give an insight into the regional and international tourism trends, and UNWTO reviews on tourism around the world.

Paper Title: SC-301B: Air Cargo Management
Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The course will help the students to understanding the prospects of air cargo industry, familiarizing the operations and management of air cargo business and analysing the trends and practices in the air cargo business.
- It provides the basics of air cargo, procedures of handling general and precious cargo in an international air travel.
- Aims to make the students to know the rates and charges applicable for various types of cargo.
- Aims to provide the aircraft, booking of cargo, terminal facilities and to learn complaints and claims.
- Provides the knowledge of procedures in loading and unloading cargo to the aircraft and the documents required.

Paper Title: SC-302B: Event Management and Promotion
Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- This course is designed for empowering the students to understand, plan and organize various events and MICE activities.
- The course provides a comprehensive knowledge of various steps involved in event planning process to host an event.
- Enables students to understand the planning and organising the various types of corporate events.
- Aims to understand and develop the skills set required to become an event planner and negotiation with different suppliers and vendors.
- Empower the students to manage the crisis during the event hosting and to take safety measures.

- Enables the students to know about the trade fair shows and exhibition and their role in event industry and the negotiations with travel and hospitality operators.

Semester IV

Paper Title: HC-401: Foreign Exchange Management

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- This course would orient the students about the rules and regulations pertaining to foreign exchange management in India.
- Aims to provide the basic insights of the foreign exchange, markets, payment system, currencies and role of tourism industry.
- Provides knowledge about exchange rates, determinants, factors, types of exchange rates and the operations of travel agencies and suppliers.
- It enables the students understand the foreign exchange exposure management and currency conversion methods.
- Aims to know the foreign exchange operations and FEMA in India
- To provide a knowledge of forex trading and required infrastructure and network for trading in India.

Paper Title: HC-402: Managerial Communications in Tourism

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- This course would orient the students about the rules and regulations pertaining to foreign exchange management in India.
- Aim of the course is to let students know about the conceptual knowledge of communication and its classification and purposes.
- Provides the effective and successful oral and written communication skills to face the challenges in the tourism and hospitality industry.
- Enables the students to learn the writing of corporate letters and preparation of reports.
- Guides the students to learn the presentation skills with effective communication.
- Aims to provide the effective writing skills to prepare the CVs to help in employment through various communication media.

Paper Title: HC-403: Destination Planning and Development

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The course would empower the students on the importance of planning and management of tourism destinations, assessing the tourism potential of a destination and to prepare tourism development plan and also helps to introduce he advanced analysis and research in the field of destination development.
- Enables the students understand the development aspects of tourist destinations and the value of tourism.
- To understand the effective tourist destinations planning and development process and analysis of the economic, socio-cultural and environmental considerations.
- Aims to empower the students to learn the process of creating image, unique destination proposition for marketing the destination at the global level.
- Enables the students to learn the creation of effective marketing promotion and publicity materials and their importance in tourism destination.
- To understand the role of national and global institutional support for policy framework of the destination planning and development.

Paper Title: HC-404: Tourism Entrepreneurship Development

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The course is intended to prepare competent entrepreneurship and entrepreneurial skills, motivating students to become job creators and exposing students to supporting factors to become an entrepreneur.
- Aims to provide the hands-on information about the basic concepts and theories of entrepreneurship and its role in economy.
- Aims to understand the creativity and innovations of entrepreneurship in tourism and travel sector.
- To find out the opportunities for infrastructural facilities for entrepreneurship in tourism.
- To understand the sources of funding for entrepreneurship and tourism development.
- To know the ways to management of entrepreneurship growth and opportunities for women empowerment.

Paper Title: SC-401A: Itinerary Preparation and Tour Packaging

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- This course is an attempt to help the students prepare tour itinerary and design package tour independently.
- It aims to provide the basic elements and resources for preparing itinerary and the do's and don'ts of itinerary.
- Provides the comprehensive idea of formulation and designing the different package tours.
- Aims to provide the knowledge of costing in formulating the tour package and types of costs.
- The course aims to familiarise the students and enable them to conduct tours at the destination.
- To make the students to familiarise about the travel formalities and documentation for international journeys.

Paper Title: SC-402A: Project/Training Report and Viva Examination

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The students have to undergo one month on the Job Training in a reputed Travel Organization (Travel Agency/Tour Operation/Event Management) during the fourth semester.
- A Project Report should be submitted by the guidance and supervision of a faculty assigned by the Department before the end semester examinations of fourth semester in the prescribed structure and format signed by the student, supervisor and Chairman/Coordinator of the Department before the last date given by the Department.
- There shall be an Internal and External evaluation of Project report followed by viva voce examinations.

Paper Title: SC-401B: Airline Computer Reservation System

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The main objective of the course is to orient the Amadeus/SABRE/ Galileo software used for services booking. After the successful completion of the course the students would be able to do air fare quote, PNR creation and issue of air ticket through Amadeus, SABRE/Galileo software.
- Aims to introduce the basics of GDS/CRS such as encoding, decoding, flight availability and selling air segments.

- Aims to provide the elements and optional elements of PNR and creation of PNR during the flight bookings.
- Aims to impart the knowledge of required travel formalities of passport and visa for international travel.
- To make the students to learn about the itinerary printing along with the issuing tickets and hotel room booking, confirmation and cancellation procedures.

Paper Title: SC-402B: Project/Training Report and Viva Examination

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- The students have to undergo one month on the Job Training in a reputed Travel Organization (Travel Agency/Tour Operation/Event Management) during the fourth semester.
- A Project Report should be submitted by the guidance and supervision of a faculty assigned by the Department before the end semester examinations of fourth semester in the prescribed structure and format signed by the student, supervisor and Chairman/Coordinator of the Department before the last date given by the Department.
- There shall be an Internal and External evaluation of Project report followed by viva voce examinations.

Paper Title: EL 301: Travel and Tourism Management (Open Elective)

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

- This course is offered to students from other departments of the University as elective. The course is designed to provide basic knowledge about travel agency and tour operation management.
- Provides the general information of travel and tour operation, functions of IATA.
- Enable the students to understand the geographic terminology to deal with the tour operation.
- To understand and learn the travel formalities and documentation in international tour operation.
- To know the modern tourism industry and its segments.

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Kuvempu University

Faculty of Education

School of Education

Education

Physical Education

EDUCATION : BROAD OUTCOME:

The Master of Education(M. Ed) is a programme of Four Semester (Two Years) duration which caters to the broder needs of the students train to achieve a post graduation in the discipline of Teacher Education. It is a programme which has a specific aim of developing experts in the field of Teacher Education. It is a programme which helps the student to imbibe the skills needed for a professional in the field of Teacher Education (TE). It provides greater opportunities for the students to extend as well as deepen the knowledge and understandings of education, specialized in the area of Elementary, Secondary & Higher Secondary Education. It also helps the students to carry on researches in the field of Teacher Education (TE). And also, to carry on several research projects that mean build up the educational infrastructure of the nation & Seek the Solutions of Education Problems.

PROGRAMME SPECIFIC OUTCOME:

The Master of Education (M. Ed) programme helps the student with different specialization like Higher secondary, Secondary& Elementary, Early Childhood Care & Education (ECCE) to Higher Secondary. This programme helps the student to seek a carrier as a Teacher Education (TE) in Teacher Education Institutions (TEIs), Educational Administrator in the National & State level educational administrative departments such as Joint Director (JD), Deputy Director of Public Instruction (DDPI), Block Educational Officer (BEO), Principals & Head Master of Higher Secondary & Elementary Level Schools. They can also seek the career as educational counsellor in educational institutions as care takers & wardens in educational hostels. They can also seek the career as professional educational practitioner who can engage in guiding to the needy persons who want to seek career in different fields of education & other endeavors

COURSE OUTCOME:

The Master of Education (M. Ed) programme which is a continuation & extension of Teacher Education Programmes like Bachelor of Education(B.Ed),Diploma in Elementary Education(D.EI.Ed) & other equivalent programmes mainly comprises of following types of courses that is Hard Core Course, which constitute of psychological, philosophical pedagogical & contemporary problems prevailing in the field of education. Soft Core Courses which specialize in Elementary & Higher Secondary Education. This course also includes the soft skills like Computer Education, Communication Skills, Life Skills, Personality Development & Yoga Education etc, which shall build up the related skills needed for an effective teachers and educational administrator. Further this course develops the skills of conducting research in the field of education. Hence this course is very useful to develop a complete professional for all the sectors of education

<table>
<tr><th colspan="3">M.P.Ed.</th></tr>
<tr><td>Broad outcome of the programme</td><td colspan="2">The student after pursuing M.P.Ed. course will be equipped with expertise of working efficiently at University Post Graduate Departments, Undergraduate colleges and Pre-University colleges.
M.P.Ed. Degree holder will be able to handle practical as well as theory classes in different spectrums of physical education, sports, recreation, health and fitness.
M.P.Ed. student after pass out will be an expert in catering to the needs of college students in terms of health, fitness, wellbeing and will be able to train students for competitive sports.
M.P.Ed. student after pass out will be able to work in fitness centers, gyms, yoga centers and stadiums to address the health and fitness needs of various sections of the community.</td></tr>
<tr><td>Programme specific outcome</td><td colspan="2">Health: Catering to the health needs of students, community dwellers and other stakeholders.
Physical fitness: Improving physical fitness of students, people suffering from non-communicable diseases and healthy individuals for keeping themselves fit.
Competitive sports: Training young sportspersons for competitive sports at different levels of participation in various sports and games.</td></tr>
<tr><td>Course outcome (paper)</td><td>Research process in physical education and sports sciences
Test, Measurement and Evaluation in physical education
Applied statistics in physical education and sports.
Laboratory practicals</td><td>Helpful for pursuing PhD and other Research activities. Following students have been benefitted:
Mr. Vasanth Naik P
Mr. Prasanna Kumara MD
Mr. DileepKumar SC
Mr. Gangadhara Magalada
Mr. Suresh R</td></tr>
</table>

	5. Practical- Volleyball, Kabaddi, Kho-Kho, Handball, Football, Badminton and TableTennis.	Helpful in preparing students for National, Inter-University and state level competitions. Mr. DileepKumar SC successfully completed Diploma in Sports Coaching from National Institute of Sports, Patiala.
	6. Practical- Track and field, running, jumping and throwing activities.	Will help in keeping oneself fit and ready for challenges in life. Mr. Mahesh is appointed in Police Department.
	7. Yoga	Helpful in obtaining expertise as Yoga trainer.
	8. Aerobics	Helpful in obtaining expertise as Fitness trainer
	9. Weight lifting and power lifting	Helpful in obtaining expertise as Gym instructor.
	10. Sports Medicine 11. Athletic care and rehabilitation	Management of sports injuries Rejuvenation of ill individuals
	12. Sports training	Helps in working as personal trainer Helps in applying sports science in preparation of sports persons.
	13. Biomechanics and Kinesiology 14. ICT in physical Education	Helps in obtaining positions like sports and games analysts.
	15. Sports psychology	Helps in obtaining position of sports psychologist.

Kuvempu University

Faculty of Science and Technology

School of Biosciences

Botany

Bio-Technology

Microbiology

Wildlife and Management

Zoology

M. Sc., Botany Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. Understanding the lower plant diversity and range of their thallus organization and reproduction and also to understand their role in ecosystem, genetic and cultural diversity, uses and their conservation
2. Describe the advanced concepts and principles of taxonomy, evolutionary inference of important morphological characters, distribution of plants, Important families of flowering plants, their classification and important characters.
3. Understanding paleobotany and pollen grains of higher plants. Available fossils detail to understand evolution of plants. Morphological variation and characters of pollen grains and importance.
4. Knowledge about study of bio fertilizers for ecofriendly crop productions.
5. Understanding the basic concepts of cell studies helping the students to develop their analytical, quantitative and problem-solving skills of genetics and plant breeding.
6. Describe evolution, anatomy, morphology, systematic, genetics, physiology and ecology of plants.
7. The ecological and evolutionary features of the flora and fauna in environment
8. Knowledge about identify and analyze scientific problems and environmental issues using oral and written communication skills.
9. Knowledge about the continually developing and is dynamic; students can find new scientific information and compare it with existing information.
10. Describe how all scientific knowledge is continually developing and is dynamic; students can find new information and compare it with existing information

Semester I, Paper Title- BO1.1, Hard Core-1: Phycology and Mycology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Classification of algae and fungi.
2. Morphology and reproduction of lower plants such as algae, lichens and fungi.
3. Variations and comparison among two groups.
4. Understand ecology and economic importance of these lower plant groups.

Semester I, Paper Title- BO1.2, HardCore-2: Biology of Bryophytes, Pteridophytes and Gymnosperms

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Classification of Bryophytes, Pteridophytes and Gymnosperms
2. Morphology and reproduction of lower plants.
3. Variations and comparison among three groups.
4. Understand ecology and economic importance of these lower plant groups.

Semester I, Paper Title- BO1.3, Hard Core -3: Plant Taxonomy, Phytogeography and Evolutionary Biology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Classification of plants based on certain approaches
2. Principles of nomenclature. How it is governed by the ICN?
3. What important morphological characters delineate flowering plant families and their classification?
4. Distribution patterns of plants.
5. Principles and theories of evolution of land plants.

Semester I, Paper Title- BO1.3, Soft Core-1: Palaeobotany and Palynology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Processes of fossilization in ancient eras.
2. Prebiotic environment and origin of plant groups.
3. Concept of Gondwana land movements and continental drift.
4. Pollen morphology.
5. Uses of pollen grains in taxonomy, fossil fuel, honey and crime detection.

Semester I, Paper Title- BO1.4, Soft Core-2: Bio fertilizers

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Types of bio fertilizers.
2. Importance of soil microorganisms.
3. Symbiotic nitrogen fixation and assimilation.
4. Plant growth promoting fungi and Bacteria.
5. Importance of Mycorrhizae and commercial production of bio fertilizers.

Semester II, Paper Title- BO2.1, HardCore - I: Plant Ecology and Environmental Biology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Limiting factors controlling distribution and growth of organisms.
2. Characteristics of organisms as population, community and ecosystems.
3. What are the ecosystem functions?
4. Applications of ecological knowledge of ecological successions.
5. Problems of pollution and its management.

Semester II, Paper Title- BO2.2, HardCore-2: Cell Biology, Genetics and Plant Breeding

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Membrane structure and function.
2. Structural organization and function of intracellular organelles
3. Structure chromosomes and gene, regulation of cell cycle.
4. Laws of inheritance.
5. Experimental methods in genetics and plant breeding.

Semester II, Paper Title- BO2.3 Soft Core-1: Techniques in Plant Biology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Tissue and organ culture of important plants.
2. Crop improvement methods through biotechnological methods.
3. How to transfer the gene for production transgenic plants.
4. *In vitro* technology and pharma industries requirements.
5. Experimental methods in biosynthetic pathways and elicitation of compounds

Semester II, Paper Title- BO2.4: SoftCore-2: Plant Pathology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. General characters of true fungi.
2. Classification of fungi and plant diseases
3. Genetic mechanisms in fungal adaptations
4. Disease epidemiology.
5. Management of Bacterial, fungal and virus diseases.

Semester II, Paper Title- BO2.5:IDE : Floriculture

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. General nature of ornamental flowers.
2. Cut flower industry.
3. Commercial flower production in India.
4. Management of flower cultivation.
5. Management of diseases and pests of flower production.

Semester III, Paper Title- BO3.1: Hard Core-1: Plant Morphogenesis and Reproductive Biology of Angiosperms

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Understand a shoot apical meristem transforms into an inflorescence and floral meristems and how these domains developmentally maintained.
2. How the male and female germ lines are established and how a variety of tissues coordinate to form gametes?
3. How seed development is accomplished and what are the mechanisms by which rejection reaction occurs during the progamic phase?
4. Understand fertilization necessary for a seed to be formed? How does a fertilized egg and central cells lead to embryo and endosperm formation?

Semester III, Paper Title- BO3.2 Hard Core-2: Plant Physiology and Biochemistry

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Students will be taught about proteins, their biosynthesis, folding into specific structures, post translational modifications and degradation mechanisms.
2. The course will deal with various phytohormones and their role in physiology of growth and development. This course will introduce students to physiological advances in sensory photobiology.
3. Students will gain the knowledge on reproductive strategies in higher plants along with physiology of flowering, molecular and hormonal basis of flowering mechanism.
4. Able to understand carbohydrate and amino acid metabolism.
5.

Semester III, Paper Title- BO3.3: Soft core -1: Plant Diversity and Human Welfare

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. What is the significance of plant diversity?
2. What are the adaptations in plants in relation to habitat conditions?
3. Plant diversity at different levels.
4. Geographic indications.

Semester III, Paper Title- BO3.4: Soft core -2: Plant Biotechnology

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Concepts, tools and techniques related to *in vitro* propagation of plants.
2. Various case studies related to basic and applied research in plant sciences using biotechnology.
3. Principles and methods used for phenotypic, genetic and molecular analysis of transgenic plants
4. Uses and current research paradigms in various plants of economic value.

Semester III, Paper Title- BO3.9: IDE: Plants for Human Welfare

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. The useful plants to human society
2. Identification feature of such resources
3. The students would be able to judge the value of biodiversity and its role in stabilizing the climate and economy. They would know the causes and consequences of loss of biodiversity and planning of conservation strategies.

Semester IV, Paper Title- BO4.1: HardCore-1: Ethnobotany, Medicinal Plants and Plant Resource conservation

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Ethnobotanical knowledge.
2. Importance of medicinal plants, their diversity, in treating various diseases.
3. Recent knowledge and status of medicinal plants.
4. Natural resources and their conservation.
5. Uses and current research prospects in various plants of economic value.

Semester IV, Paper Title- BO4.2: HardCore-2: Molecular Biology and Genetic Engineering of Plants

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Concepts, tools and techniques related to molecular techniques.
2. Different methods used for genetic transformation of plants, use of *Agrobacterium* as a vector for plant transformation, components of a binary vector system.
3. Various case studies related to basic and applied research in plant sciences using transgenic technology.
4. Principles and methods used for phenotypic, genetic and molecular analysis of transgenic plants.

5. Uses and current research paradigms in various plants of economic value.

Semester IV, Paper Title- BO4.5: Project Dissertation

Student Learning Course Outcomes

After successful completion of this course, the students will be learning: -

1. Formulate a scientific question.
2. Develop the ability to apply the tools and techniques of Botany in conducting independent research.
3. List the objectives and state the hypothesis of the research project.
4. Employ the finalized methodology to solve the problem which has been undertaken.
5. Analyze the data which has been generated by carrying out several experiments.
6. Create document and report on experimental protocols, results, and conclusions.
7. Explain their research findings to the audience effectively

DEPARTMENT OF BIOTECHNOLOGY

Broad outcomes of PG biotechnology

The department of Biotechnology offers curriculum carefully crafted keeping in mind the competitive exams at national and international levels as well as dynamically changing scenario in biotechnology research trend. The students after their PG program have been pursuing their career in wide range of avenues starting from technical, non-technical and regulatory affairs. Most of the students are encouraged to take up BITP, BINC and KBAT exams along with NTA, GRE, ToEFL exams so that they progress to higher education and start research career. The interdisciplinary nature of the curriculum also enables students to comfortably switch to other fields including Data science, Programming and intellectual property rights.

Program specific outcomes

The Program MSc in Biotechnology offers a wide range of courses including the open electives which make the program flexible by allowing students to pursue their interested course in other departments there by catering to further their interests. Students after finishing the PG program in the biotechnology are actively perusing their career primarily in biotechnology industries in the field of cell-based assay development, production departments as well as quality assurance departments in pharma industry. The department also have produced entrepreneurs who have started the business firms in the field of mushroom cultivation, contact research organizations, clinical data management, Integrated pest management, scientific research paper publication to name a few.

Course specific outcomes

Taking inspiration from specific courses such as genomics and proteomics, bioinformatics, Animal biotechnology, the students are now pursuing their career as researchers in the respective fields in institutes of national reputes like, IIHR, Yenepoya University, NITTE (Deemed to be University), Manipal Institute of Higher Education. Some students have also obtained BIG grants to establish their startups in the field of agribiotechnology. Significant amount of research papers has been published out of the mandatory minor projects that the students did as partial fulfilments of their PG program along with the studies being presented by them at national and international conferences. This has encouraged the students to take up research as their career and several students have found their placements in universities in abroad including University of Montana, University of Illinois, Auckland University to name a few.

Course specific outcomes and Program specific outcomes of M. Sc. in Biotechnology

Program specific outcomes:

The program specific outcomes comprise of three broad area.

Programme Outcome:
Objective of the Programme is to develop;

- **Researchers of the highest quality in the field of Life Sciences.**

On the completion of this program, the student appreciates the biotechnology contributions to improve the livelihood of general public. The students are encouraged to think holistically, perform the integrated analysis of data from various fields of life science research and contribute to generation of high-quality data and significant knowledge to existing public domain.

- **Entrepreneurs who can develop innovative products and solutions.**

The students are trained to look for solutions for the problems which common public face and to come with viable solutions which can be later converted to business model. By participating in the business ideation workshop, students will be able to think and comeup with viable business ideas and will be able to initiate their own startup ventures.

- **Students who can identify new hypothesis and scientific problem through criticalanalysis.**

The students of the program upon getting trained in various research and hypothesis design and methodology workshops will be able to read and comprehend the existing data in their domain of interest and devise data driven hypothesis to execute them as minor or major projects leading to a promising career in scientific research field.

Course specific Outcomes:

Sl. No.	Course Title	Outcome
1.1	Chemistry of Biomolecules and Cellular Metabolism	Students will be able to have a firm foundation in fundamentals and application of current physical scientific theories and to gain fundamental knowledge in biochemistry. Wards will appreciate physico-chemical principles underlying biological processes and to build upon undergraduate level knowledge of biochemical principles with specific emphasis on different metabolic pathways.
1.2	Genetics and Molecular Biology	At the end of the course the student will be equipped to understand three fundamental aspects in biological phenomenon and students should be able to: Describe the fundamental molecular principles of genetics; Understand the relationship between phenotype and genotype in human genetic traits; Describe the basics of genetic mapping. Understand how gene expression is regulated.
1.3	Microbiology	Students should be able to: Identify major categories of microorganisms and analyze their classification, diversity, and ubiquity; Identify and demonstrate structural, physiological, genetic similarities and differences of major categories of microorganisms; Identify and demonstrate how to control microbial growth; Demonstrate and evaluate interactions between microbes, hosts and environment.
1.4	Cell Biology and Bioinformatics	At the end of the course the student should be able to :Develop an understanding of basic theory of computational tools; Gain working knowledge of computational tools and methods; Appreciate their relevance for investigating specific contemporary biological questions; Critically analyse and interpret results Gain broad understanding in basic mathematics required for Biology; Recognize importance and value of mathematical thinking, training, and approach to problem solving, on a diverse variety of disciplines. Students will also gain insights into structure and function of various cell organelle and able to identify, compare and contrast the functions of different parts of the cell.
2.1	Recombinant DNA Technology	On completion of this course, students should be able to learn Given the impact of genetic engineering in modern society, the students will be endowed with strong theoretical and practical knowledge in the various nuances that make up the vast scientific world of genetic engineering.
2.2	Immunotechnology	On completion of this course, students will be able to: Evaluate usefulness of immunology in different pharmaceutical companies; Identify proper research lab working in area of their own interests; Apply their

		knowledge and design immunological experiments to demonstrate innate, humoral or cytotoxic T lymphocyte responses and figure out kind of immune responses in the setting of infection (viral or bacterial). Immunological Techniques, Conventional and new generation vaccines.
2.3.1	Enzymology	On completion of this course, students will be able to understand and comprehend the following: Allosteric interactions and binding isotherms of enzymes.The cooperativity, Hill and Scatchard plots.kinetics of allosteric enzymes Applications of immobilized enzyme technology anddesigning and configuration of immobilized enzyme reactors. Industrial and diagnostic applications of enzymes.
2.3.2	Genomics and Proteomics	On the completion of this course, students will be able to understand and identify various bioinformatics resources and data formats. Analyze various types of Multi Omics data and interpret the results effectively.
2.4.1	Fermentation Technology	At the end of this course, students will be able to understand the process of fermentation, various types of fermentations. Upstream and Downstream process in an industrial setup.
2.4.2	Basic Bioinformatics	At the end of this course the students will be able to access the various biological data resources, understand and process the biological data and interpret the results.
3.1	Agricultural Biotechnology	On the completion of this course, students will be able to understand various biotechnological intervention for preservation of plant gene pool, improvement of plant varieties, perform the tissue culture and regeneration of plants from various explants.
3.2	Animal Biotechnology	On completion of this course, Students will be able to gain strong understanding of animal-based cell cultures system. This will help them to take up animal based biological research as well as placement in the relevant biotech industry.
3.3	Environmental Biotechnology	On completion of this course, students should be able to learn basic principles and characteristics of biochemical technology in Water and Wastewater treatment; they will also know about *in situ* and *ex situ Bioremediation* along with recent advances in techniques for studying unculturable microbial communities.
3.4	Pharmacological Biotechnology	At the end of this course, students will be able to identify important medicinal plants, collect the samples, process and isolate the important bioactive compounds and will be able to performs various bioassays important for bioactivity screening of various phytochemicals.
3.4.1	Plant Tissue culture technology	Students will be able to gain fundamental and applied knowledge in plant biotechnology and its uses

3.4.2	Healthcare Biotechnology	On completion of this course, students will be able to learn-about application of industrially important organisms, Diagnostic techniques, fermentation technology, Nano technology and biocontrol agents.
4.1	Bioprocess Technology	At the course the end of students will be able to: • Appreciate relevance of microorganisms from industrial context; • Carry out stoichiometric calculations and specify models of their growth; • Give an account of design and operations of various fermenters; • Present unit operations together with the fundamental principles for basic methods in production technique for bio-based products • Give an account of important microbial/enzymatic industrial processes in food and fuel industry and downstream processing.
4.2	Medical Biotechnology	After successful completion of these course students will be able to: • Study the principles of chemotherapy, toxicology and immunopharmacology • Understand the concept of drug discovery, evaluation, delivery and pharmacogenomics • Understand the concept of biomolecules like protein-based therapeutics. • Learn the difference between development of Biotechnology Products of macromolecules and Chemical Products, • Understand the concepts of cancer immunotherapy, immunopharmacology • Compare and contrast different microbial diseases, including properties of different types of pathogens, and mechanisms of pathogenesis and carcinogenesis.
4.3	Research Methodology	At the end of the course students will be able to: • Understand the methodologies of scientific research and applying the same to publish papers; • Understand and practice scientific reading, writing and presentations; • Appreciate scientific ethics through case studies.

M. Sc., Microbiology Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. Practice safety measures in microbiology by using appropriate protective, biosafety and emergency procedures.
2. Learn microbiological skills and techniques through understanding principle, performing practical and research projects.
3. Describe diversity of microorganisms, bacterial cell structure and function, microbial growth and metabolism, and the ways to control their growth by physical and chemical means.
4. Explain the basic genetic systems of bacteria, bacteriophage and plasmids
5. Contribute to the development of innovative and creative scientific knowledge, technology development and creators of entrepreneurs and self sustainable individuals.
6. Describe microbial processes that can be used for the development of biochemical and immunological tools to improve the quality of human life.
7. Study the cell biology, biochemistry, growth as well as application of environmentally and industrially important microbes with a specific emphasis on improving environmental sustainability and human health.
8. Understand the concepts of role of microorganisms in bio-geochemical processes like leaching of metals and bioremediation methods.
9. Become efficient microbiologist in food beverages industry, pathology laboratories, microbial testing of any product to certify quality control and assurance.
10. Explain the role of microorganisms in food production and preservation, and their ability to cause food-borne infections.
11. Understand the concept of disease development, spread, control and eradication from society.
12. Document and report on experimental protocols, results and conclusions.

I Semester

Paper Title - MB HC-1.1: Fundamentals of Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Learn about the different fields in microbiology and gain knowledge about the different types of microorganisms and their significance.
2. Learn about theory and practical skills in microscopy and their handling techniques and staining procedures.
3. Learn about prokaryotic and eukaryotic cell structures, nutritional requirement of microorganisms and techniques for microbial growth measurement.

4. Know about various culture media and their applications, cultivation and culture preservation for routine microbiological skill handling.
5. Know the various physical and chemical methods for control of microorganisms along with different methods of disinfection and sterilization.
6. Understand different systems for microbial classification and nomenclature for the study of microbial biodiversity.

Paper Title- MB HC-1.2: Biochemistry and Biostatistics

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Gain fundamental knowledge on structure, functions and metabolism of biomolecules.
2. Understand the properties of carbohydrates, proteins, lipids, DNA, RNA, glycoproteins, glycolipids and their importance.
3. Compare the types of noncovalent chemical bonds important to bring the stability of biomolecules.
4. Understand the basic concepts of enzyme biochemistry, its kinetics and regulation
5. Articulate and differentiate working principles, instrumentation and applications of various techniques used to analyze properties and structures of biomolecules.
6. Apply the principles of statistics for designing microbiological experiment, statistical analysis, and interpretation of results and get acquitted with basic approach of research methodology.

Paper Title- MB HC -1.3: Microbial physiology and bioinformatics

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Demonstrate significant knowledge and understanding of microbial physiology, metabolism and ecology.
2. Learn about bioenergetics and carbohydrate metabolism
3. Gain knowledge about photosynthesis mechanisms in microorganisms, metabolism of lipids and nitrogenous compounds.
4. Understand secondary metabolism of fungi and bacteria.
5. Gain working knowledge of bioinformatics tools and methods.
6. Critically analyze and interpret results of their study.

Paper Title- MB SC -1.7 (A): Mycology

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Gain knowledge about distribution of fungi in nature and positive negative impacts of fungi in nature
2. Know the structural and functional diversity of fungi and their mutual relations.
3. Apply the knowledge in fungal taxonomy, bioremediation and bioprospecting of secondary metabolites and industrially important fungal enzymes.
4. State the economic importance of different fungi.
5. Understand mycotoxins and their importance
6. Know about cultivation of mushroom for entrepreneurship.

Paper Title- MB SC -1.7 (B): Principles of Genetics

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. History and scope of Genetics
2. To study the laws and concepts of Mendelian inheritance.
3. Understanding the mechanism of sex determination in different organisms.
4. Application of statistical concepts used in health medical science, plants and animal system
5. Describing the chromosomal basis of inheritance and linkage, explaining the environmental influences on gene expression,
6. Describing population structure in terms of genetic variation, evaluating mechanisms that change gene frequencies in populations and applying statistical methods to describe population structure.

II Semester

Paper Title- MB HC -2.1: Microbial Genetics and Molecular Biology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Explain central dogma of molecular biology (replication, transcription, and translation)
2. Describe the structure and synthesis of DNA and RNA, organization of prokaryotic and eukaryotic genomes.
3. Explain various levels of gene regulation in both prokaryotic and eukaryotic organisms.
4. Explain the concept of mutagenesis, mutation and mutants and their significance in microbial evolution.
5. Explain concepts in DNA repair mechanisms, and recombination as a molecular biology tool, describe transcriptional process and RNA editing.
6. Understand and articulate applications of molecular biology in the modern world.

Paper Title- MB HC -2.2: Medical Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Acquire a good understanding of infection process, common diseases caused by bacteria, fungi, viruses and parasites and their stages of infection.
2. Describe various methods that can be adopted to control spread of infection in community, understand various hospital, air and water borne diseases.
3. Understanding about host pathogen interaction, normal micro flora in the human body and sample collection and its analysis.
4. Understand the role of zoonotic infections and emerging infectious diseases.
5. Gain knowledge of various pathogenic strategies, antimicrobial resistance mechanisms and prophylaxis.
6. Gain knowledge about vaccination, screening of various diseases.

Paper Title- MB SC -2.5 (A): Plant Microbe interaction

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Describe the positive and negative interaction between microbes and plants.
2. Understand molecular mechanisms of disease resistance in plants and apply the knowledge to solve problems associated with disease management.
3. Demonstrate detailed understanding of how immune receptors function in the defense of plants against invading microbes.
4. Perform basic experiment that is aimed at studying plant-microbe interactions.

5. Will gain insight into genetics of host-pathogen interactions, resistance mechanism in plants understand physical, chemical & biological methods of disease control
6. Attain knowledge about designing of molecular diagnosis of plant disease and development of transgenic plants with applications and constraints.

Paper Title- MB SC -2.5 (B): Microbial Enzymology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Gain fundamental knowledge about enzymes and their functions.
2. Demonstrate the enzyme extraction and purification methods.
3. Understanding about the importance of industrially important fermentation products.
4. Elucidate the bioenergetics and microbial metabolic pathways.
5. Demonstrate the properties, and significance of microbial enzymes.
6. Understand the enzyme kinetics, enzyme regulation and applications of isolated enzymes in industry.

Paper Title- MB Open Elective -2.7 (A): Water Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the natural microflora in the raw water and outline standard criteria of drinking water
2. Describe the different biological and chemical treatments that should be carried out for drinking water as well as for waste water.
3. Know the different water-related diseases.
4. Gain the knowledge about the risks and hazardous resulting in biofilms.
5. Gain knowledge about the microbiological tests that should be done for drinking water.
6. Understand and learn about various bioreactors and its usage, effluent recycle.

Paper Title- MB Open Elective -2.7 (B): Agriculture Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Explain various aspects of agriculture microbiology.
2. Understand the properties of different types of soil and interaction of microbes with plants, insects and microbes itself.
3. Understand importance of biological nitrogen fixation and its mechanism
4. Understand various plant microbe interactions especially rhizosphere, and phyllosphere.
5. Mass production and applications of different biofertilizers like *Rhizobium, Azotobacter, Azopsirillum, Frankia* etc..
6. Understand the role of microorganisms in promoting plant growth and their protection from pathogens.

III Semester

Paper Title-MB HC -3.1: Agriculture Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Competently explain various aspects of agriculture microbiology and to become familiar with current research in soil and agriculture microbiology.
2. Understand the positive and negative interactions of microbes with plants.
3. Efficient in understanding the different symptoms, epidemiology and management of various plant and seed borne diseases.
4. Understand various plant microbes interactions especially rhizosphere and phyllosphere microorganisms.
5. Understand the role of microorganisms in promoting plant growth and their protection from pathogens.
6. Learning the application of microorganisms as biofertilizers and their mass production techniques.
7. Understand strategy of plant defense mechanism.

Paper Title-MB HC -3.2: Immunology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Describe the structure and organization of various components of the immune system and their function.
2. Explain about the importance of innate immunity and acquired immunity.
3. Describe the genetic basis for the expression of immune cell receptors and generation of immunological diversity, complement system.
4. Make them understand the salient features of antigen antibody reaction and its uses in diagnostics and various other studies.
5. Learn about immunization and their preparation and its importance.
6. Understand the operation and the mechanisms which underlie the immune response.
7. Well versed with immunity to infectious microbes, hypersensitivity, autoimmune disease, and transplantation immunology.

Paper Title-MB SC -3.5 (A): Immunotechnology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. The basic and general concept of immunotechnology.

2. Basic Understanding of various immunological process like innate and adaptive immunity, cells and organs of immune system, antigen and antibody interaction, immunogenicity and antigenicity, epitopes and antibody structure.
3. Describe the organization of Ig genes, class switching in constant regions of genes and expression and regulation of Ig genes.
4. How B-cell and T-cell are activated and differentiate.
5. Study immune response during allergic reaction, cancer, AIDS and other immunodeficiency diseases.
6. Development of vaccines and molecular diagnostic kits to detect various diseases.

Paper Title-MB SC -3.5 (B): Fermentation technology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the fermentation processes involved for various products and investigate the applications of various techniques for fermentation products
2. Design a simple containment system of fermenter to be monitored and controlled in fermentation process.
3. Isolate, identify and develop the microbial inoculum for industrial processing.
4. Improve and screen better strains for fermentation.
5. Understand the microbial growth and their role in producing commercial metabolites.
6. Study different types of fermentation media and fermenters used for production of different metabolites.

Paper Title-MB Open Elective -3.7 (A): Diagnostic microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Explain the isolation of pathogens from clinical samples, develop skills of techniques and procedures commonly used in the clinical microbiology laboratory.
2. Use appropriate safety protocol and laboratory techniques for processing specimens and acquire knowledge of culture techniques appropriate for the primary culture sites.
3. Recognize the expected “normal” flora for each culture site.
4. Understand the importance of Clinical Microbiology laboratory organism isolation and identification in diagnosing and monitoring diseases.
5. Associate selected infectious diseases with appropriate culture requirements and causative agents.
6. Understand the recommended process for identifying unknown pathogens.

Paper Title-MB Open elective -3.7 (B): Industrial Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the scope of industrial microbiology
2. Gain knowledge of isolation, maintenance and handling of industrially important microbial cultures in the laboratory.
3. Develop an understanding of fermentation, fermenter design, inoculums, media, their formulation and techniques of sterilization.
4. Gain knowledge about upstream and downstream processes in a fermentation process.
5. Learn the concepts of processes, instruments, management and quality being used in industries to produce the products using microorganisms.
6. Gain knowledge about production and applications antibiotics, vitamins, amino acids, alcoholic beverages, enzymes and organic acids.

IV Semester

Paper Title-MB HC -4.1: Food and Industrial Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Gain knowledge of isolation, maintenance and handling of industrially important microbial cultures in laboratory.
2. Gather information regarding microbes causing food intoxications and food-borne infections.
3. Use standard methods and procedures for the microbiological analysis of milk and different food products.
4. Know about the production and evaluation of the quality of starter cultures and fermented food products.
5. Study the characteristics of food-borne and spoilage microorganisms and preventive measures.
6. Acquire knowledge about various industrially relevant microbial products and their production process.
7. Apply the knowledge about the food preservation, food fermentation, food safety, quality control and validation.

Paper Title-MB HC -4.2: Microbial Biotechnology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the tools, techniques, advantages and disadvantages of genetic engineering.
2. Understand and describe DNA, fingerprinting and its application in forensic science.
3. Understand the methods of production of health related compounds.
4. Understand the applications of biotechnology in agriculture, medicine and environment.
5. Understand the importance of microbial enzymes, their applications, production process and relate biotransformation principles to biotransformation of steroids
6. Understand the production and importance of genetically modified foods.
7. Comprehend the importance of GMO in producing heterologous proteins and the technology used.

Semester IV Paper Title-MB-4.3: Environmental Microbiology

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Overview the till date developments in the field of environmental microbiology with special emphasis on the role of microbes in mitigating environment pollution.
2. Develop the concepts of microbial community structure and role of microorganisms in biogeochemical cycles.
3. Understand the adaptations and biotechnological applications of microbes of extreme environment.
4. Describe the role of soil microbes in nutrient transformation, plant microbe interactions.
5. Describe the role of microbes in solid and liquid waste management, gaining knowledge of various methods employed in sewage treatment and solid waste treatment.
6. Understand the role of microflora in degradation of xenobiotic compounds like petroleum, paper, wood etc., to reduce the load of pollutants in environment as well as emphasis on biofouling and bioleaching to control pollution.

Semester IV Paper Title-MB-4.7: Project work

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Formulate a scientific question.
2. Develop the ability to apply the tools and techniques of microbiology in conducting independent research.
3. List the objectives and state the hypothesis of the research project.
4. Outline the methodology that will be followed to achieve the listed objectives.
5. Employ the finalized methodology to solve the problem which has been undertaken.
6. Analyze the data which has been generated by carrying out several experiments.
7. Create document and report on experimental protocols, results, and conclusions.
8. Present and explain their research findings to the audience effectively.

M. Sc., WILDLIFE AND MANAGEMENTand Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. Understand ecological principles governing wildlife populations, communities, and ecosystems.
2. Evaluate threats to biodiversity and ecosystems, including habitat loss, pollution, and climate change.
3. Apply conservation strategies to mitigate threats and promote biodiversity conservation.
4. Acquire proficiency in wildlife monitoring and survey methods.
5. Implement sustainable wildlife management practices balancing conservation with human needs.
6. Apply ecological principles to address conservation challenges and management issues.
7. Advocate for evidence-based policies and legislation prioritizing wildlife conservation.
8. Identify common wildlife diseases and implement disease surveillance and management strategies.
9. Engage with stakeholders and communities in wildlife conservation initiatives.
10. Design and conduct scientific research projects in wildlife ecology and conservation.
11. Analyze field data using statistical and spatial analysis techniques.
12. Adhere to ethical standards and promote professionalism in wildlife management.
13. Foster partnerships and collaborations to address conservation challenges.
14. Promote environmental education and awareness for conservation stewardship.
15. Respect cultural values and indigenous rights in conservation efforts.

Semester I Paper Title- HC-1.1: SYSTEMATICS AND FORESTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the historical development and key concepts of biogeography, including continental drift, dispersal mechanisms, and biogeo-graphical realms and provinces.
2. Explain the theory of island biogeography and its relevance to ecological studies, including the role of corridors and dispersal barriers.
3. Identify the differences between plant and animal geography and discuss the origin of Indian flora and fauna.
4. Classify plants using various systematic approaches such as Bentham and Hooker, Engler and Prantle, and Hutchinson systems.
5. Apply herbarium techniques and botanical nomenclature principles in plant identification and taxonomy.

6. Analyze the floral diversity and botanical regions of India, considering conservation issues and strategies.
7. Describe the major vegetation types in India and understand the principles of vegetation classification and plant succession.
8. Classify animals using Linnean and modern taxonomic systems, including invertebrates and vertebrates up to orders.
9. Explain the principles and techniques of forestry, including production forestry, wood technology, and forest utilization.
10. Apply forest mensuration methods for measuring tree attributes, understand forest management principles, and implement silviculture techniques for natural and artificial regeneration of forests.

Semester I Paper Title- HC 1.2: WILDLIFE ECOLOGY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Explain the fundamental concepts of ecology, including the structure of ecosystems, biotic and abiotic components, and ecological functions such as energy flow and biogeochemical cycles.
2. Analyze the behaviors of wildlife species using concepts from behavioral ecology, including instinctive behavior, learning, social organization, communication, and plant-animal interactions.
3. Understand the importance of population ecology in wildlife studies, including population attributes, life tables, growth rates, population regulation, and monitoring techniques.
4. Interpret population dynamics and genetics, including concepts of density-dependent and density-independent regulation, predator-prey models, carrying capacity, and population dispersal.
5. Describe the characteristics, compositions, and structures of communities in wildlife ecosystems, including qualitative and quantitative measures of community organization.
6. Analyze species interactions within communities, including competition, mutualism, commensalism, parasitism, and predation, and their implications for community dynamics.
7. Evaluate factors influencing species diversity, including niche differentiation, resource partitioning, and competitive exclusion, using quantitative measures such as species richness, diversity, and evenness.
8. Discuss community stability and resilience, including the role of guilds, trophic interactions, and the evolutionary processes shaping community structure.

9. Apply ecological models and theories, such as null models and competition models, to understand species interactions and community dynamics.
10. Interpret the implications of energy flow, productivity, and food webs for species diversity and ecosystem functioning in wildlife habitats.

Semester I Paper Title- HC 1.3: FIELD TECHNIQUES IN WILDLIFE STUDIES

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the various field survey methods and equipment used in wildlife studies, including census techniques, sampling methods, mapping principles, and regulatory permissions.
2. Differentiate between direct and indirect census methods and apply appropriate techniques for population estimation of mammals, amphibians, reptiles, fishes, birds, and invertebrates.
3. Apply transect and quadrat methods effectively in wildlife surveys and understand the principles behind block counts, dung counts, water hole census, and aerial surveys.
4. Utilize advanced techniques such as camera trapping, electro-fishing, mist netting, radio telemetry, and satellite tracking for wildlife monitoring and research.
5. Design sampling schemes for population estimation using distance-based sampling methods and mark-recapture techniques, and interpret demographic parameters and diversity indices.
6. Identify wild animals based on natural markings, back profiles, tail types, and animal coats with natural marks, and understand the ethical considerations in marking animals for research purposes.
7. Apply statistical methods commonly used in wildlife studies, forestry, and field experiments, including measures of central tendency, dispersion, probability, and hypothesis testing.
8. Interpret tabulated data and graphical representations, including frequency distributions, standard deviation, and coefficient of variance.
9. Conduct statistical tests such as t-tests, Mann-Whitney U test, ANOVA, Kruskall Wallis one-way ANOVA, and Chi-square test for analyzing wildlife data.
10. Understand the significance of correlation and regression analysis in wildlife research, including Spearman Rank correlation coefficient and coefficient of determination.

Semester I Paper Title- SC 1.4 (a): AQUATIC ECOLOGY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the classification and characteristics of freshwater ecosystems, including lentic and lotic habitats, and the factors influencing their ecology.
2. Identify and describe the various types of freshwater communities, such as lakes, ponds, rivers, and streams, and analyze the importance and threats to their biodiversity.
3. Explain the concept of limnology and the abiotic and biotic factors affecting freshwater ecology, as well as the importance of aquatic bio-monitoring and pollution control in freshwater ecosystems.
4. Define marine ecosystems and identify different types, including salt marshes, mangroves, coral reefs, and estuaries, and analyze the threats to marine ecosystems.
5. Describe estuarine ecosystems, their formation, characteristics, and classification, and evaluate the issues facing Indian estuarine ecosystems, including pollution, habitat loss, and climate change.
6. Discuss the formation, classification, and ecological functions of coral reefs, along with their conservation strategies and distribution in India.
7. Explain the characteristics and adaptation of mangroves, their role in supporting biodiversity, and the threats they face, including exploitation and habitat degradation.
8. Define wetland ecosystems and their characteristics, functions, and types, and analyze India's wetlands and their conservation challenges.
9. Evaluate the hydrology, soil biogeochemistry, vegetation, and fauna of wetland ecosystems, and discuss the impacts of climate change on wetlands.
10. Understand wetland laws and acts, the Ramsar Convention, and criteria for identifying wetlands of national importance, as well as methods for monitoring wetland variables and assessing wetland ecosystem services.

Semester I Paper Title- SC 1.4 (b): TERRESTRIAL ECOLOGY
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Define and distinguish between different types of tundra ecosystems, including Arctic tundra and Alpine tundra, and describe the distribution and adaptations of flora and fauna found in these regions.
2. Identify and classify various forest ecosystems, including coniferous forests, temperate deciduous forests, tropical rainforests, and Indian forest types, and analyze the causes and effects of deforestation.
3. Understand the characteristics and ecological roles of grassland ecosystems, including different types of grasslands, animal dependency, economic importance, and the impact of grazing and fire.

4. Define desert ecosystems and describe the adaptations of plants and animals to survive in arid regions, with a focus on Indian deserts such as the Thardesert and cold/temperate deserts.
5. Analyze the interactions between plants and animals for survival in desert ecosystems and evaluate the causes, status, and control measures of desertification.
6. Explain the ecological services provided by tundra ecosystems, including their role in climate regulation, carbon sequestration, and biodiversity conservation.
7. Evaluate the ecological functions of forest ecosystems, including carbon storage, soil formation, water regulation, and habitat provision for wildlife.
8. Discuss the economic importance of grassland ecosystems, including their role in agriculture, livestock grazing, and biodiversity conservation.
9. Understand the adaptations of plants and animals in different terrestrial ecosystems, including physiological, morphological, and behavioral adaptations.
10. Apply ecological principles to analyze and propose conservation strategies for terrestrial ecosystems, including habitat restoration, sustainable land management, and biodiversity conservation.

Semester II Paper Title- HC 2.1: REMOTE SENSING, GIS AND ADVANCED TECHNIQUES

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the principles and basic concepts of remote sensing, including the electromagnetic spectrum, energy sources, and interaction with various surfaces such as air, water, soil, rock, and vegetation.
2. Identify different remote sensing data acquisition systems and concepts such as spectral and spatial resolution, and analyze the use of microwave remote sensing.
3. Describe the fundamentals of aerial remote sensing, including aerial photography techniques, geometric characteristics of aerial photographs, and interpretation keys for aerial photographs.
4. Explain Indian remote sensing missions, satellite data products, and the interpretation of satellite data, including visual and digital image processing techniques.
5. Define Geographic Information System (GIS) and its components, data models (Raster and Vector), resolution, orientation, and overlaying techniques, and analyze GIS analysis functions.
6. Apply GIS fundamentals in data management, conceptual design, system integration, and application development.
7. Discuss the applications of remote sensing and GIS in forestry and wildlife monitoring and management, including forest classification, inventory, mapping, and monitoring of forest cover and wildlife habitats.

8. Evaluate the use of remote sensing and GIS in damage detection, assessment, and planning for forest area development and wildlife management.
9. Apply remote sensing and GIS techniques in wildlife habitat evaluation, mapping of corridors, establishment of wildlife reserves, and prediction of forest fires.
10. Demonstrate practical skills in remote sensing and GIS through hands-on exercises, data analysis, and interpretation tasks, and integrate these techniques into real-world conservation and management scenarios.

Semester II Paper Title- HC 2.2: ENTOMOLOGY, HERPETOLOGY AND ICHTHYOLOGY

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Describe the history, evolution, and classification of insects, reptiles, amphibians, and fishes, including their diversity and taxonomy.
2. Identify and classify major insect orders, such as Hymenoptera, Lepidoptera, Coleoptera, Anisoptera, and Zygoptera, and discuss their morphology, mouthparts, development, respiration, and reproduction.
3. Analyze the economic importance and ecological roles of insects, including their adaptation and use as indicators for biodiversity monitoring.
4. Evaluate forest entomology, including the types of forest insects, forest pests, their life cycles, and management strategies for pest control, with specific case studies.
5. Describe the general characteristics of reptiles and amphibians, including their classification up to orders, adaptations, eco-physiological adaptations, and systematics.
6. Discuss the biology and conservation issues of major Indian amphibians, freshwater and marine turtles, crocodilians, lizards, and snakes, including conservation efforts.
7. Classify and discuss the major groups of fishes in India, ichthyogeography, and diversity of freshwater fishes, as well as their food, digestion, nutrition, growth, respiration, and reproduction.
8. Evaluate the ecology and adaptation of fishes in different ecosystems and their economic importance, including sport fishes in India.
9. Analyze threats to fish populations and conservation prospects, including threatened fishes of India and methods to study fish ecology, diversity, abundance, and habitats.
10. Apply knowledge gained in entomology, herpetology, and ichthyology to real-world scenarios, including biodiversity conservation, ecosystem management, and sustainable resource use.

Semester II Paper Title- SC 2.3a: BIODIVERSITY AND CONSERVATION OF NATURAL RESOURCES

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Define biodiversity and its various levels, including genetic diversity, species diversity, and ecosystem/community diversity, and understand the measurement of biodiversity using species richness and diversity indices.
2. Analyze the importance of biodiversity in food webs and ecosystem services, including biological, ecological, and social services provided by diverse ecosystems.
3. Describe the natural terrestrial ecosystems of India, including forest, grassland, wetland, and desert biodiversity, and assess the importance of agro-biodiversity and bio-cultural diversity for livelihoods.
4. Identify the climatic zones and biodiversity hotspots in India and discuss the major protected areas and initiatives for biodiversity conservation at governmental, NGO, and community levels.
5. Explain the causes of biodiversity loss, including habitat loss, hunting, exploitation, introduction of exotic species, accidental mortality, and climate change, and discuss modes of biodiversity conservation.
6. Identify major biodiversity areas globally, including mega-diversity countries and biodiversity hotspots, and understand global initiatives such as the Man and Biosphere Programme and Biosphere Reserves.
7. Discuss the concept of natural resources, their classification, extraction, depletion, and the need for protection and management, with a focus on Indian natural resources.
8. Compare conservation and preservation approaches to natural resource management and analyze the socio-economic and political realities of conservation movements in India.
9. Describe the phases of conservation and their impacts on people, identify stakeholders involved in conservation efforts, and assess the roles of international conservation bodies such as IUCN, UNDP, FAO, and WWF.
10. Evaluate the economic reasons for over-exploitation of natural resources, the ecosystem functions and services provided by biodiversity, and the need for integrating environmental and economic considerations in natural resource management.

Semester II Paper Title- SC 2.3b: ENVIRONMENTAL POLLUTION, EIA AND ECOTOXICOLOGYStudent Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Define and understand the components of the biosphere - hydrosphere, atmosphere, and lithosphere, and identify sources, types, and effects of water, air, solid, soil, noise, and radiation pollution.

2. Analyze the sources and effects of various pollutants such as NOx, SOx, SPM, hydrocarbons, acid rain, global warming, photochemical smog, ozone depletion, and their impacts on biota, as well as control measures.
3. Describe the types, sources, collection, transport, treatment, disposal, and recycling methods of solid and hazardous wastes, and identify pollutants and control measures for soil and noise pollution.
4. Understand environment monitoring, including abiotic parameters monitoring for different habitats, the role of keystone and indicator species, and various monitoring techniques and methods.
5. Explain the concept of Environmental Impact Assessment (EIA), its need, Indian policies requiring EIA, the EIA cycle and procedures, components of EIA, and key elements of an initial project description and scoping.
6. Identify the drawbacks and recommendations for EIA in the Indian system and understand the Environmental Supplement Plan (ESP).
7. Introduce the fundamentals and scope of ecotoxicology, including toxicity types, classification of toxins, poison, types of poisoning, mechanism, and factors influencing toxicity.
8. Describe bioassay methods, acute, chronic, and reproductive toxicity, and factors affecting toxicity and dose-response relationships.
9. Analyze the introduction, classification, basic aspects of pesticide toxicity, fertilizer types, and mechanisms of bioaccumulation, biomagnification, bioamplification, bioconcentration, and effects of heavy metals like arsenic, cadmium, lead, and mercury.
10. Discuss natural toxicants, including animal venoms and poisons, toxins produced by fishes, insects, microbial (algal and bacterial), and plant toxins, as well as safety standards and regulatory provisions.

Semester II Paper Title- EL 2.4: WILDLIFE CONSERVATION

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Define wildlife and recognize its values, including ethical, scientific, medicinal, game and recreation, and ecological values, as well as the significance and scope of wildlife conservation.
2. Understand the global distribution of wildlife and identify Indian wild fauna, as well as wildlife byproducts and trade.
3. Identify wildlife categories based on the IUCN Red List criteria, such as extinct, endangered, threatened, vulnerable, and data deficient categories, and analyze the causes

of wildlife depletion, including habitat degradation and destruction, exploitation for commercial purposes, deforestation, agricultural expansion and grazing, urbanization and industrialization, and forest fires.

4. Describe the historical background of wildlife conservation, the need for conservation projects in India, and differentiate between ex-situ and in-situ conservation methods.
5. Identify and analyze various protected areas for wildlife conservation, such as national parks, wildlife sanctuaries, wildlife reserves, and biosphere reserves, with a focus on those in Karnataka.
6. Understand the concepts of umbrella species and flagship species-based conservation programs, and analyze human-wildlife conflicts and mitigation strategies.
7. Discuss the constitutional provisions and legal frameworks for wildlife conservation in India, including the Wildlife Protection Act of 1972, as well as national and international guidelines and protocols.
8. Apply knowledge gained in wildlife conservation to analyze and propose conservation strategies for preserving biodiversity and mitigating human-wildlife conflicts in different ecosystems and regions.

Semester III Paper Title-HC 3.1: WILDLIFE CONSERVATION AND MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the importance of wildlife conservation, including its ecological, aesthetic, recreational, scientific, and economic values, and recognize the significance of Indian cultural ethos in wildlife conservation.
2. Identify and categorize wildlife species based on conservation priorities, such as unique species, monotypic species, keystone species, K-selected species, endangered species, and endemic species.
3. Explain the concept of protected area networks and their management, including the role of wildlife corridors in habitat connectivity and conservation practices.
4. Describe international conventions and conservation efforts, including World Heritage Sites, the Convention on Biological Diversity, the Ramsar Convention, the Convention on Migratory Species, CITES, and notable conservation movements such as Chipko&Appiko movements and the Global Tiger Forum.
5. Analyze individual species conservation projects, including Project Tiger, Project Lion, Project Hangul, Project Crocodile, and others, by understanding their aims, objectives, threats, mitigation strategies, and success rates.
6. Recognize the roles and contributions of various organizations in wildlife conservation, such as IUCN, UNEP, UNDP, FAO, WWF, UNESCO, WII, IBWL, ICFRE, TRAFFIC,

WCS, NCS, BSI, ZSI, FRI, and others, as well as initiatives like the Man and Biosphere (MAB) program and Indian Institute of Forest Management.

7. Explain wildlife policies and legislations, including constitutional provisions, the Wildlife (Protection) Act, 1972, the Environmental (Protection) Act, 1986, the National Forest Policy 1988, the Biological Diversity Act 2002, and other relevant regulations and protocols.
8. Analyze human-wildlife conflicts, including their causes, impacts, and reasons behind human-wildlife interactions, and propose preventive and mitigative strategies to reduce conflicts.
9. Examine major animals responsible for human-wildlife conflicts, such as human-elephant conflict, human-tiger conflict, human-leopard conflict, and human-monkey conflict, and discuss conflict zones, impacts, and case studies.
10. Apply knowledge gained in the course to develop comprehensive wildlife conservation and management plans, integrating conservation principles, policies, and practices to address contemporary conservation challenges effectively.

Semester III Paper Title-HC 3.2: ORNITHOLOGY AND MAMMALOGY

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Classify birds according to avian systematic classification and understand the habitat ecology of Indian birds, including coastal birds, inland water birds, high altitude birds, and desert birds.
2. Analyze the distribution of birds in India, their ecological and economic values, and their feeding ecology, including various feeding strategies such as insectivores, frugivores, nectarivores, granivores, carnivores, and scavengers.
3. Explain the functions of nesting in birds, nest site selection, types of nests, nest materials, and reproduction processes such as breeding seasons, seasonal reproductive cycles, sexual dimorphism, courtship and display, sexual selection, and mating systems.
4. Describe the phenomenon of bird migration and identify endangered and threatened bird species.
5. Trace the history of mammalogy and understand the evolution, morphology, and characteristics of mammals, including adaptations such as hibernation, torpor, aestivation, locomotion, and water regulation.
6. Classify mammals up to orders and analyze the adaptations of mammals based on body size variation, metabolic rate, feeding behavior, niche width, and reproduction.
7. Describe the anatomy, morphology, and function of mammalian skin and its derivatives.
8. Understand the behavior and social organization in mammals, including social and mating systems, territories, animal communication, and diet.
9. Analyze the digestive systems of mammals, including anatomy and function, with specific reference to herbivores and carnivores, such as tigers and elephants.

10. Apply knowledge gained in ornithology and mammalogy to identify, classify, and understand the behavior, ecology, and conservation status of bird and mammal species in diverse ecosystems, contributing to wildlife research, management, and conservation efforts.

Semester III Paper Title-SC 3.3a- HUMAN DIMENSIONS IN WILDLIFE MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the importance of wildlife in India, including its flora and fauna, and identify key protected areas and wildlife species.
2. Analyze the problems associated with wildlife management in India and explore various methods and conservation strategies adopted in the Indian context.
3. Evaluate the roles and functions of wildlife organizations and institutions at both national and global levels in wildlife conservation and management.
4. Critically review community-based conservation initiatives, examining reasons for both success and failure and extracting lessons learned.
5. Examine the challenges related to conservation-induced displacement and rehabilitation, and assess community survey methods, including participatory tools and techniques.
6. Analyze the costs and benefits of protected areas for local livelihoods, considering factors such as displacement, changes in land tenure, human-wildlife conflicts, and sustainable resource management initiatives.
7. Explore the concept of eco-development, its objectives, and its relevance in wildlife conservation, along with community participation and conservation-development linkages.
8. Conduct livelihood analysis and identify stakeholders in conservation, while also learning conflict management strategies in the context of park-people interface conflicts.
9. Learn about climate change, including its causes, impacts on ecosystems and biodiversity, and India's position and actions on climate change adaptation and mitigation.
10. Explore mitigation strategies for climate change, such as carbon sequestration, carbon sinks, carbon credits, carbon taxes, carbon offsetting, and geo-engineering, and their implications for wildlife management and conservation.

Semester III Paper Title-SC 3.3b: WILDLIFE ECOTOURISM

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the basic concepts, importance, and scope of wildlife ecotourism, along with the principles of sustainable development in wildlife tourism.
2. Evaluate the positive and negative impacts of wildlife tourism, including habitat disturbance, increased vulnerability of wildlife, and conservation efforts such as habitat restoration and anti-poaching measures.
3. Identify major wildlife tourism spots in India, including wildlife sanctuaries, national parks, and natural reserves, and analyze their significance for wildlife conservation and tourism.
4. Explore wildlife tourism destinations specifically in Karnataka, including tiger reserves, national parks, wildlife sanctuaries, and bird sanctuaries, and understand their unique features and attractions.
5. Develop skills in conservation communication and outreach, including writing popular articles, press releases, and news stories, interacting with media, and presenting information effectively to raise awareness about wildlife conservation and ecotourism planning.

Semester III Paper Title-EL 3.4: ORNITHOLOGY
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Students will gain an understanding of the habitat ecology of Indian birds, including coastal birds, inland water birds, and those found in high-altitude regions and deserts. They will learn about the distribution patterns of birds in India.
2. Students will explore the diverse feeding habits of birds, including insectivores, frugivores, nectarivores, graminivores, carnivores, and scavengers. They will understand how different bird species have adapted to obtain nutrition from various food sources.
3. Students will learn about territorial behavior in birds, including the functions and types of territoriality, as well as the defense mechanisms and site fidelity associated with territories. They will also study nesting behavior, including nest site selection, colonial nesting, and nest construction.
4. Students will study the reproductive strategies of birds, including breeding seasons, factors influencing breeding seasons, and seasonal reproductive cycles. They will learn about sexual selection, pair bonding, mating systems, and various aspects of reproductive behavior such as courtship, display, and parental care.
5. Students will explore the phenomenon of bird migration, including the timing and patterns of migration, as well as the economic values associated with migratory birds.
6. They will also examine the conservation status of endangered and threatened bird species, gaining insight into the importance of bird conservation efforts.

Semester IV Paper Title-HC 4.1: WILDLIFE HEALTH AND MANAGEMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Define disease and epizootiology, and understand the determinants of disease transmission in wildlife populations.
2. Analyze the relationship between disease and population dynamics, including the impact of occasional epizootics on population mortality.
3. Evaluate the importance of wildlife health studies in population management, including techniques for assessing animal health and condition through direct observations, physical examinations, and baseline data collection.
4. Explain the concept of quarantine and its significance in wildlife health management, including relevant regulations such as the Quarantine Act.
5. Identify common diseases affecting Indian wildlife, including viral, bacterial, protozoan, fungal, and parasitic diseases, as well as disorders like nutritional diseases, poisoning, stress, and capture myopathy.
6. Describe emerging and re-emerging diseases and their impact on wildlife populations, including zoonoses.
7. Demonstrate knowledge of capture and handling techniques for wild animals, including restraint techniques, capture methods, drug immobilization, and safety measures.
8. Understand the protocols and procedures for drug immobilization, including drug action, dosage, response, side effects, and complications.
9. Explain the management of wildlife-livestock interfaces and conservation, biodiversity loss, climate change impacts on wildlife health, and issues related to introduced/invasive species.
10. Evaluate strategies for wildlife health management, including the management of over-abundant wild animal populations causing damage, animal damage control techniques, and waterhole management for wildlife disease control.

Semester IV Paper Title-HC 4.2: APPLIED WILDLIFE SCIENCE

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the physiology and nutrition of wildlife, including energy content of foods, digestive system, metabolism, thermoregulation, and reproductive biology in birds and mammals.

2. Describe plant physiology, including the biochemistry of plants, plant hormones, photomorphogenesis, photoperiodism, flowering, trophism, nastic movements, plant diseases, and economic applications in food production.
3. Analyze captive wildlife management practices, including zoo and safari management, zoo sanitation, master planning, tourism management, visitor feedback evaluation, interpretative planning, and education methods in zoos.
4. Evaluate wildlife utilization methods, including non-consumptive and consumptive utilization, game ranching, controlled off-take from wild populations, marketing procedures, and wildlife tourism planning and economics.
5. Understand wildlife genetics, including the central dogma of molecular biology, Mendelian genetics, genetic code, molecular markers, PCR, DNA sequencing, genotyping, allelic variation, and its application for wildlife conservation.
6. Describe wildlife forensics protocols for species identification, including molecular markers and DNA analysis, and analyze wildlife crime case studies.
7. Evaluate current issues in wildlife conservation, including the Gadgil Committee and Kasthurirangan Report, human-wildlife conflicts, habitat fragmentation and destruction, wildlife committees in India, use of ICT by illegal wildlife traders, and new conservation projects at national and global levels.

Semester IV Paper Title-H.C. 4.3 Major Project work

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Formulate a scientific question.
2. Develop the ability to apply the tools and techniques of wildlife in conducting independent research.
3. List the objectives and state the hypothesisof the research project.
4. Outline the methodologiesthat will be followed to achieve the listed objectives.
5. Employ the finalized methodology to solve the problem which has been undertaken.
6. Analyze the datawhich has been generated by carrying out fieldwork and experiments.
7. Create document and report on experimental protocols, results, and conclusions.
8. Present and explain their research findings to the audience effectively.

Program and Course Outcomes of M. Sc. Zoology

Program Specific Outcomes:

After successful completion of the program, students will be able to;

- gain deeper understanding of key concepts of Zoology at biochemical, cellular and molecular level.
- elucidate knowledge and understand the complex interactions among various living organisms
- understand the physiology and endocrinology, reproduction and various processes at organisimal level.
- Strengthen the knowledge of fundamental and advanced genetics principles in light of advancements in understanding human genome and genomes of other model organisms.
- Understand the genetics of cancer, neurological disorders, and their impact
- describe the expression of genome revealing multiple levels of regulation and strategies to manipulate the same in the benefit of the mankind.
- get an insight into the advancement in computerized biology information, introduction to genomics and proteomics databases
- gain expertise in handling DNA sequence data and its analysis and get employed in R&D in the industry involved in DNA sequencing services, diagnostics.
- describe the theoretical and technical expertise in microarray technology and gene silencing
- understand the zoological science for its application in medical entomology, apiculture, aquaculture, agriculture and modern medicine.
- develop theoretical and practical knowledge in handling the animals and using them as model organisms
- understands the complex evolutionary processes and behaviour of animals
- understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
- The students will be well equipped to become very competent in research or teaching fields after completion of this program.

I Semester

Course HC.1.1 : Biosystematics, Non-chordata and Chordata

Student Learning Course Outcomes:

After successful completion of the course student will be able to;

- describe levels, importance, applications and goals of taxonomy.
- learn about the theories and types of biological classification
- acquire the knowledge of taxonomic procedures, and importance of Zoological nomenclature.
- expose to new trends in Systematics such as Cytotaxonomy, Numerical taxonomy, Cladistics, Molecular systematics.
- Learn and understand the phylogenetic tools and construction of phylogenetic trees.
- describe distinguishing characters of Non-chordates and chordates
- recognize life functions of lower and higher organisms.
- to understand the external as well as internal characters, comparative anatomy and physiology of different groups of Non-chordates and chordates.

Course HC-1.2: Animal Physiology and Endocrinology

Student Learning Course Outcomes:

After successful completion of the course student will be able to;

- understand the fundamental concepts of physiology
- understand mechanisms of various physiological processes such as digestion, respiration, circulation.
- Illustrate the physiology of the nervous and muscle contraction.
- learn the effect of environment on physiology of stress.
- know the structural organization of the endocrine system and how hormones regulate the cellular processes.
- be familiar with chemical messengers' role in communication endocrine system
- study the relation between hormones and reproduction in animals.
- illustrate how the homeostasis is related to endocrine system in normal physiology and disease

Course HC-1.3: Fundamental Genetics

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- explain principles and deviations to Mendelian principles

- learn mapping of genes and their linkage
- explain sex determining systems and dosage compensation
- elucidate the fine structure of the gene
- describe types, causes, implications of mutations
- understand the methods of gene transfer in prokaryotes using *E.coli*

Course SC 1.4a: Ecology and Evolution
Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn basic concepts of ecology and evolution
- develop the knowledge of community and population ecology
- understand the species interactions among living organisms.
- explain the biogeography
- describe the evolutionary thoughts
- understand the origin of cells and unicellular evolution
- describe the paleontology and evolutionary history
- explain molecular evolution
- describe the mechanisms of speciation

Course SC-1.4b: Biological chemistry and Biostatistics

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn basic chemical interactions and principles
- understand the chemical composition, structure, functions and metabolism of nucleic acids, carbohydrates, proteins, lipids, vitamins and enzymes
- describe the structure and function of enzymes
- explain the disorders associated with the carbohydrates and lipids.
- familiar with the clinical applications of enzymes
- describe the sampling methods, collection and classification, analysis and interpretation of data
- learn basic statistical methods applied in biology

II Semester

Course HC-2.1: Cell Biology
Student Learning Course Outcomes: After successful completion of the course student will be able to;

- give the overview of the prokaryotic and eukaryotic cell
- describe the structure and function of plasma membrane and intracellular organelles
- describe molecular organization of the eukaryotic chromosome
- give detailed structural organization of the cytoskeleton
- describe the mechanism of cell division and cell cycle
- understand the mechanism of cell communication
- illustrate the programmed cell death and aging.
- Explain the methods/techniques used in cell biology.

Course HC 2.2: Animal behaviour and Wildlife studies
Student Learning Course Outcomes: After successful completion of the course student will be able to;

- understand different behavioural patterns in animals
- describe various behavioural patterns in different animals.
- understand innate and acquired behaviours as well as functional aspects of learning and imprinting in animals including human.
- describe the social organization in animals and biological rhythms
- understand the importance and values of wildlife
- to be familiar with the conservation of diversity.
- familiar with the wildlife Legislation - its amendments and implementation.
- to implement management planning of wildlife in protected areas.
- learn the bird migration and environmental factors affecting bird migration

Course SC 2.3a: Developmental Biology
Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn the basic concepts of development
- explain the fundamental concepts of early embryonic development
- learn the fundamental concept of Organogenesis
- describe the model systems of development
- learn post-embryonic development
- understand the concept, types, ethical issues concerned with stem cells
- describe the medical implications of developmental biology

Course SC-2.3b: Economic Zoology

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn the culture of fishes, honeybees, and silkworm
- understand the economic importance of aquaculture, apiculture and sericulture
- familiar with the methods/techniques involved in aquaculture, apiculture and sericulture
- describe the application of genetic engineering related to aquaculture, apiculture and sericulture
- explain the pathological aspects and pests related to aquaculture, apiculture and sericulture

III Semester

Course HC 3.1: Molecular Biology and Biotechnology
Student Learning Course Outcomes: After successful completion of the course student will be able to;

- understand the fundamental concept of DNA Replication, transcription and translation
- describe the regulation of gene expression
- explain the mechanisms of DNA repair
- describe the mechanism and applications of gene silencing
- describe the steps, tools and applications of the genetic engineering
- explain the hybridoma technology
- familiar with transgenic technology and its applications
- learn the cell culture, and application of biotechnology

Course HC 3.2: Entomology
Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn taxonomy of insects
- describe the general insect morphology
- describe the insect physiology
- explain agriculturally, forensically and veterinary important pests and crops
- learn about integrated pest management and as weel as different methods pest control
- describe the pheromones in insects and their use in pest surveillance and management
- explain the bioluminescence in insects

Course SC.3.1a: Microbiology and Immunology

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- gain knowledge of different types of microorganisms and their significance
- describe the isolation and culture of microorganisms, and sterilization techniques
- explain the structure and classification of viruses, mycoplasma and yeast
- familiar with industrial microbiology
- explain fundamental concepts of immunity, immune cells, antigens and immunoglobulins
- describe the antigen-antibody reactions and Immunotechniques
- understand the mechanism of immune response, and immune autoimmune disorders
- describe the Major histocompatibility complex and Hypersensitivity, and vaccines

Paper 3.3b: Parasitology

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn the various types of parasites and hosts.
- understand the relationship between a parasite and the host and their effects.
- learn the classification and general characteristics of pathogenic parasites.
- differentiate the parasitic Protozoan, Trematodes, Cestodes, and Nematodes.
- know the geographic distribution, life cycle, pathogenicity, control and treatment of Protozoan, Trematode, Cestode, Nematode parasites.
- understand the important vector transmitted diseases and their control measures
- gain knowledge about virus transmitting nematodes, types and management of nematode issues.

IV Semester

Course 4.1: Advanced Genetics and Computational Biology

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- learn the genome organization of prokaryotes and eukaryotes, and genome projects
- acquire the knowledge of genetics basis of cancer and animal models of cancer
- understand the genetics of neurogenesis, and molecular basis of neurological disorders
- describe the polygenic inheritance and QTL mapping
- understand the human genome organization, and genetic basis of syndromes and disorders
- explain the genomics and genome sequencing
- explain the proteomics, protein structure determination and protein interactions

- learn to access databases and genomic tools
- develop skill in analysis genomic and proteomic data
- gain knowledge of applications of Genomics and Proteomics

Course 4.2: Environmental Pollution and Toxicology

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- understand the basic concepts of environmental pollution and toxicology.
- describe the various types and causes of pollution
- distinguish the effect of pollutants on human health, economy and wild environments.
- familiar with solid waste and biomedical waste management
- explain the impact of environmental impact assessment, and natural hazards such as Volcanoes, Earthquakes, Tsunamis and their effects
- comprehend the methods and applications to measure or detect pollutants, economic and health hazards
- develop knowledge of toxicity of pesticides agrochemicals and foods, among youngsters.
- know the pathways of transformation of toxicants and pesticides inside the body.
- gain the knowledge about heavy metal toxicity as well as various poisonous and, venomous organisms on the earth
- aware of the toxic cosmetics and their effects as well as safety regulations for usage of cosmetics
- know public health hazards due to smoking and other dangerous occupation.

Course 4.3: Project work

Student Learning Course Outcomes: After successful completion of the course student will be able to;

- identify skills and capabilities that are interested in a specialized scientific research
- formulate a scientific question and frame a hypothesis
- Develops the ability to apply techniques and methods in Zoological science research
- Plan a research design including sampling, observational statistical analysis.
- Analyze the scientific data and interpret the results
- Create a logically coherent project report, defend the work in viva voce and publish.

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Kuvempu University

Faculty of Science and Technology

School of Chemical Sciences

Biochemistry

Chemistry

Food Technology

Industrial Chemistry

Pharmaceutical Chemistry

M. Sc., Biochemistry Course and Program Outcome

PROGRAM SPECIFIC OUTCOMES

Overall, the program will help to,

1: Produce knowledgeable, trained and skilled postgraduates in the area of biochemistry and molecular biology.

2: Equip the postgraduates to take up innovative research in various branches of modern life sciences.

3: Acquire knowledge and skills to undertake a career in research either in industry or in an academic set up

4: Train the students for exploiting various biochemical and molecular biology tools to contribute towards newer areas of disease forecasting and diagnosis.

5: Contribute to the area of Biomedical science and education, Agriculture and Pharmaceutical Industries.

6: Apply the knowledge of experimental approaches to solve problems in the field of core biochemistry

7: Integrate and apply the techniques in Analytical biochemistry, Protein chemistry, Clinical biochemistry, Microbiology, Molecular biology and Bioinformatics.

8: Acquire scientific knowledge in Cell biology, Clinical Biochemistry, Molecular Biology, Analytical Biochemistry, Immunology, Enzymology and Genetic engineering.

9: Obtain awareness of the biochemical basis of human diseases, non-invasive diagnostics and drug development.

10. Provide the basis to contribute in the newer emerging areas such as personalized medicine, gene therapy and genome editing.

Semester I: Paper Title - BC-1.1: ANALYTICAL BIOCHEMISTRY.

Course Outcome: After successful completion of this course, students will be able to

1: Acquire knowledge to prepare solutions of different concentrations and analyse them spectrophotometrically in biological samples.

2: Understand the concept of testing and separation of analytes by chromatographic methods

3: Comprehend the theories and practical knowledge of separation of biological samples by various electrophoretic techniques

4: Acquire knowledge of cell culture system and techniques associated with microscopy and centrifugation.

5: Practically learn the concept of preparation of standards curves and perform quantitative estimations

6: Isolate biomolecules from biological samples and perform purity analysis by HPLC or TLC.

Semester I Paper Title- BC-1.2: BIOMOLECULES

Course Outcome: After successful completion of this course, students will be able to
1: Understand the classification, structure and function of biomolecules, the building block of cells.

2: Visualize the important biochemical processes and molecular events

3: Design the experiments to characterize the biomolecules based on its chemical nature

4: Develop the strategies to exploit the biomolecules for the benefit of mankind

Semester I Paper Title - BC-1.3: CELL BIOLOGY AND GENERAL MICROBIOLOGY

Course Outcome: After successful completion of this course, students will be able to
1: Acquire knowledge about ultrastructure and dynamics of different cell types

2: Understand the knowledge of membrane dynamics and transport system at cellular levels

3: Understand the concepts of cell division and functioning of different types of cells

4: Comprehend the history of Microbiology, types of microbes and their classification.

5: Learn microscopic examination of microbes, growth of microbes, nutritional requirements and growth curve.

6: Isolate pure cultures, enumeration and characterization of microbes by biochemical tests.

7: Understand the life cycle of viruses, bacteria and fungi and get acquainted with the genetics of viruses and bacteria.

8: Perform sterilization, preparation of culture media and plating technique (liquid and solid), culture, store and preservation of microbial strains.

9: Learn how to isolate microbes from soil, mouth flora and water samples and prepare pure cultures using streak plate and pour plate methods

10: Carry out growth curve measurement of bacterial population by turbidometry/Colony Forming Unit methods and various staining techniques.

Semester I Paper Title- BC-1.4: FUNDAMENTALS OF BIOCHEMISTRY

Course Outcome: After successful completion of this course, students will be able to

1: Understand the fundamental concepts of biology, chemistry and biochemistry.

2: Apply basic principles of chemistry to biological systems and molecular biology.

3: Relate various interrelated physiological and metabolic events.

4. Comprehend the occurrence and role of heterocyclic compounds in biological system

5. Understand the concept of thermodynamics in biological systems

6. Appreciate the importance of water and metal ions in biological systems

Semester II Paper Title - BC-2.1: ENZYMOLOGY

Course Outcome: After successful completion of this course, students will be able to

1: Understand the concept of catalysis and classification of enzymes in particular.

2: Comprehend enzyme kinetics and derive equations for various orders of enzyme catalysis.

3: Know the mechanism of enzyme catalysis in the presence and absence of inhibitors

4: Understand the various levels of regulation of enzyme activity, assay of enzyme catalysed reactions and determination of Vmax and Km values.

5: Differentially assay the isoenzymic forms of an enzyme

6: Partially purify enzyme in the nature form and assess its yield and purity

Semester II Paper Title - BC-2.2: METABOLISM OF FUEL MOLECULES AND BIOENERGETICS

Course Outcome: After successful completion of this course, students will be able to

1: Imbibe the knowledge above the relevance of thermodynamic principles in the living system

2: Comprehend the energy transduction and the spontaneity of the living system

3: Understand the catabolic and anabolic process of carbohydrate and its reciprocal regulation

4: Appreciate the role of carbohydrate in biological functions, beyond the production of ATP

5: Know nutrient sources turning into metabolic energy and the associated metabolic flux

6: Know the causes, effects and mitigation of various lipid and carbohydrate metabolic disorders

Semester II Paper Title - BC- 2.3: HUMAN PHYSIOLOGY AND NUTRITIONAL BIOCHEMISTRY

Course Outcome: After successful completion of this course, students will be able to

1: Apprehend the role of various digestive secretions in the process of digestion of food components and absorption mechanisms

2: Know the composition of blood, metabolism of haemoglobin, clotting mechanisms and the connective tissue components

3: Understand the mechanism of respiration, factors influencing interaction of carbon dioxide and oxygen with haemoglobin. Water, electrolyte and acid – base balance mechanisms

4: Understand xenobiotics and detoxification mechanisms of liver. Nerve impulse generation and transmission across and between neurons

5: Understand the mechanisms involved in muscle contraction and relaxation, photochemistry of vision, hormone production and their action

6: Acquire knowledge about nutrition, importance of vitamins and minerals in diet

7: Understand the concepts of and macro micronutrients in the context of human physiology

Semester II Paper Title - BC- 2.4: ENZYME PURIFICATION TECHNIQUES (ELECTIVE)

Course Outcome: After successful completion of this course, students will be able to

1: Know the concept of enzyme catalysis and their classification

2: Comprehend enzyme kinetics and derive equations for enzyme catalyzed reactions.

3: Understand the principle behind various chromatographic and electrophoretic techniques.

4: Decide the techniques to be applied for the purification of enzymes and determination of the purity of the isolated enzyme

5: Perform isolation of certain commercially important enzymes

Semester III Paper Title- BC-3.1: MOLECULAR IMMUNOLOGY AND CLINICAL BIOCHEMISTRY

Course Outcome: After successful completion of this course, students will be able to

1: Understand the immune system, kinds of immune responses, innate and adaptive immunity

2: Comprehend the role of primary lymphoid organs and secondary lymphoid organs in immunity, development of B and T cells, role of MHC in antigen presentation

3: Understand humoral immunity, structure of immunoglobulins, antibody classes, antibody diversity, cytokines, monoclonal antibodies and principle behind immunological techniques

4: Understand cell mediated immunity, MHC and immune response. B and T cell maturation, activation and differentiation.

5: Understand hypersensitive reactions, kinds, immunodeficiency disorders, kinds, transplantation immunology

6: Acquire knowledge about disorders associated with GIT secrertions

7: Understand the biochemical aspects of mental and neurological diseases

8: Understand the concepts of liver and kidney function tests and haematological analyses.

Semester III Paper Title- BC- 3.2: BIOCHEMICAL GENETICS AND MOLECULAR BIOLOGY

Course Outcome: After successful completion of this course, students will be able to

1: Acquire knowledge about Mendelian and non-mendelian inheritance

2: Understand the concepts of chromosomal abberations and mechanisms of recombination

3: Understand the concepts gene mapping , pedigree drawing

4: Acquire knowledge of gene silencing mechanisms

5: Acquire knowledge about DNA replication, transcription, translation and DNA repair

6: Acquire knowledge of co-transcriptional and post-translational modifications and regulation of gene expression

Semester III Paper Title - BC- 3.3: METABOLISM OF NITROGENOUS COMPOUNDS WITH CLINICAL CORRELATIONS

Course Outcome: After successful completion of this course, students will be able to

1: Recognize how fundamental chemical principles and reactions are utilized in biochemical processes.

2: Judge whether a proposed or hypothetical reaction is consistent with the general framework of catabolic and anabolic metabolism.

3: To have a knowledge of degradation and biosynthesis of individual amino acids, purine and pyrimidine bases

4: Understand the defects in amino acid, nucleotide and heme metabolic pathways leading to various disorders

5: Role of marker enzymes in clinical diagnosis of various disorders

Semester IV Paper Title- BC-4.1: CELL SIGNALLING

Course Outcome: After successful completion of this course, students will be able to

1: Understand the basic principles of signal transduction mechanisms, in particular the concepts of response specificity, signal amplitude and duration, signal integration and intracellular location

2: Give examples of different types of extracellular signals and receptors, and explain their functional significance

3: Describe the mechanisms by which different receptors may be activated by their respective ligands

4: Describe and give examples of the structure and properties of the major components of signal transduction pathways.

Semester IV Paper Title- BC-4.2: GENETIC ENGINEERING AND INDUSTRIAL BIOTECHNOLOGY

Course Outcome: After successful completion of this course, students will be able to

1: Understand recombinant DNA technology and the stepwise methodology to achieve it

2: Learn the concept of generating DNA libraries and various DNA transfer methods.

3: Get an idea of nucleic acid labelling techniques and their application in genetic engineering.

4: Understand the design and operation of different types of fermenters, downstream processing and recovery of fermentation products

5. Know the principle of microbial production of antibiotics, alcoholic beverages and vitamins

6: Analyze the quality of water, BOD and effluent treatment methods

Semester IV Paper Title- BC - 4.3: BIOSTATISTICS, BIOINFORMATICS AND NANOBIOTECHNOLOGY

Course Outcome: After successful completion of this course, students will be able to

1: Develop skills to perform statistical analysis of population studies

2: Understand how to design sample analysis and perform chi square, Fischer exact and multivariant analysis

3: Demonstrate a good understanding of measures of correlations

4: Knowledge and awareness of the basic principles and concepts of biology and computer science

5: Use the existing online software effectively to extract information from large databases and to use this information in computer modelling

6: Familiarise with working principles, tools and techniques in the field of nanomaterials.

7: Understanding of the strengths, limitations and potential uses of nanomaterials and biosensors

Kuvempu University

Department of PG Studies and Research in Chemistry
Jnanasahyadri, Shankaraghatta – 577451, India.

M.Sc. in Chemistry

Program Outcomes

After successful completion of two-year M.Sc. program in chemistry a student should be able to;

1. Explore jobs related to teaching and research.
2. Get research opportunities to pursue Ph.D. and programme targeted approach of GATE, CSIR –NET, examination.
3. Write competitive exams conducted by service commissions.
4. Develop interdisciplinary approach of the subject and able to work in teams as well as independently.
5. Progress in knowledge, understanding and proficiency in their chosen field of chemical science. Apply knowledge to build up small scale industry for developing endogenous product.
6. Opportunities in R & D and synthetic division of many industries.

Subject Outcomes
I - SEMESTER

ChHC-1.1: ANALYTICAL CHEMISTRY – I

After the completion of this course, the student would be able to;

1. Understand the classification of analytical methods like quantitative, qualitative instrumental and non-instrumental methods.
2. Study the classification of errors and its significance.
3. Understand the sequential simplex optimization, critical appraisal, treatment of multivariate data, factor analysis.

4. Study the Sampling techniques, sampling statistics, variability in the sample, sample stability.
5. Understand the concept of Need for qualityassurance; ISO 9000 series of quality system
6. Study the theory of indicators, indicator action,and preparation of indicator solutions, metal ion indicators, mixed indicators.
7. Understand the Classification of reactions in titrimetric analysis,neutralization titrations.
8. Study the Gravimetric estimations of – chloride as silver chloride, calcium as calcium.
9. Study electroanalytical techniques like Polarography, Cyclic voltametry, Amperometry and Electrogravimetry.
10. Study Chromatographic Method like PC, TLC, GLC, GC, SFC, HPLC and IEC.

ChHC-1.2: INORGANIC CHEMISTRY – I

After the completion of this course, the student would be able to;

1. Division of elements into s, p, d and f- blocks and learn their periodic trends.
2. Understand the transition and inner transition metal properties.
3. Learn the important features of chemical bonding, like valence bond theory (VBT) and molecular orbital theory (MOT).
4. Understand the comparison between;

i) bonding and anti-bonding molecular orbitals,

ii) sigma and pi molecular orbitals,

iii) atomic and molecular orbitals, bond order, molecular orbital configurations of A_2 and AB types of molecules.

5. Know the valence-shell electron-pair repulsion theory (VSEPR).
6. Explain the hybridization, structure and geometry of – AB_2, AB_3, AB_4, AB_5, $AB_2(lp)$, $AB_3(lp)$, $AB_2(lp)_2$, $AB_4(lp)$, $AB_3(lp)_2$, $AB_2(lp)_3$, $AB_5(lp)$, $AB_4(lp)_2$type species.
7. Predicting the hybridization, structure and geometry of interhalogen and xenon compounds.
8. Differentiate crystalline and amorphous solids.
9. Understand the conductors, semiconductors, insulators, superconductivity and superconducting materials.
10. Acquire the thorough knowledge on magnetic properties such as paramagnetic, diamagnetic, ferromagnetic, anti-ferromagnetic and ferromagnetic substances.

ChHC-1.3: ORGANIC CHEMISTRY – I

After the completion of this course, the student would be able to;

1. Understand the properties of electron delocalization, resonance and aromaticity.
2. Convert different aromatic molecules into one another by aromatic electrophilic substitutions.
3. Derive the reaction mechanism of Addition, Elimination and Nucleophilic substitution reactions of different organic compounds.
4. Evaluate the Stereochemical properties of different organic compounds.
5. Understand various terminologies in stereochemistry,will be able to draw the Stereochemical structures of different molecules.
6. Interpret reactivity of aromatic compounds.
7. Express the methods of determination of reaction mechanism.
8. Recognize regioselectivity and stereoselectivity of different organic reactions.
9. Understand the concepts of different reactive intermediates with examples.

Ch.HC-1.4: PHYSICAL CHEMISTRY-I

After study of this paper, students learn the following aspects:

1. Know important concepts of Thermodynamics
2. Study The Maxwell's relation, Thermodynamic equation of state, Chemicalpotential.
3. Study fugacity and activity coefficient and its determination.
4. Study third law of thermodynamics, Nernst heat theorem and Gibbs-Duhem equation.
5. Study basics of Classical Statistical Mechanics
6. Understand Boltzmann distribution law, Fermi – Dirac statistics, Bose –Einstein Statistics
7. Study partition function, relation of the partition function to the thermodynamicfunction and Determination of Partition functions.
8. Study the rate of reactions, rate law, rate constant and methods of determination of order of reactions.
9. To understand kinetics of reactions in solution.
10. Study the activity and activity co-efficients on ionic strength
11. Derive the Debye- Huckel-Bronsted equation.
12. Understand the electrochemical energy systems and fundamentals of batteries.

ChHCL-1.1: INORGANIC CHEMISTRY PRACTICALS – I

After the completion of this course the student would be able to;

1. Learn the complexometric titrations: estimation of amount of calcium, magnesium, copper, lead, nickel.
2. Become proficient in redox titrations: estimation of amount of Fe(II) and Fe(III) by $K_2Cr_2O_7$, ceric ammonium sulphate and vanadium solution.
3. Become competent in gravimetric estimations:copper as copper thiocyanate, sulphate as barium sulphate,nickel as nickel dimethyl glyoximate,lead as leadchromate.

ChHCL-1.2: ORGANIC CHEMISTRY PRACTICALS – I

After the completion of this course, the student would be able to;

1. Know meaning of safety signs and safety in handling of chemicals.
2. Know handling of glass wares in laboratory.
3. understand various laboratory methods to determine structure of unknown organic sample.
4. Understand different purification techniques in organic chemistry likerecrystallization, distillation, steam distillation and extraction.
5. Understand Systematic separation of organic binary mixtures of solid type using chemical and physicalmethods.
6. Perform Melting point determination, functional group analysis in the laboratory.
7. Correlate the reaction mechanisms with practical procedures.
8. Identify organic compounds.

Ch.HCL-1.3: PHYSICAL CHEMISTRY PRACTICAL –I

After the completion of this course, the student would be able to;

1. Explain the rate of reaction in the presence of catalyst.
2. Study the ionic activity on electrode and carried out practical experiment by using the conductometric instrument.
3. Study the electron transfer reaction and conduct the potentiometer experiments.
4. Students find out the dissociation constant value by using the potentiometer.
5. To determine the amino acid isoelectric point.
6. Able to find out the viscosity by using viscometer.

II - SEMESTER

ChHC-2.1: ANALYTICAL CHEMISTRY – II

After the completion of this course, the student would be able to;

1. Understand the nature and interaction of electromagnetic radiation with matter, types of molecular spectra and selection rules of electronic spectra.
2. Study the Woodward-Fischer rules for calculating absorption maximum of different conjugated systems.
3. Understand the concepts of vibration motion of a diatomic molecule, force constant, bond strengths, vibration-rotation spectroscopy and its characteristic features.
4. Study important concepts of Infrared Spectroscopy and its role in structure elucidation of organic compounds
5. Understand the basic theory and instrumentation of Raman Spectroscopy
6. Study the important concept of FES, AAS, AES, Molecular luminescence spectroscopy.
7. Understand the introduction, theory and principles of size exclusion and affinity chromatograpy.
8. Study the important concept of solvent extraction.
9. Study the theory, instrumentation and applications of electrophoresis.

ChHC-2.2: INORGANIC CHEMISTRY – II

After the completion of this course, the student would be able to;

1. Learn the concept of acids and bases.
2. Study the relative strength of oxy acids.
3. Acquire the thorough knowledge Preparation, structure and reactivity of borazine, substituted borazines.
4. Understand the polymeric compounds of sulphur: nitrides of sulphur (preparation, structure and properties).
5. Learn the structure and bonding, topological approach to boron hydride structure (styx numbers), preparation, structure and properties.
6. Develop a thorough knowledge on the metal clusters: Di, tri and tetra nuclear clusters (structure, synthesis and properties).

7. Thorough understanding the coordination chemistry: effective atomic number, stability of complex ions, stability constants, factors affecting the stability of complexes (nature of metal ion, ligand, chelate effect)

ChHC-2.3: ORGANIC CHEMISTRY – II

After the completion of this course, the student would be able to;

1. Understand the General mechanistic treatment of Nucleophilic, electrophilic and free-radical
   Rearrangements
2. Derive the reaction mechanism of Rearrangements reactions involving migration to electron deficient Nitrogen, Oxygen, Carbon.
3. Also Derive the reaction mechanism of Rearrangements reactions involving migration to electron rich Carbon.
4. Draw various organic reactive intermediates with stereochemistry.
5. Interpret the reactions and properties of different oxidizing and reducing reagents involving in organic reactions with suitable examples.
6. Recognize structure and function of different reagents.
7. Distinguish different types of reagents and Stereochemical outcomes in organic chemistry.
8. Write different preparation methods for reagents involving in organic reactions.
9. Use of reagents.

Ch.HC-2.4: PHYSICAL CHEMISTRY-II

After the completion of this course, the student would be able to;

1. Understand the Schrödinger equation for one dimensional time dependent.
2. Understands the wave function, normalization and orthogonality and basic postulates of quantum chemistry.
3. Learn the particle in box with different potential barrier.
4. Understand the theoretical treatment of rigid and non-rigid rotator.
5. Study the vibrational spectra of diatomic and polyatomic molecules.
6. Understand the review of laws of photochemistry.
7. Understand the solar energy and storage.
8. Study the dosimetry and safety measures against radiation hazards.

9. Study the types of polymer and determination of average molecular weight by different methods.
10. Learn the kinetics of polymerization.

ChHCL-2.1: INORGANIC CHEMISTRY PRACTICALS – II

After the completion of this course, the student would be able to;

1. Acquire the knowledge of ore analysis: Amount of;
   - calcium carbonate in limestone by oxalate method.
   - iron present in hematite ore.
   - MnO2 present in the given pyrolusite ore.
   - nitrite present in sodium nitrite ore solution.
2. Expertness in estimation of amount of :
   - Available chlorine in bleaching powder.
   - Available O_2 in Hydrogen peroxide.
   - Chromium and manganese in steel sample
   - copper present in $CuSO_4$ solution.
   - Copper and Iron in a solution mixture.
   - Nickel and Iron in a solution mixture.
   - Ascorbic acid.
   - Chlorate in potassium chlorate solution.

ChHCL-2.2: ORGANIC CHEMISTRY PRACTICALS – II

After the completion of this course, the student would be able to;

1. Know how to synthesize organic molecules?
2. Understand how to maintain reaction conditions?
3. Know how to follow reaction by using thin layer chromatography?
4. Know calibration of pipettes and burettes, preparation of standard solutions in quantitave analysis of organic compounds.
5. Understand two step syntheses of organic compounds.
6. Develop interest in writing and finding mechanisms of new reactions.

Ch.HCL-2.3: PHYSICAL CHEMISTRY PRACTICALS –II

After the completion of this course, the student would be able to;

1. Determine the mean ionic activity co-efficient of weak acid.
2. Find out the pH of strong acid, weak acid and neutral solution.
3. Understand equivalent conductance at the infinite dilution for strong electrolytes
4. To study the Precipitation titration by conductometrically.
5. Conduct the spectrophotometric/colorimeter experiments.
6. To Study the Heat of solution by carboxylic acids.

III - SEMESTER

ChSC-3.1: ANALYTICAL CHEMISTRY – III

After the completion of this course, the student would be able to,

1. Understand the concept of symmetry elements and symmetry operations of different molecules.
2. Study the properties of point groups and group multiplication tables of C_{2V} and C_{3V}.
3. Understand the Infrared and Raman activity ofmolecules belong to C_{2v}(H_2O, ClF_3, *cis*-N_2F_2) and C_{3v}(NH_3) point groups.
4. Study important concepts of 1H NMR spectroscopy and its rolein structure elucidation of organic compounds.
5. Understand the concepts of advanced NMR (COSY, 2D NMR and HETCOR) and C^{13} NMR techniques.
6. Study important concepts of Mass spectrometry and its role in structureelucidation of organic compounds
7. Understand the basic principles, instrumentation, experimentaltechniques and applications of ESR spectroscopy.
8. Study the basic principles, instrumentation, experimentaltechniques and applications of Mossbauer and NQR spectroscopy.
9. Evaluate the differences between ESR , Mossbauer and NQR spectra.

ChSC-3.2: INORGANIC CHEMISTRY – III

After the completion of this course, the student would be able to;

1. Understand the orientation of d-orbitals and crystal field splitting of energy levels intetrahedral and octahedral complexes
2. Learn the colour of transition metal complexes, modified crystal field theory (ligand field theory), evidence of covalent bonding in metal ligand bonding.
3. Knowledge of crystal field effects, spinel and inverse spinel. John-Teller distortion in octahedral complexes.
4. Predicting the electronic spectra of atoms – spectroscopic terms, classification of microstates, coupling of single electron angular momenta.
5. Predicting the Tanabe-Sugano diagrams, Orgel diagrams and ground term symbols. selection rules.
6. Understand the reactions, kinetics and mechanism - substitution reaction in octahedral complexes (associative and dissociative mechanism).
7. Learn the oxidation-reduction reactions: Classification of redox reactions, inner-sphere and outersphere mechanisms.
8. Develop a thorough knowledge on photochemical reactions: prompt and delayed reactions, d-d and charge-transfer reactions, transition in metal-metal bonded systems.
9. Study of 18-electron rule, electron counting in complexes, metal carbonyl complexes, preparation and properties of carbonyl complexes.
10. Understand the catalysis by organometallic compounds: Importance and mechanism of - Alkene hydrogenation (Wilkinson's catalysis), hydroformylation (Oxo-process), Monsanto acetic acid process, Wacker process (Smidt process), Ziegler-Natta polymerization.

ChSC-3.3: ORGANIC CHEMISTRY – III

After the completion of this course, the student would be able to;

1. Design different named reactions in organic chemistry.
2. Understand the Concepts of Coupling reactions.
3. Nomenclature of heterocyclic compounds.
4. Write different synthetic methods and reactivity of simple and fused heterocyclic compounds.
5. Understand the Concepts of Mesoionic compounds.

6. Express the differences between Bonding and antibonding orbitals, singlet and triple states in photochemistry.
7. Write and express modes of energy transfers from the excited states using Jablonski diagram.
8. Design different photochemical and pericyclic reactions.
9. Utilize their knowledge for various photochemical and heterocyclic conversions.

Ch.HC-3.4: PHYSICAL CHEMISTRY-III

After the completion of this course, the student would be able to;

1. Derive the application of Schrodinger wave equation to harmonic oscillator, rigid rotor and H-atom.
2. To solve the Schrodinger equation using various approximation methods like variation method and Perturbation method.
3. Understand the SCF method for many electron systems.
4. Learn the Slater orbitals.
5. Study the Huckel molecular orbital theory.
6. Study the adsorption by solids, liquids and gases.
7. Derive the Freundlich, Langmuir adsorption theories,BET theory and Gibbs adsorption isotherm.
8. Study the modern techniques for investigating surfaces.
9. Understand the catalysis like acid-base and derive the Michelis Menten equation.
10. Study the Kinetics of surfaces reactions.
11. Learn the colloidal systems, classification, preparation and properties and determination size of colloids.

ChHCL-3.1: INORGANIC CHEMISTRY PRACTICAL – III

After the completion of this course, the student would be able to;

1. Acquire thorough skills with the following complex preparations:
    - Mercurytetrathiocyanatocobaltate(II)complex.
    - Chloropentamminecobalt(III)chloride complex.
    - Bisoxalatocuprate(II)di hydrate complex.
    - Tris-oxalatoferrate(III) complex.
    - Sulphatotristhioureazinc(II) complex.

- Tristhioureacopper(I)sulphate complex
- Cis and trans Diaquadioxalatochromate(III)complex.

2. Acquire thorough skills with the following complex analysis:
    - Cobalt present in a given chloropentamminecobalt(III)chloride complex.
    - Copper and Oxalate present in a given bisoxala to cuprate(II)-di hydrate complex.
    - Iron and Oxalate present in a given Trisoxalatoferrate(III) complex.
    - Fe(III) using thiocyanite as ligand.
    - metal ligand composition by jobs method of continuous variation.

ChHCL-3.2: ORGANIC CHEMISTRY PRACTICAL – III

After the completion of this course, the student would be able to;

1. Know the methods to synthesize drug molecules.
2. Synthesize dyes such as methyl orange, Fluorescein, Crystal violet etc.
3. Apply various aspects of chemistry in natural products isolations.
4. Structure elucidation of natural products.
5. Various chemical conversions of natural products.
6. Understand handling of seperatory funnel in the extraction process.
7. Understand distillation of Solvents.
8. Learn the concepts of Drying agents.

Ch.HCL-3.3: PHYSICAL CHEMISTRY PRACTICAL –III

After the completion of this course, the student would be able to;

1. To study the reaction by using colorimetric measurements.
2. Determine the COD.
3. To understand the phase diagram for three component system.
4. Study the kinetics of oxidation of alcohols.
5. Learn the adsorption charecteristics.
6. Estimate the iodine, nitrite.
7. Understand the corrosion rate measurement.
8. Study the unknown concentration by spectrophotometric methods and Polarography

IV - SEMESTER

ChSC-4.1: ANALYTICAL CHEMISTRY – IV

After the completion of this course, the student would be able to;

1. Understand the basic steps involved in the structure elucidation of organic compounds
2. Determine the structural elucidation of different organic compounds.
3. Study the theory, instrumentation and its applications of X-Ray diffraction techniques.
4. Study the basic principle, instrumentation and its applications of electron and neutron diffraction techniques
5. Study the automatic methods of analysis.
6. Study Thermoanalytical Methods like TGA, DTA and DSC and its applications.
7. Learn the definition of solid surface, types of surface measurements and spectroscopic surface methods.
8. Understand the Basic principles, instrumentation and applications of XPS, AES, SEM, STM and AFM.

ChSC-4.2: INORGANIC CHEMISTRY – IV

After the completion of this course, the student would be able to;

1. Understand the essential and trace metal ions in biological process, bioligands- amino acids, proteins, nucleic acids, nucleotides and their potential metal binding sites;
2. Predict the ion transport across cell membrane.
3. Study of biological oxygen carriers,electron transfer proteins,metalloenzymes.
4. Learn the concept and scope of environmental chemistry, environmental segments, natural cycles of the environment.
5. Explain the Bio-Warfare agents, environment and public health.
6. Study of air pollutant accidents.
7. Knowledge about chemistry of new materials: Conducting polymers.
8. Understanding the super conductors- introduction, type I and type II super conductors.
9. Study of supra molecular chemistry: Definition, nature of supra molecular interactions; supra molecular host-guest compounds, common host molecules- crown ethers, porphyrins.

ChSC-4.3: ORGANIC CHEMISTRY – III

After the completion of this course, the student would be able to;

1. Understand an overview of the field of natural products in chemistry.
2. Identify different types of Carbohydrates, amino acids and Proteins, their structure, biosynthesis and properties.
3. Design preparation methods of Naural products.
4. Write Classification of vitamins and Physiological significance of Vitamin.
5. Learn the different types of alkaloids, terrenes and their chemistry and medicinal importance.
6. Understand Stereochemistry and structural elucidation of Cholesterol and related steroids.
7. Understand the concepts of Nucleic acids.
8. Design Crick-Watson model of DNA, structure of RNA.

Ch.HC-4.4: PHYSICAL CHEMISTRY - IV

After the completion of this course, the student would be able to;

1. Study the Fundamentals and importance of nanomaterials.
2. Learn the carbon nanoparticles.
3. Understand the preparation methods of nanomaterials.
4. Understand the Electrode potential and Its applications.
5. Study the principles and preparation of electroplates.
6. Study the types, methods and problems in corrosion.
7. Understand the phase rules for different systems.
8. Study the fundamentals and basic principles in Electrosynthesis
9. Learn the electrooxidation and reductions in electro organic reactions.

ChPR-4.1: PROJECT WORK

After the completion of this project, the student would be able to;

1. Have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries.
2. Understand the literature survey and collection of research articles.
3. Understand good laboratory practices and safety.
4. Design a synthetic route and able to carry out synthesis of important compounds.

5. Get a skill in problem solving and analytical reasoning as applied to scientific problems.
6. Understand the techniques of spectroscopy such as IR, Mass, ^{1}H NMR ^{13}CNMR in structural elucidation.
7. Understand Analytical techniques such as chromatography, Distillation etc.
8. Understand instrumentations handling like IR, UV and Electroanalyser.
9. Communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

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Broad outcome of the programme (BOP)

- To become leading Food Technology department that provides quality technical education with good research component, to develop solutions in the field of food & nutrition, health and environment.
- The department is working with a mission to cultivate creativity in teaching and research to build food science knowledge base and to promote quality learning and research.
- To establish itself as the leader in human resource development for supporting the food technology sector.
- To provide knowledge and skills for better preservation techniques, processing and value addition to agricultural products.
- To promote research and development for food product and process and guarantee sanitation and safety of processed food items.
- To provide well equipped infrastructure and research facilities to students for carrying out research smoothly in allied fields of food technology.
- To develop good professional relationship with the leading institutions at national and international level.
- To develop the spirit of competition among students and help them to cultivate enthusiasm, self-confidence, problem solving capacity, self-respect and to develop communication skills.
- To conduct placement drives for top Food and allied Industries, Institutions or Government Organization through campus selection.
- To develop awareness among the students about environmental issues and work towards sustainable developments.
- Help and Train the Students to initiate to do the startups in the field of Food Technology.

Programme specific outcome(PSO)

PSO1: To have grounding knowledge in Biology, Food entrepreneurship based research, Food Technology and nutrition.

PSO2:To be proficient in the principles and practices of Advanced Dietetic, Health value added Food and Drug nanotechnology.

PSO3: To apply Food technology principles to biological systems to address the societal Problems such as malnutrition, nutritional disorders and food adulteration.

Outcome of each course

First semester

FT 1.1FOOD CHEMISTRY

1	Enables to understand physicochemical properties of water, carbohydrates their functional properties and inborn error caused by carbohydrates.
2	Enables to study amino acids physicochemical properties, biological functions, interaction, modified protein, applications in food industry and their metabolic defects.
3	Enables to study enzymes, lipids flavour changes in fats and oils, enzyme biological significance and metabolic disorders.

4	Enables to understand vitamins and minerals and their physiological and biochemical functions, role in different food, and deficiency diseases.

FT 1.2FOOD MICROBIOLOGY

1	Able to understand basics concepts of microbiology, historical developments, and microbial technique
2	Able to know the techniques of preservation of foods, food hygiene and sanitation.
3	Students can understand the pathogens of food spoilage and different molecular techniques used to characterize the pathogens.
4	Able to know the different food borne diseases caused by microorganisms and a brief on different regulatory practices and policies.

FT 1.3PRINCIPLES OF FOOD PROCESSING & PRESERVATION TECHNOLOGY

1	List and identify the factors responsible for food spoilage, quality and need for preservation.
2	Compare and contrast the different low temperature food preservation methods &discuss their principles
3	Compare and contrast the different high temperature food preservation methods & discuss their principles.
4	Able to identify & discuss the applications of dehydration, membrane-based separation & irradiation as methods of food preservation.

FT 1.4 NUTRACEUTICALS AND FUNCTIONAL FOODS

1	Enable to acquire the knowledge on concept, history, and evolution of nutraceuticals, anti-oxidant properties and its functional & therapeutic properties.
2	Able to learn about natural occurrence and classification, isolation techniques and stability studies of Phytochemicals/nutraceuticals
3	Learn about role of Probiotics, Prebiotics and Symbiotics as health benefits and their productdevelopment.
4	Able to gain knowledge on concept, development of functional foods, bioactive compounds and nutrigenomics concepts.

FT 1.5 FOOD CHEMISTRY LABORATORY

1	Enables to understand Qualitative and quantitative test of carbohydrates, and proteins.
2	Enables to study Determination of macro and micro nutrients.
3	Enables to study Determination of iodine value, acid value and saponification values of oil.
4	Enables to understand Determination and estimation of phytochemicals.

FT 1.6 FOOD MICROBIOLOGY LABORATORY

1	Good microbiology laboratory practices and introduction to different glass wares/instruments/equipment's used in microbiology laboratory
2	Preparation of different media and its application
3	Different culture techniques for the isolation of microorganisms.
4	Enumeration and characterization of the microorganisms and preservation techniques of different food.

FT1.7 PRINCIPLES OF FOOD PROCESSING & PRESERVATION TECHNOLOGY LABORATORY

1	Use of theories, principles and calculation for chemical reagents preparation to conduct the experiments.
2	Design and enhance the practical approaches in estimation of carbohydrates, proteins and salt content.
3	Formulate and evaluate the experimental methods used in Food preservation experiments.
4	Gain proficiency in basic laboratory techniques in both chemistry and biology, and be able to apply the scientific method to the processes of experimentation.

FT 1.8 NUTRACEUTICALS AND FUNCTIONAL FOODS LABORATORY

1	Acquire the knowledge on principal concept in determining anti-oxidant properties of nutraceuticals by different methods.
2	Learn about isolation/determination of different naturally occurring Phytochemicals.
3	Able to learn isolation of probiotic (LAB) bacteria, biochemical tests and its health benefits.

4	Gain proficiency in determining anti-nutrients in food materials.

Second semester

FT 2.1 BIOANALYTICAL TECHNIQUES AND BIOSTASTICS

1.	Students will be able to understand and explain the basic concepts of sample, collection, and handling along with chemical, and biological properties of carbohydrates.
2.	The principle and concept of analysis of various food will make students to capable of understanding the food components and adulterants in food.
3.	Student will understand the fundamental of the various separations methods and its operating principles of the various column and channel separation techniques.
4.	Student will able to Comprehend the knowledge gained on characteristics and properties of foods. Student will acquire skills to estimate the nutrient analysis by different methods for various nutrients.

FT 2.2 FOOD BIOTECHNOLOGY

1	Able to acquire the knowledge of basics concepts of cell, genetics and biotechnological concepts
2	Basic Concepts and design of fermentation/fermenter for the production of various products.
3	Apply the biotechnology in the field of Biosensors and uses and application of enzymes in food industries.
4	Apply the fundamental concepts of nanotechnology in Foo industries

FT2.3 NUTRITION AND THERAPEUTIC FOODS

1	Acquire knowledge on concept of nutrition, health benefits, food formulations, energy balance and deficiency, BMR and RMR and its regulation.
2	Able to learn growth monitoring and promotion, Nutrition during pregnancy, lactation and lactation period.
3	Learn about growth development from infancy, pre-school age and adulthood.
4	Able to gain knowledge on concept concepts of dietary planning and diet therapy.

FT 2.4 FOOD ENGINEERING AND ENZYMES IN FOOD PROCESSING

1	Able to understand basics concepts of food energy laws related to size reduction and Familiarize with principles of fluid flow and basic unit operation principles of several food processingmethods
2	Knowledge of psychometric would enable the students to evaluate and optimize the food storage conditions in food processing plants,regarding enzymes and their enzyme applications in processed food, fermentation and fermenters would enable the students to pursue their career in fermented food making industries.
3	Ability to explain the enzyme kinetics and the effects of different parameters on enzymes.Understand the application of reactors and Explain how enzymes act as biological catalysts and how they interact with specific substrate molecules
4	The enzymes are biological catalysts that catalyze the biochemical and molecular reaction which is necessary for maintenance and production of many food products.

FT 2.5 BIOANALYTICAL TECHNIQUES LABORATORY

1	Pupil will Acquire knowledge on Standard solutions and the various buffer solutions.
2	Student will able to Perform quantitative, qualitative analysis and interpret analytical results of food.
3	Learner will acquire competences to use different instruments like calorimeter, UV-Visible Spectrophotometer, Chromatographic separation, HPLC, Gas chromate-graphic analyzer, Rheology.
4	Acquire skills to estimate the nutrient analysis by different methods for various nutrients.

FT 2.6 FOOD BIOTECHNOLOGY LABORATORY

1	Use of theories, principles and calculation for chemical reagents preparation to conduct the experiments.
2	Design and enhance the practical approaches in plant biotechnology.
3	Design and enhance the practical approaches in estimation of sugar, alcohol and citric acid.
4	Design and enhance the practical approaches in synthesis of nanomaterials and applications.

FT 2.7 NUTRITION AND THERAPEUTIC FOODS LABORATORY

1	Develop skills on determining glucose level in blood and urine.
2	Learn about isolation/determination of different naturally occurring Phytochemicals.
3	Gain proficiency in designing diet plan for osteoporosis, protein, Vitamin, Iron deficiency.
4	Learn on diet plan for diabetes and cardio vascular diseases.

FT 2.8 FOOD ENGINEERING AND ENZYMES IN FOOD PROCESSING LABORATORY

1	Use of food engineering theories, principles and calculation for chemical reagents preparation to conduct the experiments.
2	Design and enhance the practical approaches in filtration, drying , food dehydration techniques and encapsulation procedures .
3	Formulate and evaluate the experimental methods used in the productions of enzymes (amylases, proteases, celluloses, pectinases, lipases) experiments,
4	Experiments designed on role of enzymes, flavours in food processing industry, and be able to apply the scientific method to the processes of experimentation.

Third Semester

FT 3.1 FOOD PRESERVATIVES, PACKAGING AND RESEARCH METHODOLOGY

1	The knowledge of advance techniques in food processing preservation would helpthe students to develop novel food products with improved quality characteristics.
2	Knowledge of harmful food preservatives would make the students acquainted with the scientific and technical know-how use, reduce or eliminate food preservatives during different types of food production.
3	The students would become familiar with various novel packaging techniques and can provide their technical skills in the food package manufacturing industry.
4	The students would be able to use statistical tools during prediction and solve theproblems arising in food industries.

FT 3.2 DAIRY TECHNOLOGY

1	Able to know the Dairy Education & Research in India and properties of the milk.
2	Able to understand the techniques involved in processing, quality assurance of milk, and packaging of milk.
3	Students are able to know different types of milk, milk products and marketing

	strategies in India.
4	Able to know the sanitary aspects of dairy plant.

FT 3.3 PROCESSING TECHNOLOGY OF MEAT, POULTRY AND FISH

1	Understand the present and future scenario of meat, poultry and fish products in India and abroad.
2	Students will have learnt about chemistry, various processing and preservation methods used for meat, fish, poultry and eggs.
3	Understand and identify the specific processing technologies used for meat, fish and poultry products.
4	Understand the safety standards in relation to meat, poultry and fish products.

FT3.4 POST HARVEST MANAGEMEN

1	The students would be acquainted with the post harvesting processing of the fruits and vegetables.
2	The students would be acquainted with knowledge of processing and milling technologies of cereals.
3	The students would get opportunity to render their services in processing and quality control aspects of oil and oil products processing industries.
4	The students would be acquainted with knowledge of Spice production and processing technologies.

FT3.5 NUTRACEUTICALS (ELECTIVE)

1.	Enable to acquirethe knowledge on concept, history, evolutionofnutraceuticals, anti-oxidant properties and itsfunctional & therapeuticproperties.
2	Able to learn about natural occurrence and classification of Phytochemicals/nutraceuticals and its role in diseasemanagement.
3	Able to gain knowledge of isolation techniques and stability studies of Phytochemicals/nutraceuticals and concept of anti-nutrients.

FT 3.6 FOOD PRESERVATIVES, PACKAGING AND RESEARCH METHODOLOGY LABORATORY

1.	Students will be acquainted with the industrial techniques used to preserve and process foods, extend their shelf-life and improve their palatability characteristics.
2	Students will be familiarized with advances in food processing techniques.
3	Students will be acquainted with the principles, methods, and materials used for safe packaging of foods.
4	Students will be familiarized with national and international specifications for food preservation.

FT 3.7 DAIRY TECHNOLOGY LABORATORY

1	Design the experiments for the quality analysis of the milk
2	Isolation of probiotics and other microorganism from the milk.
3	Different chemical analysis of the milk.
4	Dairy industry management and project feasibility, plan layout, cost benefit analysis.

FT 3.8 PROCESSING TECHNOLOGY

1	Design and enhance the practical approaches in spoilage and preservation methods of eggs.
2	Understanding the biochemical changes during different slaughtering operation of meat products.
3	Design and enhance the practical approaches in estimation of proteins and detection of soya bean in meat.
4	Formulate and enhance the practical approaches in preparation, processing and preservation methods of meat.

FT 3.9 POST HARVEST MANAGEMENT LABORATORY

1	Students will get experimental knowledge of how to determine the moisture content of different kinds of flour.
2	With the knowledge of preparation of fermented cereals, pulses based products, which are very much beneficial human health students can acquire jobs in various foodindustries.
3	Students can get the information about sensory evaluation of products which are prepared by them. This information is very helpful for them in fast food industries.
4	The students would be acquainted with knowledge of health benefits of fermented cereals and pulses.

Fourth Semeser

FT4.1 FOOD ADDITIVES AND BIOSTATISTICS

1	Students will understands the chemical and technological properties of relevant food additives used as food improvement.
2	Students learnt the knowledge of the food additives, the reasons of their use in foods and toxicologicalevaluation.
3	Students will acquire competence in the proper use of additives in safe food production.
4	Students identify the importance of data collection & its role in determining scope of Bio-statistics. Interpret statistical results correctly andeffectively.

FT 4.2 WASTE MANAGEMENT, FOOD LAWS AND ENTREPRENEURSHIP

1	Students will understands the conventional and advanced waste management methods.
2	The students would be enabled to develop food quality and safetymanagementsystems in food industries.
3	Students learnt the knowledge of national and international food safety laws and standards.
4	The knowledge regarding various standards and regulatory provisions wouldbebeneficial for the students while pursuing their own entrepreneurship in food processing sector or while finding jobs in standard making organizations.

FT4.3 BAKERY AND CONFECTIONARIES TECHNOLOGY

1	Students get the knowledge of handling the equipments used in bakery units by studying Bakery equipments.
2	Students can acquire the knowledge of essential ingredients and functional properties of bread making.

3	Students get the information of making process of different confectioneries and chocolate products, bread making ,biscuits and cookies making etc
4	Bakery and Confectionery course envisages providing students with knowledge of the basic functioning of the Bakery industry.

FT4.4 PROJECT WORK / DISSERTATION

1	Development of research orientation and aptitude in the students enabling them topursue for higher research studies.
2	Hands on practical training on using various instruments and other statistical toolswill enhance the knowledge and technical experience of the students.
3	Enhancement of logical reasoning, analytical power and independent thinking tohypothesis for research problem and find its solutions.
4	Report writing, presentation and publication of results will provide platform to beinteractive with the scientific community.

FT 4.5 FOOD ADDITIVES AND BIOSTATISTICS LABORATORY

1	Understand the present and future scenario of meat, poultry and fish products in India and abroad.
2	Students will have learnt about chemistry, various processing and preservation methods used for meat, fish, poultry and eggs.
3	Understand and identify the specific processing technologies used for meat, fish and poultry products.
4	Understand the safety standards in relation to meat, poultry and fish products.

FT 4.6 WASTE MANAGEMENT, FOOD LAWS AND ENTREPRENEURSHIPLABORATORY

1.	Understand the chemical properties of water can be studied perfectly by doing standard experiments.
2	Students acquire the different practical techniques of preparation of samples and analytical methods.
3	Understand and identify the specific toxic substances present in food staffs.

4	Students will be acquainted with techniques involved in preparation of FSMS plan.

FT 4.7 BAKERY AND CONFECTIONARIES TECHNOLOGY LABORATORY

1	Understand the chemical properties of flour can be studied perfectly by doing standard experiments.
2	Students acquire the different practical techniques of preparation of verities of bakery and confectionary products.
3	Understand and identify the specific processing technologies used bakery and confectionary industry.
4	Students will be acquainted with techniques involved in advanced baking and confectionery.

Course outcome (CO)

CO1: Apply the knowledge of science, engineering fundamentals, and mathematical concepts to the solution in the field of food technology.

CO2: Identify, formulate, review research literature, and analyze complex Food Technology/applications problems and Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the food sustainability.

CO3: Acquire the practical knowledge and demonstrate the ability to design, conduct/troubleshoot experiments and analyze data in the field of food technology

CO4: Understand the impact of the professional food technology solutions in societal and environmental contexts, and apply ethical principles and commit to professional ethics and responsibilities and communicate effectively and write effective reports and design documentation, make effective presentations.

M.Sc., INDUSTRIAL CHEMISTRY

Industrial chemistry: The Science of today is technology of tomorrow. The manufacturing art concerned with the transformation of matter into useful materials in useful amounts with cutting edge research thrust areas. Usually this transformation of available materials into more desirable ones involves some kind of process following a method.

Preamble :

Industrial chemistry is the branch of chemistry which applies physical and chemical. processes towards the transformation of raw materials into products that are of benefit to the modern applications helps to the society. The core courses in Industrial Chemistry is designed to familiarize the students with the industrial processes involved in the commercial production of the products.

The main objective of a M.Sc., programme in Higher Education system is to prepare the students for the application of ideas to the society. The Industrial Chemistry is the process of development, optimization, and monitoring of fundamental chemical processes used in industry with basic as well as applied aspects of chemistry for transforming raw materials and precursors into useful commercial products for the betterment of society.

The current pattern is designed to provide a focused learning outcome-based syllabus at the M.Sc., level providing structured teaching-learning experiences catering to the needs of the students. Industrial Chemistry program provides a broad education within chemistry with applications of engineering, mathematical, and industrial applications management principles.

This course will prepare the students both academically and in terms of employability. The programme also inculcates various attributes at thepost graduate level. These attributes encompass values related to emotional stability, social justice, creative and critical thinking, well-being and various skills required for employability, thus preparing students for continuous learning and sustainability.

The curriculum based on learning outcomes of M.Sc., Industrial Chemistry offers knowledge of broad areas including analytical, organic, inorganic, physical, analytical, spectroscopy, unit operations, chemical, advanced and basic aspects including polymer chemistry and technology with pharmaceutical chemistry. They are also exposed to instructions and research projects in instrumental analysis, Nanochemistry, Chemical Spectroscopy, Organic Synthesis, Coordination and Organ Metallic Chemistry, Natural Product Chemistry, Solid State Chemistry, Polymer Chemistry and Composites, Environmental Chemistry and pollution & Monitoring control.

The courses define clearly the objectives and the learning outcomes, enabling students to choose the elective subjects broadening their skills in the field of Industrial chemistry. The course also offers skills to pursue research in the field of Chemistry and thus would produce best minds to meet the demands of society.

Programme Learning Outcome

The learning outcome - based approach for Industrial Chemistry is to design the curriculum framework to suit the requirements of the various industries. Industrial chemistry deals with commercial production of chemicals and related products from natural raw materials and their derivatives. The course structure has been designed to allow flexibility in program and course content development while at the same time maintaining a basic chemistry and applied chemistry with uniformity in structure in comparison with other universities across the country. It enables humanity to experience the benefits of chemistry when we apply it in the exploitation of materials and energy. The present course gives students ability to employ critical thinking and efficient problem solving skills in the core areas of chemistry including analytical, Inorganic, organic and physical chemistry with applied aspects.

Programme Specific Outcome

Industrial Chemistry offers the synergism of basic concepts of Chemistry with Industrial applications. The main objective of this course is to produce M.Sc., graduates with enhanced skills, knowledge and depth research aptitude to carry out higher studies or research and development in the various industrial areas.

The course of Industrial Chemistry prepares the students for immediate entry to the workplace or Industries with sound theoretical, experimental knowledge in the area of requirements and it may be in the health, energy, environment, foods, cosmetics, polymers and related multidisciplinary required fields with broad perception of chemical sciences. Overall, the course offers basic foundation in chemistry, biological, physiccal and maths which enables the students to understand the concepts in chemical processing, engineering and industrial development.

It provides technical and managerial skills in industrial development and management. Students are able to learn and gain experience to enable them to venture into the industrial field and public sectors. The degree also allows them to pursue Ph.D. programme in Industrial chemistry and related areas.

- develop ability to scale up chemical products and techniques developed at laboratory to the industrial level. It also helps the students to do beyond chemistry knowledge into the world of industrial professionals.
- Advanced knowledge of fundamentals of industrial chemistry with enhanced command over modern scientific methods, techniques and chemical processes equipped with environment safety measures.

- Cultivate independent thinking and able to integrate knowledge from other disciplines to fit into various industrial areas.
- Advanced knowledge of fundamentals of industrial chemistry
- with enhanced command over modern scientific methods, techniques and
- chemical processes equipped with environment safety measures.

Graduate Attributes

Graduates with a degree in Industrial Chemistry can pursue various careers such as research and development, quality control, production management, or technical sales. In addition, they can work in multiple industries, from pharmaceuticals, cosmetics, petrochemicals, and food and beverage.

The depth knowledge of basic and applied areas of Industrial Chemistry able to employ skills in the basic areas of Industrial chemistry (analytical, organic, inorganic, physical and material). Students will become efficient in managerial skills, able to employ analytical reasoning, problems solving and interpretation and documentation of laboratory experiments at a level suitable to succeed at an entry-level position in chemical industry. Capability to demonstrate knowledge and understanding of major chemistry concepts, theoretical principles and experimental findings and ability to use modern instrumentation techniques with chemical analysis and separation. Cultivate independent thinking and able to integrate knowledge from other disciplines to fit into various industrial areas. Below are *few of the examples* where a M.Sc., graduate with Industrial Chemistry Degree can expect a suitable position.

The departments below require Research and Development, Quality control, Quality Assurance, production /manufacturing chemists

Overall, there are vast areas, where a successful M.Sc., graduate with industrial chemistry degree is able to suit himself for positions. After successful completion of the Degree, the student can enroll for higher education for a PhD degree in the subject, which further creates wide range of job opportunities such as Scientist working in Academia or Industries, and or as Professors in Universities.

Sl. No.	Industries	Positions (Department wise)
1	Textile Industry	Dyeing, Fabric, Manufacturing Departments
2	Paints and Enamels	Colour generating, mixing, quality,production
3	Cement/Ceramic Industry	Kiln Operator for Cement manufacturing Plant
4	Polymer Industry	Quality Control, R&D, Production, Chemists
5	Pharmaceutical Chemistry	Quality Control, R&D, Production, Chemists
6	Fertilizer Industries	Chemist (Fertilizer Plants)
7	Material Chemistry	Development of Batteries
8	Electronic industries	Developing silicon materials
9	Metallurgy	Gold, Silver, platinum, etc
10	Food Industry	Quality Control, R&D, Production, Chemists

KUVEMPU UNIVERSITY

Department of PG Studies in Industrial Chemistry

Shankaraghatta

New CBCS Scheme Course Pattern

Sem	Theory Code	Max Marks 100		Credits Hrs/ Week	Credits Points	Practical Code	Max Marks 50	Credits Hrs/ Week	Credits Points	Total Credits per semester
I	IC.HC: 1.01	75	25	4	4	IC.HC : 1.05	40+10	4	2	22
	IC.HC: 1.02	75	25	4	4	IC.HC : 1.06	40+10	4	2	
	IC.HC: 1.03	75	25	4	4	IC.HC : 1.07	40+10	4	2	
	IC.HC: 1.04	75	25	4	4					
II	IC:HC: 2.01	75	25	4	4	IC:HC: 2.05	40+10	4	2	24
	IC:HC: 2.02	75	25	4	4	IC:HC: 2.06	40+10	4	2	
	IC:HC: 2.03	75	25	4	4	IC:HC: 2.07	40+10	4	2	
	IC:HC: 2.04	75	25	4	4					
	Elective	40	10	2	2					
III	IC:HC: 3.01	75	25	4	4	IC.HC : 3.04	40+10	4	2	24
	IC:HC: 3.21	75	25	4	4	IC.HC : 3.05	40+10	4	2	
	IC:SC: 3.03	75	25	4	4	IC.HC : 3.06	40+10	4	2	
	IC:SC: 3.04	75	25	4	4					
	Elective	40	10	2	2					
IV	IC HC: 4.01	75	25	4	4	IC HC: 4.04	40+10	4	2	20
	IC SC: 4.31	75	25	4	4	IC HC: 4.05	40+10	4	2	
	IC SC: 4.23	75	25	4	4	Project	75+25	4	4	
										90
	Personality Development Programme								2	
	Communication Skills								2	
	Computer Skills								2	06
										96

1st Semester : Theory papers

IC.HC: 1.01 Analytical & Separation Techniques

IC HC: 1.02 Inorganic Chemistry-I

IC HC: 1.03 Organic Chemistry I

IC HC: 1.04 Physical Chemistry-I

Practical

IC.HC: 1.05 Inorganic Chemistry

IC HC: 1.06 Organic Chemistry

IC HC: 1.07 Physical Chemistry

2nd Semester

Theory papers

IC: HC: 2.01: Spectroscopic Techniques

IC HC: 2.02: Inorganic Chemistry - II

IC HC: 2.03: Organic Chemistry-II

IC HC: 2.04: Physical Chemistry - II

Elective

Practical

IC.HC: 2.05 Inorganic Chemistry
IC HC: 2.06 Organic Chemistry
IC HC: 2.07 Physical Chemistry

3rd Semester

Theory papers

IC HC: 3.01: Chemical process principles
IC HC: 3.02: Advanced Organic and Medicinal chemistry
IC SC: 3.03: Polymer Chemistry and Technology
IC SC: 3.04: Pollution monitoring and control
Elective

Practical

IC.HC: 3.05 Preparation, Separation and Estimation
IC HC: 3.06 Technical Analysis-I
IC HC: 3.07 Technical Analysis-II

4th Semester

Theory papers

IC HC: 4.01: Unit Operations
IC SC: 4.02: Organo Metallic and Bioinorganic Chemistry
IC SC: 4.03: Advanced Analytical Techniques

Practical

IC HC: 4.04: Commercial Analysis
IC HC: 4.05: Experiments in Polymer Chemistry
IC HC: 4.06: Project work and Viva-voice

Industrial Chemistry

Knowledge	Skills/Attitude	Jobs/Employability
• Knowledge with respect to the concepts and methodologies in chemistry. • To execute the challenges associated with subjects of various disciplines of chemistry. • In depth understanding of the major fields in chemistry like Inorganic, Organic, Physical, Analytical, and related fields. • Experimental knowledge • Creative aptitude to work independently and start up new ventures in the fields of application.	• Ability to communicate accurately, reliably, orally and develop written skills • Able to use IT effectively to communicate and perform key work functions • Ability to use the knowledge and techniques a) To analyse chemical information b) To evaluate the appropriateness of different approaches (Chemical, Analytical, Spectral, etc.) in solving problems related to chemical sciences • To offer solutions to the problems in chemical sciences • Able to identify and organize the work priorities and manage them effectively • To exercise the personal responsibility and decision-making abilities • Working effectively with others i.e., to indulge in team work to achieve the shared	Chemistry graduates have opportunities in following areas such as • Pharmaceuticals • Neutraceuticals • Cosmoceuticals • Educational Institutions • Pharma Industry • Forensic Institutes • Research/Institutions • Chemical Industry (Processing Chemist, Research Chemist, etc.) • Laboratory Technicians and Testing Laboratories • Oil refineries and related Industries • Mettellurgy • Cement Industry

	goal with other discipline and background individuals The ability to identify and address their own learning needs in changing circumstances Commitment to ethical practise Being flexible and adaptable Willing to attend different points of view before arriving to decision	Paper and Pulp industries Agro Industry Radiologist Jobs in Public Sectors like Banking, Railways, Forest department, Mining, and many other laboratories where chemistry is needed

Job opportunities in Industrial Chemistry

Knowledge	Skills	Job
• Labelling of samples • Verification of sample dates • Notifying the sample date • Proper protection for sample keeping	• Documentation recording • Good communication skills • Work as per Standard operating procedure	Sample in charge
• Engaurd the warehouse	• Good communication skills • Proper maintain of documentation • Work as per Standard operating procedure	Manager

• Knowledge about chemicals • Keeping proper ventilation • Should know about basic chemistry • Beware of Hazardous chemicals	• Handling of hazardous chemicals • Proper maintain of documentation • Work as per Standard operating procedure	In charge of Chemical Store
• Collection of receipts • Recording of Time and date • Proper English communication	• Follow Goods Manufacturing Process procedures • Good communication skills • Proper maintain of documentation • Work as per Standard operating procedure	Receipt collector (Plant).
• Scale up reactions • Production of large scale materials • Handle laboratory equipment and supplies safely and effectively	• Knowledge of chemistry • Follow Goods Manufacturing Process procedures • Document laboratory activities for reference purposes	Production department
• Plan and manage the Rota for chemist cover within area(s) of responsibility	• Follow Good Manufacturing Process procedures • Document laboratory activities for reference purposes • Good communication skills • Proper maintain of documentation • Work as per Standard operating procedure	Cluster officer
• Scale up reactions • Production of large scale materials	• Follow good manufacturing processprocedures • Document laboratory activities for reference purposes	Officer (Production)

• Handle laboratory equipment and supplies safely and effectively		
• Routine analysis of Samples • Perform Titrametric analysis • Wet analysis like ROI(Residue on Ignition), LOD(Loss on drying).	• Knowledge of analytical chemistry • Follow good manufacturing process procedures • Document laboratory activities for reference purpose	Analyst
• Monitoring the chemical reactions • Perform chemical synthesis in small scale	• Knowledge about organic chemistry • Knowledge about basics of chemistry • Should know preliminary safety precautions	Chemist
• Monitoring the Lab temperature, humidity. • Keeping documentation as per standard operating procedure • Checking of lab hygine	• Knowledge about basics of chemistry • Follow good manufacturing process procedures • Document laboratory activities for reference purposes	Lab manager
• Handling of Equipment's • Handling of bulk plant equipment's.	• Basic knowledge about Instruments • Proper maintain of documentation • Work as per standard operating procedure	Operator
• Routine and non-routine analysis of samples	• Knowledge about analytical chemistry • Knowledge of Acid, bases and salts • Basic computing knowledge	Titration specialist

	• Basic knowledge about Instruments • Proper maintain of documentation	
• To recommend pricing and product positioning strategy based on market trends and competitors strategy. • To launch new products or existing products to new markets. • Training of sales force and provide technical support.	• Must have capability in selection of Products (Analytical Instruments Related Items) as per the Customer s application. Experience in handling analytical Instruments • Knowledge of analytical Chemistry • Must have Good Communication Presentation Skills.	Field executive

Knowledge	Skills	Job
• Routine analysis of Samples • Perform Titrametric analysis • Wet analysis like Residue on ignition, Loss on drying	• Knowledge of analytical chemistry • Knowledge about basics of chemistry • Follow good manufacturing process procedures • Document laboratory activities for reference purposes	• Lab technician • Wet Lab analyst
• Scale up reactions • Production of large scale materials • Handle laboratory equipment and supplies safely and effectively	• Knowledge of Chemistry • Follow good manufacturing processprocedures • Document laboratory activities for reference purposes	• Production assistant

• Sampling and testing of water samples. • Analysis of trace elements present in water. • Hardness of water testing. • Turbidity analysis.	• Knowledge of analytical techniques. • Document laboratory activities for reference purposes	• Chemist (Water plant)
• Monitoring the chemical reactions • Perform chemical synthesis in small scale	• Knowledge about organic chemistry • Knowledge about basics of chemistry • Should know preliminary safety precautions	• R&D monitors
• Routine analysis of Samples • Perform Titrametric analysis • Wet analysis like Residue on ignition , Losson drying. • Handling of Analytical instruments	• Knowledge of analytical chemistry • Knowledge about basics of chemistry • Follow Good Manufacturing Processprocedures • Document laboratory activities for reference purposes	• Analyst trainee
• Routine analysis of Samples • Perform Titrametric analysis • Wet analysis like Residue on ignition , Losson drying.	• Knowledge of analytical chemistry • Knowledge about basics of chemistry • Follow Good Manufacturing Processprocedures • Document laboratory activities for reference purposes	• Junior executive

• Maintain and update good manufacturing process compliant along with state-of-the-art analytical laboratories. • Coordinate pharmaceutical-related activities for all products. • Prepare, update and maintain reports on basis of scientific deductions. • Develop and present well-structured technical presentations inclusive of R and D reports, quality investigation reports and regulatory filing documents. • Interpret all Master Manufacturing Formula documents and perform with production on entire process development.	• Ensure to follow current Good Laboratory Process, CGMP(current good manufacturing process) guidelines with respect to work safety and practices. • Train laboratory staff about usage of analytical and equipment techniques. • Evaluate raw, midway, final product along with stability samples as per given guidelines. • Ensure to qualify, explain and maintain all laboratory equipment's. • Write, revise and prepare standard operating procedures as required.	• Good manufacturing process trainee officer
• Drug coding	• Computer knowledge with chemistry skills	• Pharmacy Assistant
• Routine analysis of Samples • Perform Titrimetric analysis • Wet analysis like Residue on ignition, Losson drying	• Knowledge of analytical chemistry • Knowledge about basics of chemistry • Follow good manufacturing processprocedures	• Junior Analytical Chemist

• Handling of Analytical instruments	• Document laboratory activities for reference purposes	
• Engaurd the warehouse • Good English communication • Recording dispatch batches	• Good communication skills • Proper maintain of documentation • Work as per standard operating procedure	• Warehouse In charge
• Knowledge of Environmental chemistry • Must have knowledge in Air monitoring in Environmental Testing. • Well versed with all the equipment in the laboratory.	• Know the hazards of chemicals • Able to perform testing of air pollutants, soil pollutants and hazardous waste.	• Environment Health and Safety assistant
• Coordinate customer visits and audits. Assist in developing quality goals and improvement plans. • Track quality performance and initiate quality improvement plans. • Define and develop quality criteria- Define outgoing quality plan, work with production, product management and customer.	• Knowledge of analytical chemistry/chemistry • Follow good manufacturing processprocedures • Document laboratory activities for reference purposes	• Quality Assurance executive junior • Junior executive Clinical Labs

• Documentation and procedure compliance. Establish, review and revise quality procedures, establish training / development for quality inspectors and technician for the related products.		
• Routine and non routine analysis of Samples	• Knowledge of analytical chemistry • Knowledge about basics of chemistry • Follow Good Manufacturing Process procedures • Document laboratory activities for reference purposes	• Lab assistant Cosmetics and Perfume Industry • Lab assistant Fertilizer Plants
• Need to have a strong fundamental background in analytical chemistry. • Knowledge for analyzing drugs, DNA, trace, and toxicological evidence.	• Using scientific rules and methods to solve problems. • Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems. • Understanding written sentences and paragraphs in work related documents.	• Lab assistant Forensic Labs
• Knowledge of drugs and their effect. • The medical representative's responsibilities include persuading	• Proven medical sales experience. • Proficient in Microsoft Word, Excel, Outlook, and PowerPoint.	• Sales assistant (Medical representative)

potential customers to purchase company medications.	• Strong negotiation skills. • Excellent organizational skills. • Effective communication skills. • Exceptional customer service	

Knowledge	Skills	Jobs
• Knowledge about titrations. • Knowledge of inorganic chemistry. • Knowledge of spectroscopic technique.	• Develop and qualify new testing methods • Perform visual inspections of finished products • Identify and troubleshoot equipment problems • Receive and inspect raw materials • Perform validations or transfers of analytical methods in accordance with applicable policies or guidelines • Investigate or report questionable test results	Quality Control executive
• Knowledge of chemistry.	• Devising procedures to inspect and report quality assurance issues • Monitoring all operations that affect quality • Supervising and guiding inspectors, technicians and other staff	QualityAssuranceexecutive

• Knowledge of chemical hazardous and carcinogenicity.	• Expert in soil, water and air testing.	Environment Health and Safety officer
• Knowledge of named reactions and reagents, spectroscopic techniques and chromatographic techniques.	• Bigger scale reaction handling (production) • Troubleshoot.	Production Chemist
• Knowledge of named reactions and reagents. • Knowledge of spectroscopic techniques. • Knowledge of chromatographic techniques.	• Logical thinking ability. • Able to perform reactions from (mg scale to gram scale). • Spectral analyzing skills. • Troubleshoot.	Research assistant
• Knowledge of named reactions and reagents. • Knowledge of spectroscopic techniques. • Knowledge of chromatographic techniques.	• Reaction monitoring • Glassware washing	R&D Lab assistant
• Knowledge of Analytical chemistry	• Using a range of software, techniques and equipment to carry out research and analysis. • Analyzing and interpreting data.	Analyst (Validation)

	• Making sure that data is accurately recorded in accordance with guidelines. • Reporting and presenting results. • writing research papers, reports, reviews and summaries	
• Knowledge of pharmaceutical chemistry and plant materials • Knowledge of natural products	• Responsible for performing Organic standard prep and sample analysis • Run Gas Chromatography-ECD, GC-FID, GC-MS, HPLC instrumentation. • Preform data interpretation and reporting.	Chemist (nutraceutical's)
• Knowledge of Chemistry/ Industrial chemistry	• Approving or rejecting all components, drug product containers, closures, in-process materials, packaging material, labelling and drug products. • Review production records. • Ensure that if errors have occurred that they have been fully investigated. • Approving or rejecting drug products manufactured, processed, packed or held under contract by another company. • Approving or rejecting procedures or specifications.	Good manufacturing process Trainee

• Knowledge of Chemistry.	• Devising procedures to inspect and report quality assurance issues • Monitoring all operations that affect quality • Supervising and guiding inspectors, technicians and other staff	Quality Assurance Trainee
• Knowledge of drug design and development • Knowledge of surfactants	• Develop and qualify new testing methods • Perform visual inspections of finished products • Identify and troubleshoot equipment problems • Receive and inspect raw materials	Formulation Trainee
• Knowledge of named reactions and reagents, chromatographic techniques and separation.	• Able to perform reactions from (mg scale to gram scale). • Spectral analyzing skills. • Troubleshoot.	Chemist Fertilizer Industry
• Knowledge of Medicinal chemistry/Drug Discovery and Design.	• Capable of developing potent molecules • Able to do molecular docking • Able to perform molecular simulations	Drug Discovery & Development (CADD)
• Knowledge of chemistry • Knowledge of medicinal chemistry	• Ability tests bodily fluids and tissue samples during autopsies to determine the presence of toxins or chemicals.	Toxicology specialist.

• Knowledge Chemicals (hazardous, carcinogenic)	• Ability work in laboratories and use various methods to locate toxic levels of drugs or other poisons within the body.	
• Knowledge of chemistry/Biochemistry/Biology • Knowledge of enzymes, DNA, RNA.	• Expert in analyze non-biological trace evidence found at crime scenes in order to identify unknown materials and match samples to known substances. • Skill in analyzing drugs/controlled substances taken from scenes in order to identify and sometimes quantify these materials.	Forensic scientist

Knowledge	**Skills**	**Jobs**
• Knowledge of organic reactions and reagents. Knowledge in literature search. designing the schemes, maintaining reaction conditions, spectral analysis.	• Handling synthetic reactions. • Handling small scale reactions (mg scale). • Monitoring the reactions. • Purifying the compounds. • Communication skills	**R&D Chemist (Chemistry/Pharmaceutical chemistry**)
• Knowledge of Analytical chemistry • Routine sampling, analysis and documentation of pharmaceutical samples-	• Handling of Analytical Instruments such asHPLC, GC, etc. • Knowledge of chromatography and spectroscopy techniques.	**Quality Control Analyst (Raw materials)**

raw materials, intermediates, finished products and package materials. • Routine and non-routine analysis for raw materials, in process and finished formulations according to quality test procedures.	• Maintaining documentation of standard operating procedure. • Work as per the Standard operating procedure.	
• Analysis and documentation of pharmaceutical In-process samples, intermediates, finished products. • Responsible for analysis of In-process and Finished Product samples as per approved specification and standard testing procedures. • Responsible for analysis of Stability samples of Finished Products as per approved protocol.	• Experience of working to good manufacturing process • Handling of Analytical Instruments. • handling of chromatography and spectroscopy techniques. • Work as per the Standard operating procedure	**QC Analyst (In process and Finished products)**
• Developing and implementing quality control audit plans. • Identifying testing parameters for products.	• Proficiency in quality management software. • In-depth knowledge of industry standards. • Exceptional attention to detail. • Advanced organizational skills.	**QC Auditor**

• Evaluating production stages and testing the composition, appearance, and functionality of completed products. • Assigning team members to quality audits and overseeing there. • Training employees on quality standards and procedures work.	• Excellent leadership and communication skills	
• Knowledge of chromatography and spectroscopy. • Practical knowledge of analytical instruments (IR, FT-IR, HPLC, LCMS, GCMS, NMR).	• Ability to develop and validate new methods. • Logical and independent mind. • Systematic approach to tasks. • Theoretical knowledge of analytical techniques. • Excellent IT skills.	**Analytical R&D** chemist
• Knowledge of computational software and chemistry simulation techniques to help identify novel hits or leads against selected therapeutic targets, as well as to support medicinal chemistry lead optimization programs.	• Computer tool kits. • Skill of Programming language. • Skill to handle various workstations of CADD.	Drug Discovery & Design chemist (CADD- Computer Aided drug Design).
• Knowledge of computational chemistry. • Knowledge of *in silico* data analysis.	• Knowledge of Computer skills. • Programming language knowledge.	Cheminformatics data scientist

• Knowledge of Cheminformatics data analysis.		
• Lab formulation work to address product issues and product requirements. • Pilot scale coating work to address product issues and product requirements. • Full scale plant trials to address product issues and product requirements.	• Experience in formulation development and/or polymer science. • Experience in project management preferred but not essential. • Good communication skills. • Able to work individually and as part of a multi-disciplinary team.	**Plant Chemist**
• Sampling and testing of water samples. • Analysis of trace elements present in water. • Hardness of water testing. • Turbidity analysis.	• Knowledge of analytic techniques.	Chemist (Water sample testing)
• Professional judgment in regulatory, ecotoxicology, mammalian toxicology, occupational health safety and biochemistry and chemistry • Responsible for conducting risk assessments, support evaluation and authorization processes in order to ensure the regulatory compliant sale and transfer.	• Knowledge in Risk assessment with particular expertise in toxicity profile modeling. • Skillwith Q-SAR toolbox, and other related modeling tools**.**	Toxicologist

• The use of assessment methods/models as alternatives to animals and minimizes unnecessary animal testing without reducing the safety of human health and environment.		
• Using laboratory instrumentation to analyse samples	• Experience in Handling and Troubleshooting of Instruments like HPLC, GC-HS, UV and IR.	Analytical Lab technician
• Regulations, policies, or procedures and compliance matters. • Maintaining data in information systems or databases.	• Good communication skills since they need to interact with clients, staff members and other regulatory authorities • Ensure compliance with regulations • Identify and interpret relevant regulatory guidelines.	Regulatory affairs
• Operation of Liquid filling stations and liquid packaging as well as production of chemicals. • Operating all plant and equipment in a safe, environmentally compliant and efficient manner so as to maximize the sites potential profitability while complying with internal rules and policies and external regulations.	• Experience in a chemical plant environment. • Experience working on site.	Chemical process operator

• Managing the receipt/unloading of bulk raw materials, loading/dispatch of bulk product and packing out and labelling of products as required.		
• Research, analyze and synthesize new and existing materials for product, process development and applications. • Perform analytical and physical testing of rubber products and raw materials to provide support to Production and Quality	• Technically sound Chemistry skills with Polymer Chemist/Rubber Technologist.	**Polymer Chemist**
• Develop and present well-structured technical presentations inclusive of R and D reports, quality investigation reports and regulatory filing documents. • Resolve all complex analytical issues inclusive of validation and development of analytical procedures. • Ensure to transfer of new and current products as appropriate.	• Ensure to follow current Good Laboratory Practice, current good manufacturing process guidelines with respect to work safety and practices. • Train laboratory staff about usage of analytical and equipment techniques. • Evaluate raw, midway, final product along with stability samples as per given guidelines.	**Good manufacturing process chemist**

• Interpret Master Manufacturing Formula documents and perform with production on entire process development.		
• Persuading potential customers to purchase company medications, identifying prospective business opportunities for the company, and providing the relevant departments with customer feedback.	• Proven medical sales experience. • Proficient in Microsoft Word, Excel, Outlook, and PowerPoint. • Strong negotiation skills. • Excellent organizational skills. • Effective communication skills. • Exceptional customer service skills. • Persuasive and resilient.	**Medical Representative**
• Ensuring necessary product certification is created and passed to the sales department. • Performing laboratory tasks with due diligence in accordance with the Laboratory Training Manual and the priorities of the work schedule. • Strictly adhering to policies for Health and Safety, Quality and IT.· Ensuring all	• As a QC Technician, Good instrumentation hands on experience used in pharmaceutical industries.	**Quality Control Executive**

measuring equipment used has valid calibration.		
• Need to have a strong fundamental background in the natural sciences specially chemistry. • Knowledge for analyzing drugs, DNA, trace, and toxicological evidence.	• Systems Evaluation - Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system. • Monitoring - Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action. • Complex Problem Solving - Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. • Judgment and Decision Making - Considering the relative costs and benefits of potential actions to choose the most appropriate one	**Forensic Chemist (Chemistry)**
• Knowledge of molecular and atomic structure of crystal. • Symmetry of crystals. • Interpret and understand x-rays.	• Ability to analyze data andvisualize structures in 3D. • Abilities in adapting and integrating computer software and Advanced mathematics and communication skills.	**Crystallographer**

• Working knowledge of the Heavy Atom Method and Patterson Techniques. • Molecular Replacement. • Understand structure refinement. • Knowledge of materials, including metals, gases and biological materials such as proteins, nucleic acids and viruses.	• Analytical skills to design experiments. • Computer skills. • Crystal-growing capabilities • Device maintenance, operation, and development.	
• Mastering the patent classification process Assigning classifications in accordance with the Cooperative Patent Classification rules and definitions Classifying applications related to specific technologies	Experience with intellectual property a plus. Exceptional analytical skills and attention to detail. The ability to use computer systems to perform research and classification operations.	Patent Classification specialists (Chemistry)
• Audit analytical testing of finished dosage pharmaceutical products and/or raw materials following analytical methodology for release in commercial and non-commercial purposes. • Knowledgeable in typical pharma analytical laboratory instrumentation including, but	• Manage constructive relationships with customer service agents in field virtually to ensure accuracy in consultant pay and account manager commissions. • Follow legal and client requirements to ensure collection and customer services calls are handled accurately and appropriately.	Quality Control Associate auditor II/Auditor I (Chemistry/Pharmaceutical chemistry)

not limited to HPLC/GC, spectrometry, dissolution, and balances.	• Review prerecorded sale and customer service interactions to identify trends to support business operations. • Performed other duties including ensuring customer satisfaction through problem resolution and excellent customer service. • Develop strategies to improve customer service and customer experience. • Managed assembly procedures for Ford Customer Service Division. • Created quality assurance program for customer service organization.	

CHAIRMAN

Dept of PG Studies in Industrial Chemistry

M.Sc., Pharmaceutical Chemistry Program and Course Outcome.

Program Specific Outcomes

After successful completion of program,

1. Students will conduct experiments utilizing diverse laboratory techniques, instruments, and methodologies commonly employed in chemical analysis and synthesis.
2. Applying theoretical pharmaceutical chemistry principles, students will address real-world issues, designing and optimizing chemical processes, developing novel materials, and investigating environmental concerns.
3. Students will gather, analyze, and interpret data from chemical experiments, instrumental analysis, and computational simulations, drawing meaningful conclusions from their findings.
4. Through written reports, oral presentations, and visual representations, students will effectively communicate scientific concepts, experimental procedures, and research findings, adhering to professional standards.
5. Collaborating with peers and professionals, students will demonstrate ethical behavior, respect for diversity, and adherence to safety protocols in interdisciplinary teams.
6. Students will proficiently identify and define complex Medicinal/Pharmaceutical problems, employing logical and systematic approaches to solve them, and critically evaluating the validity and reliability of their solutions.
7. Students will be able to apply their knowledge of chemistry to address societal challenges such as sustainability, energy production, environmental pollution, and public health, demonstrating awareness of the ethical, social, and global implications of their work.
8. Students will be equipped with the skills and motivation to pursue lifelong learning and professional development opportunities, staying abreast of advances in chemistry and related fields, and continuously enhancing their knowledge and skills throughout their careers.
9. Demonstrate Leadership and Initiative: Students will be able to demonstrate leadership qualities, take initiative in problem-solving and decision-making, and contribute positively to the advancement of the field of chemistry and the broader scientific community.
10. Students will be able to identify opportunities for innovation and entrepreneurship in the field of chemistry, develop novel ideas, products, or processes, and effectively communicate and implement their innovations for societal benefit and economic growth.
11. Graduates proficiently interpret spectroscopic data and chromatographic separations, enabling accurate identification and characterization of pharmaceutical compounds in diverse formulations.
12. Students apply pharmacokinetic principles to assess drug absorption, distribution, metabolism, and excretion, optimizing dosage regimens for enhanced therapeutic efficacy.
13. Graduates utilize computational tools and structure-activity relationships to design novel pharmaceutical agents with improved potency, selectivity, and therapeutic profiles.

14. Students comprehend ethical and regulatory standards governing pharmaceutical research, ensuring adherence to legal requirements and industry best practices in drug development and manufacturing.
15. Graduates effectively communicate and collaborate with multidisciplinary teams, facilitating seamless integration of scientific knowledge and expertise to achieve common goals in pharmaceutical research and development.
16. Graduates demonstrate adept critical thinking skills, analyzing complex scientific challenges in pharmaceutical chemistry and proposing innovative solutions to advance drug discovery and development efforts.
17. Students embrace lifelong learning, engaging in ongoing professional development activities to stay updated with emerging trends, technologies, and regulatory advancements in the pharmaceutical industry.
18. Graduates contribute to society by developing safe, effective, and affordable pharmaceutical products that address unmet medical needs, improving healthcare outcomes and enhancing quality of life for patients worldwide.
19. Graduates exhibit leadership qualities, driving innovation and entrepreneurship in pharmaceutical sciences, fostering a culture of creativity and excellence in drug discovery and development endeavors.
20. Students appreciate the global impact of pharmaceutical research and development, demonstrating cultural sensitivity and ethical awareness in addressing healthcare challenges across diverse populations and regions.

Semester I Paper Title PC.HC. 1.01: INORGANIC CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course students will be able to: -

1. Students will grasp atomic trends like size, ionization potential, and electronegativity, and their implications in chemical behavior and periodic trends.
2. Comprehensive understanding of s, p, d, and f block elements including electronic configurations, oxidation states, and chemical properties.
3. Students will correlate electronic configurations with characteristic properties of transition elements and analyze trends within transition metal chemistry.
4. Understanding of electronic configurations, oxidation states, absorption spectra, and comparison with other block elements.
5. Students will learn preparation methods and structures of xenon compounds, gaining insights into the unique chemistry of noble gases.
6. Understanding of atomic and molecular orbitals, various bonding types, hybridization, resonance, and significance of hydrogen bonding in molecules.
7. Comprehensive understanding of ionic bonding principles including lattice energy, defects, and factors influencing ionic radii, with applications of Fajan's rule and hydration energy.
8. Analysis of coordination compounds using valence bond, crystal field, and molecular orbital theories, including bonding, crystal field splitting, and spectrochemical series.
9. Grasping the electronic spectra and magnetic properties of transition metal complexes, including selection rules and magnetic behavior.
10. Students will explore modern acid-base theories like Bronsted, Lewis, and HSAB concepts, understanding their applications and theoretical principles in diverse chemical systems.

Semester 1Paper Title PC.HC.1.02: ORGANIC CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand acidity and basicity effects of substituents, hybridization concepts, and resonance effects in molecules.
2. Master homolysis, heterolysis, formation, stability, and reactions of carbocations, carbanions, free radicals.
3. Explore aromaticity, including Huckel's rule, in benzenoid and nonbenzenoid compounds, understanding ring systems.
4. Utilize a variety of organic reagents in reactions, including DCC, Lead tetraacetate, and Osmium tetraoxide etc,
5. Learn mechanisms and applications of named reactions.
6. Grasp chirality concepts, absolute configurations, enantiomers, epimers, and stereochemistry in molecules.
7. Apply methods for determining configuration, including physical and chemical methods, and conformational analysis.
8. Study effects of conformation on reactivity, including in acyclic and cyclic systems.
9. Explore chiral technology applications in organic synthesis, such as asymmetric hydrogenation and hydroformylation.
10. Develop problem-solving skills through understanding reaction mechanisms and applying theoretical concepts.

Semester 1Paper Title PC.HC. 1.03: PHYSICAL CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand thermodynamics terminology, laws, entropy, free energy, and Maxwell's relations, including applications of partial molar properties and the third law.
2. Explore quantum chemistry concepts, including atomic spectra, quantum mechanics postulates, wave equations, and their application to particle behavior.
3. Learn about polymer types, molecular weight distributions, polymerization processes, and analytical techniques for characterizing polymers in various applications.
4. Study reaction kinetics, including rate law determination methods, collision and transition state theories, and kinetics in solutions and fast reactions.
5. Grasp electrochemistry principles, including electrolytic solutions, Debye-Huckle theory, electrode potentials, and applications in batteries and fuel cells.
6. Analyze chemical dynamics, understanding terminology, methods for determining rate laws, and theories such as Arrhenius, collision, and transition state theories.
7. Explore black body radiation, Bohr model, de-Broglie hypothesis, and atomic spectra, providing a foundation for understanding elementary quantum chemistry principles.
8. Understand the concept of activity and activity coefficients, including the Debye-Huckel equation and its application to electrolytic solutions.
9. Learn about polarization, overvoltage, reversible electrodes, and electrochemical energy systems, including batteries, fuel cells, and their electrochemistry.

10. Gain proficiency in various analytical techniques such as viscosity method, ultracentrifugation method, and chemical and X-ray diffraction analysis in polymer chemistry.

Semester I Paper Title PC.HC. 1:04. ANALYTICAL CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Grasp analytical method classification, error analysis, confidence intervals, significance testing, and sampling techniques for solid, liquid, and gaseous samples.
2. Understand titrimetric analysis principles, including acid-base, redox, complexometric, non-aqueous titrations, gravimetric analysis, and TGA applications.
3. Comprehend solvent extraction techniques, ultracentrifugation, supercritical fluid extraction, and extraction of metal organic complexes and drug impurities.
4. Learn about drug impurities, sources, effects, and purity tests, as well as pharmacopoeias and formularies in pharmaceutical chemistry.
5. Understand instrumentation principles and applications in analytical techniques such as fluorescence spectroscopy, atomic absorption spectroscopy, and colorimetry.
6. Master titrimetric analysis, including acid-base, redox, and complexometric titrations, and gravimetric analysis, understanding principles and applications in pharmaceutical analysis.
7. Explore solvent extraction methods, ultracentrifugation, and supercritical fluid extraction, understanding their principles and applications in pharmaceutical analysis and drug formulation.
8. Analyze drug impurities, understanding their sources, effects, and methods for purity testing, as well as the importance of pharmacopoeias and formularies.
9. Gain proficiency in using various analytical instruments, such as fluorescence spectroscopy, flame photometry, and atomic absorption spectroscopy, in pharmaceutical analysis.
10. Develop skills in interpreting analytical data, performing error analysis, and ensuring accuracy and precision in pharmaceutical analysis and drug formulation processes.

Semester I Practical-I, PC: 1.05: Inorganic Chemistry

Student Learning Course Outcomes
After successful completion of this course students will be able to : -

1. Analyze and quantify the levels of temporary, permanent, and total hardness in water samples using complexometric titrations, demonstrating proficiency in water quality assessment.
2. Employ complexometric titrations to accurately estimate the concentration of calcium ions in various aqueous solutions, showcasing mastery in quantitative analysis techniques.
3. Utilize complexometric titrations to determine the concentration of magnesium ions in solution, demonstrating competency in analytical chemistry methods.

4. Perform redox titrations to quantify the concentration of ferrous (Fe(II)) ions in solution, showcasing expertise in oxidation-reduction reactions and titration techniques.
5. Employ redox titrations to determine the concentration of ferric (Fe(III)) ions in samples, demonstrating proficiency in advanced analytical methods.
6. Conduct redox titrations to accurately measure the concentration of copper ions in copper sulfate solutions, showcasing practical skills in transition metal chemistry.
7. Successfully prepare various metal complexes, including chloropentammine cobalt (III) chloride, potassium trisoxalato ferrate (III) trihydrate complex, mercury (II) tetrathiocyanato cobaltate complex, and hexaminecobalt (III) chloride, demonstrating practical knowledge in coordination chemistry synthesis techniques.
8. Analyze coordination compounds to determine the metal and ligand contents, demonstrating proficiency in qualitative and quantitative analysis of complex chemical systems.

Semester I Practical-II, PC: 1.06: Organic chemistry

Student Learning Course Outcomes
After successful completion of this course students will be able to : -

1. Identify and classify organic compounds based on their functional groups, utilizing a variety of qualitative analysis techniques such as solubility tests, precipitation reactions, and characteristic color changes.
2. Apply chemical tests and reactions to elucidate the presence of specific functional groups in organic compounds, enabling qualitative identification and characterization.

Semester I Practical-III, PC: 1.07: Physical Chemistry

Student Learning Course Outcomes
After successful completion of this course students will be able to : -

1. Students will be able to explain the mechanism and factors influencing acid-catalyzed hydrolysis reactions, such as ester hydrolysis.
2. Students will be able to design and conduct experiments to determine rate constants of chemical reactions, including the use of Arrhenius equation to calculate activation energies.
3. Students will understand the concept of ionic strength and its influence on reaction rates, as well as how to experimentally investigate this effect.
4. Students will be proficient in using viscometry techniques to measure polymer solution viscosity and correlate it with molecular weight.
5. Students will be able to design and carry out experiments to study the adsorption behavior of solutes on solid surfaces, such as charcoal.
6. Students will gain practical experience in conducting conductometric titrations to determine acid strengths and compositions in mixtures.
7. Students will be able to perform pH titrations and analyze titration curves to determine the pH of acids and bases.
8. Students will learn to use potentiometric techniques to determine acid dissociation constants (pKa) of weak acids.

9. Students will develop skills in analyzing experimental data, drawing conclusions, and relating results to theoretical concepts in chemistry.
10. Students will gain hands-on experience in conducting experiments safely and accurately, including proper handling of chemicals and equipment.

Semester II Paper Title PC.HC.2.01: ADVANCED INORGANIC CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand symmetry principles, point groups, and molecular symmetry operations, identifying molecular point groups and their implications in molecular properties.
2. Master organometallic chemistry, including the 16 and 18-electron rules, synthesis, reactions, and catalytic applications of organometallic compounds.
3. Explore properties of non-transition elements, including carbon, nitrogen, oxygen, halogens, boron compounds, and their biological significance in transport mechanisms.
4. Study oxygen and electron carriers, including hemoglobin, myoglobin, hemerythrin, and iron-sulfur proteins, understanding their structures, functions, and biological roles.
5. Analyze metal ion deficiency, toxicity, and treatment, studying the toxic effects of metals like iron, copper, arsenic, and mercury in biological systems.
6. Understand metal chelation therapy applications in medicine, including its role in treating metal ion toxicity and its use in anticancer therapy.
7. Grasp the substituent effects on porphyrin rings in oxygen carriers, understanding their structures, stereochemistry, and oxygenation mechanisms.
8. Explore the chemistry of metal carbonyls, nitrosyls, and cyclopentadienyl metal complexes, including their synthesis, bonding, and catalytic applications.
9. Analyze the role of metal ions in biological systems, including their transport across biological membranes and their involvement in essential metabolic processes.
10. Gain proficiency in identifying and understanding the biological effects of metal ions, toxicity mechanisms, and therapeutic applications of metal chelation in medicine.

Semester II Paper Title PC.HC.2.02: ADVANCED ORGANIC CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will understand molecular orbital symmetry, Woodward-Hoffmann correlation diagrams, electrocyclic reactions, cycloadditions, and sigmatropic rearrangements with emphasis on mechanisms and applications.
2. Students will grasp the laws, quantum yields, Jablonski diagram, and various photochemical reactions including photoreduction, photooxidation, photolysis, di-pi-methane rearrangement, and Paterno-Buchi reaction.
3. Students will master the synthesis, reactions, and mechanisms of pyrrole, furan, thiophene, pyridine, indole, benzofuran, benzothiophene, quinoline, and isoquinoline, with emphasis on electrophilic and nucleophilic substitutions.

4. Students will classify and comprehend nucleophilic, electrophilic, and radical rearrangements involving migration to electron-deficient or electron-rich centers, as well as aromatic rearrangements such as Fries and Claisen rearrangements.
5. Students will learn about synthons, synthetic equivalents, functional group interconversions, protecting group principles, and strategic considerations in organic synthesis, including one-group and two-group C-X disconnections.
6. Students will understand various coupling reactions such as Hiyama, Kumada, McMurry, Negishi, Stille, Suzuki-Miyaura, and Ullmann couplings in organic synthesis, considering chemo-, regio-, and stereoselectivity.
7. Students will enhance their ability to solve complex problems in advanced organic chemistry, applying theoretical knowledge to practical scenarios in synthesis and mechanistic understanding.
8. Students will critically evaluate the mechanisms, stereochemistry, and applications of advanced organic reactions, developing a deeper understanding of their scope and limitations.
9. Students will learn to design synthetic routes strategically, considering reactivity, selectivity, and efficiency, with the ability to plan multistep syntheses using retrosynthetic analysis.
10. Students will integrate theoretical principles with laboratory practice, applying advanced organic chemistry concepts in experimental design, data interpretation, and synthesis optimization.

Semester II Paper Title PC.HC.2.03: ADVANCED PHYSICAL CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understanding catalytic reactions, kinetics of enzyme-catalyzed reactions, and heterogeneous catalysis principles, including factors affecting surface reactions and oscillatory reactions.
2. Mastery of the phase rule application to one, two, and three-component systems, including water, sulfur, potassium iodide-water, and ferric chloride-water systems.
3. Grasping adsorption phenomena by solids, adsorption isotherms, surface area measurement techniques, and Gibbs adsorption isotherm principles, with applications in surface films and multilayer adsorption.
4. Comprehensive knowledge of colloidal systems, including properties like the Tyndall effect and Brownian movement, and pharmaceutical applications such as emulsions and suspensions stability.
5. Understanding surface and interfacial tension measurements, surfactants classification, micelle formation, and their pharmaceutical applications in solubilization and wetting agents.
6. Grasping diffusion laws, types, and factors affecting dissolution rates, including the development of dissolution models and drug release mechanisms in dosage form design.
7. Analysis of factors influencing dissolution and diffusion, methods to enhance solubility of poorly soluble drugs, and understanding drug release mechanisms for effective preformulation studies.
8. Understanding particle size distribution, surface area determination methods, flow properties of powders, and various techniques for particle size determination in micromeritics analysis.

9. Proficiency in modeling drug release through polymer matrix and laminates, and understanding the concept of membrane-controlled delivery for dosage form design.
10. Recognizing the pharmaceutical applications of surfactants, colloids, and micromeritics principles in drug formulation and delivery systems.

Semester II Paper Title PC.HC.2.04: ADVANCED ANALYTICAL AND NANOCHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understanding electromagnetic radiation characterization, quantization of energy levels, and analysis of rotational, vibrational, and electronic spectra in molecules.
2. Grasping Raman scattering principles, polarization of Raman lines, and interpretation of Raman spectra, with comparisons to IR spectra.
3. Mastery of X-ray diffraction fundamentals, crystal systems, and experimental methods for crystal structure determination.
4. Interpreting Mössbauer spectra, including isomer shift, quadrupole splitting, and magnetic hyperfine structure, with applications in structure determination.
5. Understanding ESR principles, rules for spectrum interpretation, and applications in studying free radicals, biological structures, and coordination compounds.
6. Grasping the fundamentals and importance of nanochemistry, including the structure, properties, and applications of carbon nanoparticles and nanotubes.
7. Understanding the nature of carbon bonds, carbon clusters, and carbon nanotube properties, fabrication methods, and applications in various fields.
8. Mastery of chemical vapor deposition for nano material fabrication and applications of nanomaterials in medicine, including drug delivery and medical diagnosis.
9. Understanding the significance of nano materials in medicine, such as immunogold labeling, and their potential in various fields due to their unique properties.
10. Recognizing the interdisciplinary nature of nanochemistry and its applications in medicine, material science, and analytical chemistry for advancing technology and research.

Semester II Paper Title PC.2.05: ELECTIVE: DRUG DISCOVERY AND DEVELOPMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Grasping the process from initial extract preparation to compound development, with insights from Taxol's natural product drug development.
2. Overviewing enzyme catalysis, reversible and irreversible inhibition mechanisms, with examples like AZT and clavulanic acid for understanding drug action.
3. Distinguishing oral solids, liquids, suspensions, and other forms, understanding their properties and applications in drug delivery systems.
4. Evaluating advantages and disadvantages of local, oral, and parenteral routes, including various administration methods like inhalation and injection.
5. Grasping the methods for initial screening of natural product extracts and understanding the importance of compound identification.

6. Mastering techniques for structural identification of compounds derived from natural products, crucial for drug development and optimization.
7. Understanding the general concept of enzyme inhibition, including reversible and irreversible mechanisms, and their significance in drug discovery.
8. Identifying and contrasting various dosage forms like oral solids, liquids, and topical semi-solids, considering their properties and applications.
9. Understanding the pros and cons of different administration routes, including local, oral, and parenteral methods for effective drug delivery.
10. Applying knowledge of dosage forms and administration routes to optimize drug delivery systems for specific therapeutic needs and patient preferences.

Semester II Practicals-I, PC: 2.06: Inorganic chemistry

Student Learning Course Outcomes
After successful completion of this course students will be able to : -

1. Students will develop the ability to identify and classify common inorganic ions based on their chemical properties and behavior in qualitative analysis tests.
2. Students will gain hands-on experience in conducting qualitative analysis experiments, including the use of reagents, test tubes, and laboratory equipment to identify the presence of specific ions in solution.
3. Students will apply fundamental principles of inorganic chemistry, including solubility rules, acid-base reactions, and precipitation reactions, to interpret experimental observations and identify unknown ions.
4. Through the analysis of experimental data and the interpretation of results, students will enhance their critical thinking and problem-solving abilities, particularly in the context of identifying unknown ions in complex mixtures.

Semester II Practicals – II, PC: 2.07: Advanced organic chemistry

Student Learning Course Outcomes
After successful completion of this course students will be able to : -

1. Students will be able to perform various organic synthesis reactions, including acetylation, benzylation, nitration, bromination, and hydrolysis, with appropriate reagents and conditions.
2. Students will develop a deeper understanding of the mechanisms underlying organic synthesis reactions, including electrophilic aromatic substitution, nucleophile substitution, and hydrolysis mechanisms.
3. Students will demonstrate knowledge of laboratory safety procedures, including proper handling and disposal of chemicals, use of personal protective equipment, and emergency response protocols.
4. Students will develop skills in analysing experimental results, including yield calculations, melting point determinations, and qualitative analysis of reaction products.
5. Students will gain experience in troubleshooting experimental challenges, such as low yields, side reactions, and impurities, and develop strategies for optimizing reaction conditions and purification techniques.

6. Students will be able to communicate their experimental procedures, results, and conclusions effectively through written reports, oral presentations, and scientific discussions.
7. Students will gain proficiency in quantitative analysis techniques, including stoichiometric calculations, titration methods, and data analysis for estimating the composition of mixtures containing organic compounds.
8. Students will enhance their critical thinking and problem-solving abilities by designing and executing experiments, analyzing data, and making evidence-based conclusions.
9. Through engaging in hands-on laboratory experiments and exploring the principles of organic synthesis, students will develop a curiosity and enthusiasm for further study and research in the field of organic chemistry.

Semester II Practicals – III, PC: 2.08: Bioanalytical techniques

Student Learning Course Outcomes
After successful completion of this course students will be able to : -

1. Students will learn extraction techniques, such as solvent extraction or steam distillation, to isolate caffeine from tea leaves.
2. They will understand the principles of partitioning between immiscible phases and apply them to separate caffeine from other components of the tea.
3. Students will gain experience in extraction and purification techniques to isolate piperine from black pepper.
4. They will learn methods such as Soxhlet extraction, column chromatography, or recrystallization to obtain pure piperine.
5. Students will apply extraction and purification techniques to isolate nicotine from tobacco leaves.
6. They will understand the principles of solvent selection, pH control, and crystallization to maximize yield and purity of nicotine.
7. Students will explore various natural sources and learn to isolate other biologically active constituents, such as alkaloids, flavonoids, or essential oils.
8. They will gain skills in selecting appropriate extraction methods, analyzing extracts for purity, and characterizing isolated compounds using spectroscopic or chromatographic techniques.

Semester III Paper Title PC.HC.3.01: SPECTROSCOPY TECHNIQUES

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understanding UV-Visible spectroscopy principles, including instrumentation, Beer's Law, and chromophores, for qualitative and quantitative analysis of organic compounds.
2. Mastery of Optical Rotatory Dispersion fundamentals, Cotton effect curves interpretation, and Circular Dichroism's relation, with practical applications.
3. Grasping IR spectroscopy basics, vibration types, interaction with molecules, and qualitative interpretation techniques including sample preparation and FT-IR instrumentation.
4. Proficiency in analyzing IR spectra, understanding functional group frequencies, and interpreting spectra based on chemical environment variations.
5. Comprehending NMR principles, including nucleus types, excitation, relaxation processes, chemical shift, spin-spin coupling, and FT-NMR principles with C13 nucleus reference.
6. Application of NMR techniques for spectra interpretation, including signal splitting, coupling constants, and understanding 2DNMR principles for structural elucidation.
7. Understanding Mass Spectrometry fundamentals, ion formation, molecular ion peaks, analyzers, fragmentation processes, and ionization techniques like FAB and MALDI.
8. Proficiency in analyzing Mass Spectra, including fragmentation patterns, McLafferty rearrangement, and determining molecular formulas and weights for qualitative and quantitative analysis.

Semester III Paper Title PC.HC.3.02: BIOORGANIC CHEMISTRY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the chemistry of amino acids, including synthesis methods, chemical reactions, and primary structure determination, enabling proficient peptide synthesis.
2. Analyze alkaloids, glycosides, anthocyanins, and nucleic acids, including structure elucidation and phytochemical testing for alkaloids and flavonoids.
3. Evaluate the biological significance of steroid hormones, prostaglandins, essential oils, and terpenoids, examining their structures, biosynthesis, and pharmacological properties.
4. Interpret enzyme kinetics, including the Michaelis-Menten equation, Vmax, Km, and bisubstrate reactions, to quantitatively analyze enzyme-catalyzed reactions.
5. Perform experiments to elucidate enzyme inhibition mechanisms using reversible and irreversible inhibitors, interpreting data to determine enzyme kinetics parameters.
6. Demonstrate practical skills in the extraction, isolation, and structural elucidation of natural products such as alkaloids, glycosides, essential oils, and terpenoids.
7. Apply stereochemistry principles for the protection and deprotection of amino groups, activation of carboxylic groups, and synthesis of dipeptides and tripeptides.

8. Assess the occurrence, synthesis, and classification of alkaloids, glycosides, anthocyanins, and nucleic acids, and perform phytochemical tests for alkaloids and flavonoids.
9. Understand enzyme classification, characteristics, and kinetics, including enzyme-substrate complex formation, factors affecting reaction rates, and enzyme inhibition mechanisms.
10. Critically analyze the structures, occurrence, and pharmacological properties of steroid hormones, prostaglandins, essential oils, and terpenoids in biological systems.

Semester III Paper Title PC. SC. 3.21: SEPARATION TECHNIQUES

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the principles and terminology of chromatographic methods, including paper chromatography and thin-layer chromatography (TLC), and their applications in qualitative analysis.
2. Explore the various methods of paper chromatography, such as ascending, descending, and 2D techniques, along with their practical applications in separating and identifying components.
3. Examine the principles and techniques of thin-layer chromatography, including types of adsorption, preparation methods, and mobile phase selection, and compare its advantages with paper chromatography.
4. Investigate column chromatography and high-performance thin-layer chromatography (HPTLC), focusing on adsorption phenomena, packing techniques, and their applications in pharmaceutical analysis.
5. Learn the principles and instrumentation of gas chromatography (GC), including column types, efficiency parameters, and detector types, and understand its derivatization methods and interfacing with mass spectrometry.
6. Explore the principles and instrumentation of high-performance liquid chromatography (HPLC), emphasizing reverse-phase HPLC, column selection, and detectors such as UV-visible, refractive index, and mass detectors.
7. Compare the efficiency, retention, resolution, and selectivity parameters of GC and HPLC, highlighting their respective strengths and limitations in pharmaceutical analysis.
8. Understand the significance of mobile phase selection and packing materials in HPLC, including standard columns, narrow bore columns, and guard columns, for optimizing separation and detection.
9. Learn about the resolution equation and efficiency parameters in gas chromatography, along with the practical applications of GC in pharmaceutical analysis.
10. Explore advanced techniques in chromatography, including derivatization methods, such as acylation and esterification, and the use of electron capture detectors (ECD) in gas chromatography for sensitive detection of analytes.

Semester III Paper Title PC. SC. 3.22: PHARMACEUTICAL ANALYSIS

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the principles, specifications, and performance of automated methods of analysis.
2. Identify automation strategies and analyze the advantages and disadvantages of automated techniques.
3. Familiarize with various automated chemical analyzers, including infrared process analyzers, on-line potentiometric analyzers, chemical sensors, discrete analyzers, and continuous analyzers.
4. Demonstrate knowledge of thermal methods of analysis, including thermogravimetric analysis (TGA), differential thermal analysis (DTA), and differential scanning calorimetry (DSC).
5. Explain the theory, working principles, and instrumentation of capillary supercritical fluid chromatography, gel chromatography, and size exclusion chromatography.
6. Analyze cyclic voltammetry principles, instrumentation, and applications, along with electrogravimetry theory and applications.
7. Define and describe ion-exchange chromatography (IEC), including ion-exchange mechanisms, factors affecting equilibrium, instrumentation, and applications.
8. Understand the principles and applications of affinity chromatography, exclusion chromatography, and supercritical fluid chromatography.
9. Explain the basis and applications of electrophoresis techniques, including moving boundary electrophoresis, zone electrophoresis, isotachophoresis, isoelectric focusing, immunoelectrophoresis, and capillary electrophoresis.
10. Demonstrate practical skills in performing experimental techniques related to the discussed analytical methods.

Semester III Paper Title PC.SC.3.23: DRUG DISCOVERY AND DEVELOPMENT

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the historical context and processes involved in drug discovery, including lead discovery, modification, and the pharmaceutical phases, emphasizing natural product sources and enzyme inhibition.
2. Analyze drug design principles, including physicochemical properties, stereochemistry, and 3D database searches, employing computational methods like docking and molecular modeling.
3. Evaluate the relationship between molecular structure and pharmacological activity, focusing on solubility, functional group modification, and drug-receptor interactions in lead compound refinement.
4. Examine the classification, properties, and biological significance of vitamins, exploring their synthesis, chemical properties, and physiological roles in health and disease prevention.
5. Investigate the nomenclature, classification, and structural characteristics of lipids, emphasizing the biological importance of lipids such as phospholipids, sphingolipids, and oils in cellular function.
6. Apply drug discovery methods, including random screening, lead compound refinement, and functional group modification, to identify potential drug candidates and improve pharmacological activity.

7. Discuss the significance of drug action in terms of ADME processes, bioavailability, pharmacodynamics, and drug routes of administration, ensuring effective drug development and delivery.
8. Explore the concept of selectivity in drug action and drug-receptor interactions, elucidating how specific molecular structures influence target specificity and therapeutic efficacy.
9. Investigate the synthesis, biological roles, and consequences of deficiency or excess of essential vitamins such as retinal, thiamine, ascorbic acid, and vitamin K in human health.
10. Examine the structural diversity, purification methods, and physiological functions of lipids, highlighting their roles as structural components, energy sources, and signaling molecules in biological systems.

Semester III Paper Title PC 3.03: ELECTIVE: DRUG DESIGN AND METABOLISM

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the principles of drug design and development, exploring lead discovery methods like random and non-random screening, and rational approaches to lead modification for improved potency and therapeutic index.
2. Analyze physicochemical properties of drugs, including solubility, partition coefficient, protein binding, and chelation, and their impact on biological activity and drug metabolism.
3. Investigate drug metabolism pathways, including phase I (oxidation-reduction, hydrolysis) and phase II (conjugation reactions), and the role of Cytochrome P-450 enzymes in biotransformation.
4. Examine the identification of pharmacophores and functional group modifications in lead compounds, emphasizing structure-activity relationships (SAR) and strategies to enhance potency and safety profiles.
5. Discuss the significance of drug metabolism in terms of site-specific biotransformation, highlighting major conjugation reactions such as glucuronidation, sulfation, methylation, and acetylation.
6. Explore the factors influencing drug metabolism, including enzyme induction/inhibition, genetic polymorphisms, age, gender, and disease states, and their implications for drug efficacy and toxicity.
7. Evaluate the role of isosterism, geometrical, and optical isomerism in drug design and metabolism, considering their impact on drug-receptor interactions and pharmacokinetic properties.
8. Investigate the importance of steric effects and ionization in drug molecules, elucidating their influence on drug distribution, metabolism, and excretion processes *in vivo*.
9. Discuss clinical observations and experimental approaches in drug discovery, emphasizing the integration of *in vitro* and *in vivo* studies to optimize lead compounds for therapeutic use.
10. Analyze the role of drug metabolism studies in preclinical and clinical drug development, focusing on the assessment of metabolic stability, metabolite identification, and drug-drug interactions for safe and effective pharmacotherapy.

Semester III Practical-I, PC: 3.04: Synthesis of drugs and drug intermediates-I

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will develop practical skills in synthetic organic chemistry, including reaction setup, purification techniques, and product characterization.
2. Students will gain a deeper understanding of reaction mechanisms involved in the synthesis of drugs and drug intermediates, enabling them to predict reaction outcomes and troubleshoot experimental challenges.
3. Students will learn about the synthesis and properties of pharmaceutically important compounds, including their biological activity, pharmacokinetics, and therapeutic uses.
4. Students will acquire proficiency in interpreting UV, IR, NMR, and mass spectra, allowing them to identify functional groups, determine molecular structures, and assess compound purity.
5. Students will develop critical thinking and problem-solving abilities by analyzing spectral data, proposing structural assignments, and making evidence-based conclusions.
6. Students will understand the importance of ethical conduct and safety protocols in pharmaceutical research, including the responsible handling and disposal of hazardous materials.
7. Students will learn to effectively communicate their experimental procedures, results, and interpretations through written reports, oral presentations, and scientific discussions, fostering collaboration and teamwork.

Semester III Practical-II, PC: 3.05: Separation techniques:

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Develop practical skills in various chromatography methods including TLC, column, and paper chromatography for qualitative and quantitative separations in analytical chemistry laboratories.
2. Gain a deep understanding of partitioning, adsorption, and separation mechanisms underlying chromatographic processes, enabling efficient compound separation and analysis.
3. Interpret chromatographic data including retention times, peak shapes, and resolutions to identify and quantify compounds in complex mixtures with accuracy.
4. Optimize experimental conditions such as stationary/mobile phase selection, flow rates, and detection methods to achieve optimal chromatographic separations for diverse compound classes.
5. Develop proficiency in quantitative analysis techniques using peak areas, calibration curves, and standard solutions to determine compound concentrations in chromatographic fractions reliably.
6. Learn to troubleshoot chromatographic challenges such as poor resolution or peak shape, and develop strategies to address issues for successful chromatographic separations.

Semester III Practical- III, PC: 3.06: Assay of drugs by titrimetric and instrumental methods – I

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will develop practical skills in performing titrimetric and instrumental assays for the quantitative determination of drug concentrations in pharmaceutical formulations.
2. Gain a deep understanding of the principles underlying titrimetric and instrumental assays, including acid-base, redox, and complexometric reactions used in pharmaceutical analysis.
3. Interpret assay data obtained from titrations and instrumental measurements, including calculation of drug concentrations and assessment of assay accuracy and precision.
4. Learn to develop and validate assay methods for pharmaceutical analysis, including optimization of experimental conditions and assessment of method performance parameters.
5. Understand the importance of quality control in pharmaceutical analysis, including adherence to regulatory guidelines and validation requirements for assay methods.

Semester IV Paper Title PC.HC. 4.01: MEDICINAL CHEMISTRY-I

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the classification and mechanism of action of local anti-infective agents, including nitrofurazone and furazolidone, and their synthesis and structure-activity relationship (SAR).
2. Explore the mechanism of action and SAR of sulfonamides, such as sulfisoxazoles and sulfamethoxazoles, and their synthesis for combating bacterial infections.
3. Study the classification, mechanism of action, and synthesis of major antibiotics like Penicillin G, cephalosporins, and tetracyclins, highlighting their SAR.
4. Analyze the mechanism of action and synthesis of antitubercular and antileprotic agents like isoniazid, ethambutol, and clofazimine, focusing on their efficacy in treating mycobacterial infections.
5. Investigate the mechanism of action and synthesis of analgesic and anti-inflammatory agents like Ibuprofen, phenylbutazone, and diclofenac sodium, and understand their pharmacological properties.
6. Explore the synthesis and mode of action of anticancer, antiviral, and hypoglycemic agents, including 5-fluorouracil, azidothymidine, and tolbutamide, emphasizing their therapeutic potential.
7. Examine the classification, mechanism of action, and synthesis of antihistamines like pheniramine maleate, pyrilamine, and histamine receptor antagonists such as ranitidine and cimetidine.
8. Study the synthesis and mechanism of action of cardiovascular agents, including antiarrhythmic agents like verapamil and antihypertensive agents like clonidine and hydralazine derivatives.

9. Explore the mechanism of action and synthesis of psychopharmacological agents like benzodiazepines (e.g., diazepam), phenothiazines (e.g., chlorpromazine), and tricyclic antidepressants (e.g., amitriptyline).
10. Analyze the mechanism of action and synthesis of antimalarials like chloroquine, mefloquine, and primaquine, focusing on their efficacy against Plasmodium species, and SAR considerations.
11. Investigate the mechanism of action and synthesis of antiamoebic agents like metronidazole and iodoquinol, highlighting their use in treating amoebic infections.
12. Study the mechanism of action and synthesis of anticonvulsants like phenytoin sodium and carbamazepine, focusing on their role in managing epileptic seizures.
13. Explore the mechanism of action and synthesis of sedatives and hypnotics like phenobarbital and chlordiazepoxide, emphasizing their pharmacological effects on the central nervous system.
14. Analyze the mechanism of action and synthesis of general anesthetics like halothane and methohexital sodium, focusing on their use in inducing and maintaining anesthesia during surgical procedures.

Semester IV Paper Title PC.HC:4.02: MEDICINAL CHEMISTRY-II

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the historical evolution and basic considerations in medicinal chemistry, including drug forms, applications, and biological actions, and factors influencing drug metabolism and interactions.
2. Explore drug classification, nomenclature, and the selection of essential drugs, along with physicochemical properties affecting biological activity like solubility, partition coefficient, and ionization.
3. Delve into Structure-Activity Relationships (SAR) and Quantitative Structure-Activity Relationships (QSAR), focusing on substituent effects, lipophilicity, electronic effects, and steric parameters in drug design.
4. Investigate prodrugs and their utility in enzyme activation, including various types and mechanisms of drug activation, such as carrier-linked prodrugs and bioprecursor prodrugs.
5. Analyze examples of drug action targeting cell membranes, walls, enzymes, receptors, and nucleic acids, including mechanisms of action and classes of drugs affecting each target area.
6. Examine the principles and techniques of combinatorial chemistry in drug synthesis, including solid support methods, parallel synthesis, and encoding methods for library generation and screening.
7. Explore drug metabolism processes, including phase-I and phase-II reactions, the role of Cytochrome P-450 enzymes, and factors influencing drug biotransformation in the body.

Semester IV Paper Title PC.SC.4.21: GENERAL PHARMACOLOGY

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the basics of pharmacology including drug sources, routes of administration, distribution, metabolism, and excretion, along with factors influencing drug effects and toxicity.
2. Explore sterilization methods and screening techniques for drug discovery, including bioassays, *in vitro* and *in vivo* studies, and methodologies for microbial assays.
3. Investigate drug-receptor interactions, affinity, and mechanisms of drug action, along with adverse drug reactions and the concept of drug allergy.
4. Examine microbial drug development, including microbiology fundamentals, fermentation processes, antimicrobial assays, and downstream processing.
5. Gain insights into immunology and immunopharmacology, covering the immune system, immune response mechanisms, hypersensitivity, immunodeficiency, and immunomodulation techniques.

Semester IV Paper Title PC.SC.4.22: DOSAGE FORMS AND REGULATORY ASPECTS

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Learn about various dosage forms, including oral solids, liquids, suspensions, and emulsions, along with their production methods and quality control measures.
2. Understand the principles of stability in medicinal products, covering chemical and physical stability factors, such as hydrolysis, oxidation, and changes in crystal properties.
3. Explore current good manufacturing practices (GMP) and quality management requirements, including guidelines for manufacturing premises, equipment, documentation, and quality control.
4. Gain insights into process development for solid dosage forms and granulation, including validation of equipment, batch size definition, and regulatory aspects of process development.
5. Study novel drug delivery systems (NDDS) fundamentals, including sustained/controlled release mechanisms, factors influencing design, and pharmacokinetic/pharmacodynamic basis.
6. Explore the theory of mass transfer and Fick's law in the context of novel drug delivery systems, along with the assessment of bioavailability in controlled-release systems.
7. Understand the role of polymers in controlled release, including classification, properties of biocompatible/biodegradable polymers, and modeling drug release from different polymer matrices.

Semester IV Paper Title PC.SC. 4.23: BIOPHARMACEUTICS

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand the structure of cell membranes and the mechanisms of gastrointestinal absorption of drugs.
2. Analyze the factors affecting drug absorption including biological, physiological, physico-chemical, and pharmaceutical factors.
3. Evaluate methods for determining drug absorption such as in-vitro, in-situ, and in-vivo methods.
4. Define and measure bioavailability, including the concept of equivalents and bioequivalence studies.
5. Demonstrate knowledge of dosage regimen principles including multiple dosing, loading dose, maintenance dose, and adjustment of dosage in renal and hepatic impairment.
6. Apply therapeutic drug monitoring concepts for individualization of therapy.
7. Demonstrate understanding of scale-up and pilot plant techniques in pharmaceutical production.
8. Analyze pharmaceutical production planning and control, including large-scale manufacturing techniques for solids, liquids, semisolids, and parenteral dosage forms.
9. Evaluate pre-approval inspections and post-operational activities including FDA evaluation, risk-based approach to inspections, and quality by design concepts.
10. Understand equipment cleaning procedures and their importance in pre-approval inspections.
11. Analyze distribution processes, handling of recalled and returned products, and management of complaints and adverse effects.
12. Understand the regulatory framework governing drug product design, manufacture, and distribution in India, including the Drugs and Cosmetics Act 1940 and its rules, National Pharmaceutical Pricing Authority (NPPA), and Intellectual Property Rights.
13. Evaluate registration requirements and regulatory procedures for various drug categories including new drugs, generics, medical devices, biologics, herbals, cosmetics, and fixed-dose combinations.
14. Analyze regulatory requirements for clinical trial registration, test license, commercial import license, manufacture license, and certificate of pharmaceutical product (CoPP).
15. Understand the organization and structure of the FDA and its regulatory processes in the USA including the Federal Register, CFR, FDC Act, Hatch-Waxman Act, and Orange Book.
16. Analyze regulatory approval processes for IND, NDA, ANDA, orphan drugs, and combination products.
17. Understand the organization of the EMA and marketing authorization procedures in the European Union, including variations, extensions, and IMPD requirements.
18. Evaluate regulatory requirements for generic drug registration, new drugs, and post-approval requirements in emerging markets such as BRICS countries and Egypt.

Semester IV Practical –I, PC: 4.03: Synthesis of Drugs and Drug intermediates-II

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will develop practical skills in organic synthesis techniques, including reaction setup, monitoring, workup, and purification of synthesized compounds.
2. Students will gain a deep understanding of the reaction mechanisms underlying the synthesis of drugs and drug intermediates, including condensation, cyclization, and functional group transformations.
3. Learn to purify synthesized compounds using techniques such as recrystallization, column chromatography, and spectroscopic methods for compound characterization.
4. Apply knowledge of synthetic routes and transformations to design and execute efficient strategies for the synthesis of specific drug molecules and intermediates.
5. Adhere to safety protocols in laboratory practices, including proper handling of reagents, waste disposal, and ethical conduct in synthetic chemistry research.
6. Develop problem-solving skills to address challenges encountered during synthetic reactions, such as low yields, side reactions, and purification issues.
7. Effectively document experimental procedures, results, and observations through laboratory notebooks, reports, and presentations, fostering clear communication and record-keeping practices in synthetic chemistry research.

Semester IV Practical-II, PC: 4.04: Assay of drugs by titrimetric and instrumental methods – II

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will develop practical skills in performing titrimetric and instrumental assays for the quantitative determination of drug concentrations in pharmaceutical formulations.
2. Gain a deep understanding of the principles underlying titrimetric and instrumental assays, including acid-base, redox, and complexometric reactions used in pharmaceutical analysis.
3. Interpret assay data obtained from titrations and instrumental measurements, including calculation of drug concentrations and assessment of assay accuracy and precision.
4. Learn to develop and validate assay methods for pharmaceutical analysis, including optimization of experimental conditions and assessment of method performance parameters.
5. Understand the importance of quality control in pharmaceutical analysis, including adherence to regulatory guidelines and validation requirements for assay methods.

Semester IV Practical-III, PC: 4.05: Project Work

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will be able to design a research project in Pharmaceutical Chemistry, considering objectives, methodologies, and timelines for completion.
2. Develop proficiency in conducting multistage synthesis or isolation of active molecules from medicinal plants, employing appropriate laboratory techniques and equipment.
3. Conduct comprehensive literature reviews to gather relevant information on the chosen topic, including background information, previous research findings, and current trends in Pharmaceutical Chemistry.
4. Gain experience in using analytical techniques such as spectroscopy, chromatography, and spectrophotometry for compound characterization and evaluation of biological activities.
5. Analyze experimental data obtained from multistage synthesis, isolation, or pharmacokinetic studies, and interpret the results to draw meaningful conclusions.
6. Develop critical thinking skills to address research challenges and troubleshoot experimental issues encountered during the project work.
7. Effectively communicate research findings, methodologies, and conclusions through the preparation of a dissertation, adhering to appropriate scientific writing conventions and standards.
8. Present the research project findings during a viva voce examination, demonstrating the ability to articulate ideas, respond to questions, and defend the validity of the research conducted.
9. Understand and adhere to ethical principles in Pharmaceutical Chemistry research, including integrity in data collection, proper attribution of sources, and respect for human and animal subjects in pharmacokinetic studies.
10. Develop project management skills to organize research activities, allocate resources effectively, and meet project deadlines within the allotted timeframe.
11. Gain insight into the professional aspects of Pharmaceutical Chemistry research, including collaboration with peers, mentorship opportunities, and potential avenues for future research or career advancement.

Kuvempu University

Faculty of Science and Technology

School of Earth Resources and Environmental Science

Earth Science and Resource Management

Environmental Science

Remote Sensing Applications

M. Sc., Earth Science and Resource Management Program Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. Understand the Earth's major systems and how they interact with each other
2. Identify common minerals, rocks and ores and their genesis, occurrence and distribution in earth.
3. Describe and interpreting the development of landforms and geologic structures due to natural agents.
4. Constructing and interpreting geologic and topographic maps, cross-sections, and topographic profiles for understanding earths exterior and interior.
5. Understand the composition of the Earth's atmosphere and its processes.
6. Understand the Earth's place in the solar system.
7. Understand the impact of humans on climate change, factors responsible for climate and roles of which play in controlling climate change.
8. Understand foundational geologic principles and theories and their impact on Earth systems
9. Understand the Earth's dynamics and the processes involved in dynamic development of earth.
10. Being familiar with technologies and their application used in solving geologic problems.
11. Map geological materials, features and processes in the field using appropriate tools and techniques, including compass, hand drafting, GPS, GIS and Remote Sensing.

I Semester

Paper Title- ESH 101: Mineralogy, Crystallography and Thermodynamics

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Gain knowledge on mineral identification, their crystallography, chemical composition, physical properties, genesis, their classification.
2. Understand the basics of crystallography and mineralogy
3. Learning how to identify and recognize minerals under thin section
4. Understand the importance of minerals to society and their economic value.
5. Explain how the properties of chemical elements and their bonds regulate the structure and composition of minerals
6. Demonstrate how the crystal structure of minerals affects the external morphology

7. Understand the facts, concepts, principles, theories, classification systems, and language associated with minerals.
8. Interpret stability fields in terms of pressures and/or temperatures using a phase diagram.
9. Comprehensive Knowledge of Mineralogy: Students will gain knowledge about the physical and chemical properties of various mineral groups. They'll be able to classify and recognize the occurrence and uses of different minerals, and understand concepts like isomorphism, polymorphism, pseudomorphism.
10. Application of Optical Mineralogy: Students will gain knowledge on the principles of optics, isotropism and anisotropism, refractive indices, double refraction, extinction, pleochroism, and interference colors in the context of mineral identification. They will also develop practical skills to use a polarizing microscope and study the optical properties of common rock-forming minerals.
11. Understand the relations between heat and mechanical energy, and of the conversion of either into the other. Thermodynamics as the science that tells us which minerals or mineral assemblages will be stable under different conditions.

Paper Title- ESH 102: Physical Geology and Oceanography

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Fundamentals of Geology and Earth Sciences: Students will gain a comprehensive understanding of the origins and physical properties of Earth, the principles of geology, and its place within the solar system.
2. Understand of Natural Processes and Phenomena: Students will gain knowledge of internal and surface processes of Earth, such as weathering, erosion, seismic activity, and volcanism, and their environmental impact.
3. Mastery of Geomorphology and Dynamic Earth Concepts: Students will understand the fundamental principles of geomorphology and will learn about Earth as a dynamic system, encompassing theories of continental drift, sea-floor spreading, paleomagnetism, and plate tectonics.
4. Practical Skills in Geomorphological Analysis: Students will develop practical skills for understanding and analyzing geomorphic features, including the use of topographical maps and toposheets, understanding landform contour maps, and field study of important landforms.
5. Understand the basic chemical, geological, physical, and biological features and processes of the oceans.
6. Students will learn about Marine life and ecosystems, Ocean circulation, Plate tectonics and the geology of the seafloor

Paper Title- ESH 103: Geoinformatics

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand of Photo Geology and Aerial Photography: Students will acquire a fundamental understanding of aerial photography, including knowledge of the electromagnetic spectrum, types and geometry of aerial photographs, and factors affecting aerial photography.
2. Proficiency in Remote Sensing Fundamentals: Students will learn about the basics of remote sensing, remote sensing systems, and sensors. They will be able to understand the signatures of rocks, minerals, and soils, and apply remote sensing knowledge in geosciences and geomorphological studies.
3. Knowledge of Remote Sensing Satellites and Image Processing: Students will gain knowledge about various Indian and foreign remote sensing satellites. They will understand digital image processing and its essential steps, including elements of pattern recognition and image classification.
4. Competence in Geographic Information System (GIS): Students will be introduced to the Geographic Information System (GIS), its components, product generation, and map analysis tools. They'll also learn about the integration of GIS.

Paper Title- ESS 101: Earth and Atmospheric Science

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Explain the physical laws governing the structure and evolution of atmospheric phenomena spanning a broad range of spatial and temporal scales.
2. Apply mathematical tools to study atmospheric processes.
3. Students will have the knowledge and skills to: Critically analyze the interactions between the atmosphere and the surface (topography, vegetation, built structures), and apply this understanding in an environmental decision-making context.
4. Explain the principles behind, and use of, meteorological instrumentation.
5. Study the fluid dynamics that drive the circulation of the ocean and the atmosphere.
6. Understand the physical and mathematical descriptions of various atmospheric phenomena.
7. Gain experience on how to ask relevant weather-related questions, and how to use weather information to make decisions.
8. Study of the atmosphere, atmospheric phenomena, and atmospheric effects on our weather.

II Semester

Paper Title- ESH 201: Petrology and Geochemistry

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand of Igneous Petrology: Students will understand the fundamentals of igneous petrology, including the composition, types, and origin of magma. They'll comprehend various igneous rock forms, textures, structures, and the principles of differentiation and assimilation, as well as Bowen's reaction series.
2. Knowledge of Sedimentary Petrology: Students will understand the processes that form sedimentary rocks and will be able to classify them based on their textures and structures. They will gain detailed knowledge of the petrography of important siliciclastic and carbonate rocks such as conglomerate, breccia, sandstone, greywacke, shale, limestone.
3. Comprehensive Study of Metamorphic Petrology: Students will comprehend the processes and products of metamorphism, including types, factors, zones, and grades of metamorphism. They will learn to identify the textures, structures, and classifications of metamorphic rocks and perform detailed petrographic analyses of key metamorphic rocks.
4. Practical Skills in Petrography: Students will develop practical skills for identifying igneous, sedimentary, and metamorphic rocks based on their physical properties in hand specimens and optical properties in thin sections. This will involve hands-on experience with rock samples and the use of a microscope.
5. Insight into Cosmic Element Abundance and Planetary Composition: Students will learn about the cosmic abundance of elements and the composition of planets and meteorites. They will gain a holistic understanding of the geochemical evolution of the earth and geochemical cycles.
6. Proficiency in Geochemical Thermodynamics and Isotope Geochemistry: Students will grasp the key principles of geochemical thermodynamics, isomorphism, polymorphism, and isotope geochemistry, providing them with a comprehensive and nuanced understanding of geochemical phenomena.
7. Students will understand Goldschmidt's geochemical classification of elements and the distribution of major, minor, and trace elements in different types of rocks - igneous, metamorphic, and sedimentary.

Paper Title- ESH 202: Hydrogeology and Structural Geology

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will grasp the concept of the distribution of water on the earth's crust, types of groundwater, zones of aeration and saturation, and the water table. They'll also learn about the classification of aquifers, hydrological properties of rocks and soil, and principles governing groundwater movement.
2. Students will gain knowledge in surface and sub-surface investigations of groundwater, including geophysical exploration and test drilling. They'll learn about the fluctuations of water levels, the quality of groundwater, well hydraulics, water wells, and various recharging methods. The course will also cover details about spring wells.
3. Proficiency in Environmental and Hydrological Applications: Students will develop skills in generating seismic and land degradation maps, interpreting satellite imageries, measuring water pollution levels, and performing field studies of geo-environmentally sensitive zones. They'll also practice water quality analysis and study borehole drilling in the field.
4. Students will comprehend the fundamental concepts of structural geology, including contouring, reading geological maps, and understanding bed, dip, strike, and outcrop.
5. They'll learn to use instruments like clinometer/Brunton compass and identify various geological structures, deformations, and faults.
6. Students will gain an understanding of different types of geological discontinuities like joints and unconformities, and understand their significance in the context of structural geology.

Paper Title- ESH 203: Paleontology, Indian Stratigraphy, Geology of Karnataka

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Students will understand the basic principles and nomenclature of stratigraphy and learn about the stratigraphic distribution of various rock groups throughout different geological periods in India and special reference to Karnataka.
2. They'll gain practical experience in preparing stratigraphic columns and conducting field studies in type areas.
3. Students will acquire a detailed understanding of the distribution and classification of Paleozoic, Mesozoic, and Cenozoic rocks in India and Karnataka, their marker fossils, and significant geological formations associated with these periods.
4. Understand of Paleontology and Fossil Study: Students will comprehend the nature, preservation, and significance of fossils, learn about the taxonomy of various phyla

including Mollusca, Brachiopoda, Arthropoda, and Echinodermata, and understand the geological history and morphological characteristics of these groups.

5. Evolution and Plant Kingdom: Students will learn about the evolution of key species including man, horse, and elephant, as well as an introduction to reptiles, particularly focusing on the Mesozoic period.
6. In addition, they will gain a foundational understanding of the plant kingdom, including the classification and morphology of notable plant fossils. They'll get hands-on experience studying fossils and models of significant fauna and flora from various geological periods.

Paper Title- ESS 201: Digital image processing and GIS Data Analysis

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Learn and understand the digital image processing
2. Study the image fundamentals and mathematical transforms necessary for image processing.
3. Learn and understand various image enhancement technique used in digital image processing
4. Study image restoration procedures.
5. Study the image compression procedures.
6. Perform image enhancement techniques in spatial and frequency domain.
7. Elucidate the mathematical modelling of image restoration and compression
8. Apply the concept of image segmentation.
9. Describe object detection and recognition techniques.
10. Learn and understand various image transform used in digital image processing
11. Learn and understand various image restoration technique and methods used in digital image processing
12. Learn and understand various image compression and segmentation used in digital image processing

III SEMESTER

Paper Title- ESH-301: Economic and Engineering Geology

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Knowledge of Economic Geology: Students will understand the scope of economic geology, including syngenetic and epigenetic minerals deposits, and the classification of mineral deposits. They'll gain an understanding of ore genesis, control of ore mineralization, magmatic and hydrothermal processes, and the geographical and geological distribution of various ore deposits in India. Additionally, they will acquire skills in the megascopic study and identification of various ore minerals
2. They will also develop an understanding of the engineering properties of rocks and other structural materials with implications for design of dams, tunnels, bridges, canals, and highways.
3. Significance of geology in major engineering projects
4. Method of assessing geological perspective of major infrastructure projects
5. Rock properties related to the strength and bearing capacities of rocks and soils
6. Learn major techniques for ameliorating engineering properties of earth material
7. Understand the effect and relationship of natural hazards on engineering projects

Paper Title- ESH- 302: Exploration Geology - Geological, Geochemical and Geophysical

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Proficiency in Mineral Exploration Techniques: Students will acquire a firm understanding of magnetic, electromagnetic, radiometric, and seismic methods of mineral exploration, as well as principal methods of geological prospecting.
2. They'll also gain exposure to the instruments used in geological prospecting.
3. Understanding of industrial and non-industrial resources and distinction between reserve and resource
4. Understand the Mining Methods and Geological Applications: Students will be introduced to various mining methods, including open cast and underground mining.
5. Learn Natural resource consumption patterns through historical times
6. Gain knowledge on Principles of prospecting of exploration
7. Will learn techniques of mineral exploration and reserve estimation methods

Paper Title- ESH-303: Fuel Geology and Disaster Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understand Coal as a Fuel Source: Students will gain comprehensive knowledge about coal, its formation, types, and geological significance. They'll understand the role of coal as a primary energy resource, its composition, and extraction methods.
2. Expertise in Coal Liquefaction and Gasification: Students will learn about the processes of coal liquefaction and gasification, where coal is converted into liquid and gaseous fuels.
3. They'll understand the chemical and physical transformations involved, the technologies used, and the advantages and disadvantages of these processes from an energy production and environmental perspective.
4. Proficiency in Petroleum Geology: Students will explore the geological aspects of petroleum, including its formation, composition, and extraction. They'll understand the characteristics of petroleum reservoirs and the geological and structural conditions that create oil traps.
5. Knowledge of Petroleum Distribution in India: Students will learn about the geographical and geological distribution of petroleum in India, exploring major oil-producing regions and the geological characteristics that make them suitable for oil extraction. They'll also get insight into India's oil industry, including extraction techniques, production volumes, and the economic and environmental implications of oil extraction.
6. Understand Environmental Geology: Students will learn fundamental principles of disaster management, including the causes and remedies of geological hazards such as landslides, earthquakes, and volcanic hazards. They'll also gain an understanding of atmosphere pollution, deforestation, global warming, and water pollution.
7. Definition and types of natural disasters
8. Landslide, Earthquakes, Flood, Drought hazard mapping techniques, and forecasting and management of natural hazards

Paper Title- ESS-301: Mineral and Water Resources Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Expand their knowledge of the physical, chemical, biological, and social sciences and learn how to apply this knowledge to the management of water resources.
2. Understand water resource decision-making at governance levels from local to national.
3. Use a wide range of analytical tools to sustainably manage water resources.
4. Have an understanding of professional and ethical responsibility.
5. Describe the fundamental knowledge of hydrological principles, precipitation, evaporation, surface runoff and unit hydrograph.

6. Apply the hydrological principles in flood routing and groundwater.
7. Describe the fundamental knowledge of water demand and supply, water pollution and water quality standards.
8. Apply the knowledge to assess on urban impacts, dissolved oxygen and eutrophication.
9. Apply the knowledge to water and wastewater treatment.
10. Students should understand the technical components and roles of mineral resource management.
11. Students should be able to describe and explain commonly occurring processes for mineral beneficiation.
12. Students should be able to calculate and evaluate reserve estimations provided by different techniques and to report the results.
13. Students should be able to analyze reasons for selection of processes based on raw material properties.

IV SEMESTER

ESPW – 401: Project Work

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Project-based learning is an immersive, hands-on experience that can help students learn life and career skills. It can also help students prepare for real-world challenges.
2. Will be able to understand Project management, Empathy, Systems thinking, Exploration, Problem-solving.
3. Use effectively oral, written and visual communication. Identify, analyze, and solve problems creatively through sustained critical investigation. integrate information from multiple sources.
4. Students learn and apply relevant concepts from multiple sub-disciplines while addressing real world geoscience problems.

Program Specific Outcomes

Master's degree in Environmental Science provides graduates with the knowledge, skills, and experience needed to address complex environmental challenges and contribute to the sustainable management of natural resources.

The outcomes of a Master's degree in Environmental Science are:

1. Students will have a deep understanding of environmental science principles, including ecology, environmental chemistry, environmental policy, sustainability, and more.
2. They will develop advanced research skills, including the ability to design and conduct experiments, analyze data, and critically evaluate scientific literature.
3. Graduates will be equipped with the skills to identify environmental problems, assess their causes and impacts, and develop effective solutions.
4. They will gain an interdisciplinary perspective, integrating knowledge from various fields such as biology, chemistry, physics, geology, economics, sociology, and political science to address complex environmental issues.
5. Graduates will understand environmental policies, regulations, and governance structures at local, national, and international levels.
6. They will be proficient in communicating scientific findings and recommendations to diverse audiences, including policymakers, stakeholders, and the general public, through oral presentations, technical reports, and publications.
7. Many courses include fieldwork, providing hands-on experience in environmental monitoring, assessment and management.
8. Graduates will be familiar with various technologies and tools used in environmental science, such as GIS (Geographic Information Systems), remote sensing, environmental modelling software, and laboratory equipment.
9. They will understand the ethical considerations and principles of sustainability in environmental decision-making and management.
10. Graduates may pursue careers in a wide range of fields, including environmental consulting, government agencies, non-profit organizations, academia, research institutions and private industry, working as environmental scientists, consultants, policymakers, educators, researchers, and administrators.

First Semester
Course Outcome

ESHC-1.1: Multidisciplinary Nature of Environmental Science

1. Students will gain a comprehensive understanding of the physical, chemical, biological, and social dimensions of the environment, highlighting the multidisciplinary nature of environmental science.
2. Graduates will be able to identify and comprehend various environmental issues, including pollution, conservation challenges, and resource management dilemmas, through a holistic lens encompassing diverse scientific disciplines.
3. Students will develop the ability to recognize and analyze complex environmental problems by considering their interrelated physical, chemical, biological, and social components.
4. Graduates will acquire skills in developing sustainable solutions to environmental challenges, integrating knowledge from different disciplines to address issues such as pollution control, habitat restoration, and resource conservation.
5. The much-sought intention of this paper is to expose students to Physical, Chemical, Biological, and social environments so that the outcome of the course will ensure awareness of the multidisciplinary nature of the subject, which will help the students to understand various issues and problems associated with environmental pollution, conservation, and management of environmental resources.

ESHC-1.2: Environment and Ecosystem

The paper offers insight into the intricate interactions between living organisms and non-living components within our surroundings.

1. Exploration of dynamic relationships among organisms and their interactions with soil, water, air, and climate.

2. Study of various ecosystems and their components, including biotic and abiotic factors.
3. Investigation into energy flow through food chains and food webs within ecosystems.
4. Understanding roles of producers, consumers, and decomposers in energy transfer and nutrient cycling.
5. Examination of population and community dynamics, including factors influencing growth, distribution, and species interactions.

This course provides students with a comprehensive understanding of ecosystem dynamics, including the interactions between living and non-living components, energy flow, population and community ecology, and the influence of environmental factors. Through this knowledge, students gain insights into the complexities of environmental issues and the importance of sustainable ecosystem management.

ESHC-1.3: Environment for development

1. The course aims to deepen students' understanding of crucial environmental issues that are integral to achieving sustainable development for modern human society.
2. Students will study various conservation challenges faced by ecosystems, species, and natural resources worldwide.
3. They will understand the importance of biodiversity conservation, habitat preservation, and ecosystem restoration efforts in maintaining ecological balance and resilience.
4. Students will understand the interconnectedness between environmental health, human well-being, and economic prosperity, emphasizing the importance of sustainable resource management and environmental stewardship.
5. Students will learn to identify and address the key environmental drivers of change that influence global sustainability.

This course will equip students with the knowledge and skills necessary to develop and implement sustainable solutions to environmental challenges.

ESSC-1.4: Aquatic Ecology

1. Aquatic ecosystems serve as major providers of ecosystem services crucial for human well-being. They play vital roles in regulating water quality, supporting biodiversity, and providing resources such as food and water.
2. Students will study the classification and structural characteristics of aquatic ecosystems. They explore the diversity of freshwater, wetland, and marine ecosystems, understanding their unique features and functions.
3. The course addresses various issues affecting the functionality of aquatic ecosystems. Students analyze current threats such as pollution, habitat destruction, overfishing, and climate change, which endanger water resources and biodiversity.
4. Students learn about the rich biodiversity associated with aquatic ecosystems. Emphasis is placed on the importance of conserving wetlands and protecting the diverse flora and fauna inhabiting these ecosystems.
5. This paper serves as a foundational knowledge base for students to address aquatic ecosystem issues.

It provides students with essential insights and tools to tackle conservation challenges and promote sustainable management of water resources.

ESSC-1.5: Radiation and Environment

1. Through this course, students will gain insights into radiation chemistry, protection measures, waste management, and practical examples, equipping them with essential knowledge for addressing environmental challenges.
2. Radiation is omnipresent in our environment, stemming from sources like the Sun's nuclear reactions and naturally occurring radioactive materials, shaping life on Earth.
3. Light and heat from the Sun's nuclear reactions are fundamental to our survival, underscoring the importance of understanding radiation's role in our environment.
4. Life on Earth has evolved alongside radiation, making it an integral part of our ecological systems and biological makeup.

5. Environmental Science students will grasp the concepts of radiation and its effects on the environment and human health, as well as strategies for its control.

Second Semester
Course Outcome

ESHC-2.1: Environmental Chemistry and Environmental Statistics

1. Environmental Chemistry explores into the effects chemicals exert on air, water, and soil, elucidating their significance in shaping both the environment and human health.
2. Students gain insights into atmospheric, soil, and water chemistry, equipping them to comprehend diverse environmental issues and devise effective solutions.
3. The course empowers students to become environmental advisors by applying their knowledge to address real-world challenges and provide viable solutions.
4. Environmental problems are complex and multifaceted, necessitating a comprehensive understanding that can be achieved through suitable application models and statistical analysis.
5. The primary objective of the course is to enrich students with a deep understanding of environmental chemistry coupled with statistical proficiency, enabling them to tackle environmental challenges with a holistic approach.

ESHC-2.2: Environmental Pollution

1. The course emphasizes that pollutants, originating from both natural and human activities, pose significant public health risks when their concentrations surpass critical levels, underscoring the importance of pollution control measures.
2. Students gain a thorough understanding of water pollution, air pollution, soil pollution, noise pollution, and thermal pollution, including their sources, impacts, and control strategies.
3. Through exposure to various dimensions of pollution, students develop practical skills to address environmental challenges effectively, focusing on implementing control measures to mitigate pollution's adverse effects.

4. The course provides insights into the status of environmental pollution in India, enabling students to grasp the specific environmental issues facing the country and empowering them to contribute meaningfully to addressing these challenges.
5. Upon completing the course, students emerge with the competence to tackle a range of environmental issues related to pollution, equipped with the knowledge and skills necessary to implement effective control measures and promote sustainable environmental management practices.

ESSC-2.3: Energy and Energy Resources

1. Energy serves as the fundamental backbone of all life and ecosystem production activities, encompassing both traditional and modern industrial processes. In this course, students will be provided with an in-depth knowledge of various renewable and non-renewable sources of energy, their production, application, and issues related to consumption.
2. The course offers comprehensive insights into a wide range of energy resources, including both renewable and non-renewable sources, covering their production methods, applications, and associated consumption issues.
3. Students gain a deep understanding of the complexities surrounding energy usage and its environmental implications, enabling them to become proficient environmental managers.
4. By studying this course, students develop the ability to identify the underlying causes of current environmental issues, rooted in energy production and consumption patterns.
5. Equipped with knowledge of energy sources and their environmental impacts, students are empowered to devise sustainable solutions and contribute to effective environmental management practices.

ESSC-2.4: Solid waste management and Resource Recovery

1. The course highlights the severe environmental consequences of inadequately managed solid waste, including soil, air, and water contamination, which can disrupt ecosystems and harm biodiversity.
2. The students will study the effective solid waste management, which is crucial for minimizing waste accumulation, emphasizing the importance of implementing strategies to reduce waste generation.

3. Students gain extensive knowledge about various types of solid waste, disposal methods, and mitigation strategies, enabling them to understand the full scope of solid waste management.
4. Through hands-on learning experiences, students actively engage in the collection, treatment, and disposal procedures for solid waste, enhancing their practical skills in waste management.
5. By equipping students with the necessary expertise in solid waste management, the course aims to mitigate the impact of solid waste on ecosystems, promoting sustainable environmental stewardship and conservation efforts.

ESSC-2.5: Natural Resources and Conservation

1. The course emphasizes the importance of maintaining properly functioning ecosystems to provide essential services vital for life, including clean air, water, fertile soil, and a stable climate.
2. Human activities have led to the depletion of natural components of ecosystems, highlighting the urgent need for natural resource conservation to mitigate further environmental degradation.
3. Students gain essential knowledge about various natural resources of the Earth, including forests, water, land, and food resources, along with strategies for conservation.
4. Natural resource conservation is critical for managing and preserving important resources for the benefit of future generations, ensuring sustainability and continuity of essential ecosystem services.
5. By understanding natural resources and conservation principles, students develop the skills necessary to become effective environmental managers, capable of implementing conservation strategies and promoting sustainable resource management practices.

ES IDE-1: Environmental Education

1. As an open elective, the course covers fundamental topics such as drivers of environmental degradation, sustainable development, environmental awareness, and formal and non-formal education approaches.

2. The students will be exposed to environmental education facilitates and active exploration of environmental issues, encouraging individuals to engage in problem-solving and take meaningful action to enhance the environment.
3. Helps to recognise the universal importance of environmental awareness and action, The course promotes compulsory education to cultivate respect for ecosystems among all students.
4. Students gain insights into various international initiatives aimed at addressing environmental challenges, fostering a global understanding of the need for sustainability and conservation efforts.
5. By equipping students with knowledge and awareness of environmental issues, the course empowers them to become advocates for sustainability and conservation, promoting the development of a culture centered around responsible environmental stewardship.

Third Semester
Course Outcome

ESHC-3.1: Environmental Engineering and Science

1. The course emphasizes the application of engineering principles to address issues related to air, water, and soil pollution, as well as the management of hazardous waste, providing students with practical solutions to environmental challenges.
2. Environmental officers, managers, and policymakers require an understanding of engineering and mechanical processes to effectively control pollution. This course equips students with the necessary knowledge to fulfil these roles.
3. Upon completion of the course, students are proficient in implementing various techniques such as wastewater treatment, industrial effluent management, solid waste management, and hazardous waste management, enhancing their ability to tackle diverse environmental problems.
4. Students gain practical experience in implementing engineering solutions for pollution control and waste management, preparing them for real-world challenges in environmental management roles.

5. The course empowers students with the skills and knowledge needed to analyze environmental problems and devise effective engineering-based solutions, contributing to sustainable environmental management practices.

ESHC-3.2: Environmental Impact Assessment, GIS, and Environmental Microbiology

1. The course ensures students acquire comprehensive knowledge of EIA, a vital tool for safeguarding the environment and promoting sustainable development by identifying potential impacts and proposing mitigation measures for developmental projects.
2. Students gain proficiency in GIS, enabling them to effectively manage, manipulate, analyze, and represent georeferenced data for resource planning and management, facilitating solutions to complex environmental problems.
3. The curriculum covers various aspects of EIA techniques, environmental auditing, and environmental management plans, providing students with the necessary skills to ensure environmentally responsible project design and implementation.
4. Environmental microbiology studies microbial interactions with the environment, equipping students with knowledge of microbial communities' composition and physiology in soil, water, air, and sediments. Students learn to utilize microorganisms to address environmental challenges effectively.
5. By integrating knowledge from EIA, GIS, and environmental microbiology, students develop a holistic understanding of environmental issues and acquire the tools and techniques necessary to propose and implement sustainable solutions in environmental management.

ESSC-3.3: Global Environmental Changes and Natural Hazards

1. The course addresses the interconnected anthropogenic problems of Earth's ecosystem, including global warming, acid rain, ozone depletion, and deforestation, which have wide-ranging negative impacts on human activities and economies globally.
2. Students gain in-depth knowledge of Earth's atmosphere, climate dynamics, greenhouse gases, and the prediction of climate change, providing a solid foundation for understanding global environmental issues and natural hazards.

3. The course empowers students to actively engage in finding solutions to climate-related issues, fostering a sense of responsibility and agency in tackling environmental challenges.
4. Students become knowledgeable about the various factors influencing climate change, enabling them to recognize the complexities of environmental degradation and its impacts.
5. Through the course, students learn about potential solutions to mitigate the effects of climate change, equipping them with the tools to contribute positively to environmental conservation efforts.

ESSC-3.4: Water Quality Science

1. The course acknowledges the pressing issue of inadequate access to safe and clean water, a major risk factor for the spread of infectious diseases, highlighting the importance of understanding water quality and standards for public awareness.
2. Students explore a range of topics encompassing water management, including sources of water, water use and demand, quality issues, standards, consequences of pollution on water quality, and treatment methods, providing a holistic understanding of water-related challenges.
3. By studying water quality issues, students gain awareness of the consequences of pollution on water quality, empowering them to recognize and address environmental impacts that affect public health.
4. The knowledge acquired in this course has direct applications in day-to-day life, equipping students with the understanding and skills necessary to address water quality concerns in their communities and personal lives.
5. Students who opt for this course emerge with a strong foundation in water quality issues, enabling them to advocate for improved water management practices and policies that safeguard public health and environmental sustainability.

ESSC-3.5: Air Pollution Monitoring

1. The course underscores the importance of protecting public health from pollutants, particularly addressing the significant threats posed by air pollution to human well-being.
2. Given the severity of air pollution's health impacts, there is a pressing need for effective remedies to control and mitigate air pollution, highlighting the critical nature of the current situation.

3. Students are equipped with expertise in tackling air pollution through a curriculum covering essential topics such as basic issues of air pollution, air quality standards, air sampling and analysis techniques, instrumentation, pollution control measures, and legal frameworks.
4. The course provides practical training to students, enabling them to apply their knowledge in real-world scenarios as environmental officers, thereby enhancing their competitiveness in the field.
5. By mastering the intricacies of air pollution management, students emerge from the course with the skills and expertise needed to address environmental challenges effectively, positioning them as competent environmental officers capable of safeguarding public health.

ESSC-3.6: Environmental Nanoscience

1. The course introduces students to the unique properties of nanoscale materials, which can offer novel and unexpected solutions to various environmental challenges.
2. Students gain appreciation for diverse topics such as environmental chemistry, colloidal chemistry, and nanotechnology, providing a multidisciplinary foundation for addressing environmental issues.
3. Through the course, students learn about the preparation of nanomaterials, equipping them with practical skills for manipulating materials at the nanoscale level.
4. Students explore the application of nanotechnology in addressing environmental issues, gaining insight into how nanomaterials can be utilized for tasks such as pollution remediation and environmental monitoring.
5. By mastering the fundamentals of nanotechnology and its application to environmental problems, students are prepared for future endeavours in environmental science and technology.

ES IDE-2: Drinking water resources, quality, and management

1. The course adopts an interdisciplinary approach, catering to students who did not major in environmental science by focusing on the vital topic of drinking water resources, quality, and management.

2. Students explore various aspects of drinking water, including its sources, water stress, quality assessment, treatment methods, water supply systems, and the current status of drinking water in India, ensuring a thorough understanding of the subject.
3. Even for non-environmental science students, the course raises awareness about the critical importance of drinking water quality and effective management practices, highlighting its significance for public health and well-being.
4. Through the course, students acquire practical knowledge about the challenges associated with drinking water management and the strategies employed to ensure access to safe and clean drinking water for communities.
5. By studying drinking water resources and management, students develop cross-disciplinary competence, enabling them to address complex environmental issues beyond their primary field of study.

Fourth Semester
Course Outcome

ESHC-4.1: Ecotoxicology

1. The course addresses the pervasive issue of chemical contaminants in everyday commodities, highlighting their potential health risks at both individual and ecosystem levels.
2. As an applied paper, the course delves into ecotoxicology, providing students with insights into the effects of environmental contaminants on ecosystems and organisms.
3. Students explore fundamental aspects of ecotoxicology, including the identification of environmental contaminants, their pathways in ecosystems, and processes such as uptake, biotransformation, detoxification, elimination, and accumulation of toxic substances.
4. Through the course, students develop proficiency in assessing the risks associated with chemical contaminants, enabling them to evaluate and mitigate potential environmental and health hazards.
5. By studying ecotoxicology, students remain up-to-date with recent advancements and advancements in the field, ensuring they are equipped with current information to address contemporary challenges related to contamination and environmental health.

ESHC-4.2: Occupational Health and Safety & Environmental Law

1. The course is designed to prepare students for their future careers in industry and various occupations by providing fundamental knowledge of occupational health, hygiene, and safety measures essential for a safe work environment.
2. Students learn about important safety protocols and measures to prevent workplace accidents and injuries, ensuring their well-being while working in any occupation.
3. The curriculum includes education on environmental laws and protection legislation, enabling students to understand their rights and responsibilities concerning environmental protection in the workplace.
4. Through the course, students gain awareness of potential occupational hazards and learn how to identify, assess, and mitigate risks to ensure their safety and the safety of others in the workplace.
6. By familiarizing themselves with environmental laws, students become knowledgeable about legal requirements and regulations, ensuring compliance with environmental legislation in their future occupations.

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M. Sc., Remote Sensing Application Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. To gain knowledge of remote sensing data collection and analysis from a distance, typically by using satellites, aircraft, or drones.
2. Learn remote sensing skills and techniques through understanding principle, performing practical and research projects.
3. To study and analyzing the Earth systems using spatial data base.
4. Master's in Remote Sensing Applications can pursue careers in Earth and environmental monitoring, utilizing advanced skills in data analysis and interpretation.
5. The program equips students to become GIS specialists, integrating remote sensing data seamlessly into geographic information systems for spatial analysis.
6. The program equips students to become GIS specialists, integrating remote sensing data seamlessly into geographic information systems for spatial analysis for both mineral and water resource studies.
7. Agricultural monitoring is a key outcome, as students learn to assess crop health, implement precision agriculture techniques, and manage agricultural resources efficiently.
8. With a focus on urban planning and development, graduates are adept at utilizing remote sensing technologies to assess land use patterns and contribute to smart city initiatives.
9. Build knowledge in disaster management is a result, enabling graduates to use remote sensing for risk mapping, impact assessment, and effective response to natural disasters.
10. Graduates contribute to climate change research by monitoring climate patterns, studying the impact on ecosystems, and participating in initiatives addressing environmental challenges.
11. As remote sensing consultants, individuals provide valuable expertise to various industries, assisting organizations in implementing and interpreting remote sensing data.
12. Research and academia opportunities arise, allowing graduates to conduct advanced studies in remote sensing and contribute to the academic community.
13. Employment in government agencies becomes a viable path, where graduates play roles in environmental protection, agriculture, forestry, and urban planning, contributing to policy development and decision-making.
14. Private sector opportunities abound as graduates find employment in companies offering remote sensing services, developing and implementing solutions for industries such as forestry, mining, and energy.
15. Learn may engage in technology development and innovation, participating in the creation of new remote sensing technologies and applications to address emerging challenges.

I Semester

Paper Title - RSH101 EARTH SCIENCE-I

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Acquire the information about roles, exploring new crystal structures and advancing the understanding of the fundamental principles governing the arrangement of atoms in solids.
2. Expertise in rock-forming minerals opens avenues in the field of Mineralogy, where to erudition the classification, chemical compositions, interpretation, and understanding of Minerals and their geological significance.
3. To erudition Physical, Chemical and Optical properties of the following common ore forming minerals, like Iron, Manganese, Aluminum, Chromium, Copper etc
4. Learn about the Fundamental relationships of thermodynamics and application to mineralogical system

Paper Title- RSH 102 - PRINCIPLES OF GEOINFORMATICS

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Gain knowledge on Aerial Photography, Geometry Image measurements and refinements, Types of aerial photography and Application
2. Understand the interpretation of aerial photos analyses the aerial photography
3. Learn about the photogrammetry, Planimetric mapping, Project planning and Terrestrial and close-range photogrammetry.
4. Understand the principles of remote sensing , and remote sensing platforms and sensors
5. Understand the thermal remote sensing analysis, data collection and it application.
6. Learn about the microwave remote sensing and Radar Technology and terrain Interactions.

Paper Title- RSH 103 - HYDROGEOLOGY AND STRUCTURAL GEOLOGY

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Demonstrate significant knowledge and understanding Surface Water Hydrology, Hydrological Cycle and Groundwater Hydrology.
2. Learn about the Water bearing characteristic of rocks and Groundwater reservoirs.
3. Graduates may pursue roles in academia and research, conducting studies on groundwater dynamics, aquifer characterization, and innovative water management techniques.

4. Gain working knowledge of hydro geological tools and methods.
5. Learn about importance of structural Geology.
6. Structural suites play a key role in mitigating geological hazards, providing expertise in understanding and assessing seismic activity, landslides, and fault movements.
7. Students will comprehend the fundamental concepts of structural geology, including contouring, reading geological maps, and understanding bed, dip, strike, and outcrop.
8. Learn to use instruments like clinometers/Brunton compass and identify various geological structures, deformations, and faults.

Paper Title- RSS 101 - WEB PROGRAMMING, JAVA, C, PYTHON

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Expertise in C programming promote to software development careers, where individuals contribute to the creation of efficient and high-performance applications for a variety of platforms.
2. Careers in embedded systems become viable, as C programming specialists design and develop software for ranging from IoT devices to automotive systems.
3. Understanding in .NET development leads to careers in web application development, where individuals contribute to the creation of dynamic and scalable web solutions using the .NET framework. The .NET developers contributing to the design and implementation of business applications, database systems, and integration solutions.
4. Graduates may pursue roles in cloud computing, using .NET to develop and deploy applications on cloud platforms such as Microsoft Azure, contributing to the scalability and efficiency of cloud-based solutions. Careers in mobile app development open up, with .NET developers creating cross-platform mobile applications using frameworks like Xamarin.
5. Expertise in ArcObjects provides opportunities in the field of Geographic Information Systems (GIS), where individuals contribute to the development of custom applications and tools for spatial data analysis. Careers in environmental and urban planning become accessible, as ArcObjects specialists contribute to the design and implementation of GIS solutions for mapping, land use planning, and disaster management.
6. Opportunities in natural resource management arise, with individuals leveraging ArcObjects to develop applications for monitoring and managing resources such as forestry, water, and biodiversity.
7. Proficiency in Python to diverse career paths, including web development, data science, and machine learning, where individuals use Python for its versatility and ease of integration. Careers in automation and scripting become accessible, with Python developers contributing to the automation of repetitive tasks, system administration, and network programming.
8. Opportunities in data analysis and visualization arise, as Python is widely used in data science for tasks such as data cleaning, analysis, and the creation of visualizations using libraries like Pandas and Matplotlib.

II Semester

Paper Title- RSH 201 - EARTH SCIENCE- II

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand of Igneous Petrology: Students will understand the fundamentals of igneous petrology, including the composition, types, and origin of magma. They'll comprehend various igneous rock forms, textures, structures, and the principles of differentiation and assimilation, as well as Bowen's reaction series.
2. Knowledge of Sedimentary Petrology: Students will understand the processes that form sedimentary rocks and will be able to classify them based on their textures and structures. They will gain detailed knowledge of the petrography of important siliciclastic and carbonate rocks such as conglomerate, breccia, sandstone, greywacke, shale, limestone.
3. Comprehensive Study of Metamorphic Petrology: Students will comprehend the processes and products of metamorphism, including types, factors, zones, and grades of metamorphism. They will learn to identify the textures, structures, and classifications of metamorphic rocks and perform detailed petrographic analyses of key metamorphic rocks.
4. Practical Skills in Petrography: Students will develop practical skills for identifying igneous, sedimentary, and metamorphic rocks based on their physical properties in hand specimens and optical properties in thin sections. This will involve hands-on experience with rock samples and the use of a microscope.
5. Insight into Cosmic Element Abundance and Planetary Composition: Students will learn about the cosmic abundance of elements and the composition of planets and meteorites. They will gain a holistic understanding of the geochemical evolution of the earth and geochemical cycles.
6. Proficiency in Geochemical Thermodynamics and Isotope Geochemistry: Students will grasp the key principles of geochemical thermodynamics, isomorphism, polymorphism, and isotope geochemistry, providing them with a comprehensive and nuanced understanding of geochemical phenomena.
7. Students will understand Goldschmidt's geochemical classification of elements and the distribution of major, minor, and trace elements in different types of rocks - igneous, metamorphic, and sedimentary.

Paper Title- RSH 202 - GEOMORPHOLOGY, PALEONTOLOGY, INDIAN TRATIGRAPHY, GEOLOGY OF KARNATAKA

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Acquire a good understanding of Geomorphologic process,
2. Mastery of Geomorphology and Dynamic Earth Concepts: Students will understand the fundamental principles of geomorphology and will learn about Earth as a dynamic

system, encompassing theories of continental drift, sea-floor spreading, pale magnetism, and plate tectonics.
3. Understand of Natural Processes and Phenomena: Students will gain knowledge of internal and surface processes of Earth, such as weathering, erosion, seismic activity, and volcanism, and their environmental impact.
4. Understand of Paleontology and Fossil Study: Students will comprehend the nature, preservation, and significance of fossils, learn about the taxonomy of various phyla including Mollusca, Brachiopoda, Arthropoda, and Echinodermata, and understand the geological history and morphological characteristics of these groups.
5. Students will acquire a detailed understanding of the distribution and classification of Paleozoic, Mesozoic, and Cenozoic rocks in India and Karnataka, their marker fossils, and significant geological formations associated with these periods.

Paper Title- RSH 203 – DIGITAL IMAGE PROCESSING

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Expertise in Digital Image Processing equips individuals with the skills to advanced algorithms for image recognition and object detection, and also to analyse satellite and aerial imagery for environmental monitoring, agriculture, and disaster assessment, land cover classification.
2. Digital Image Processing techniques to analyse remote sensing data for assessing ecological changes, tracking deforestation, and monitoring natural disasters.
3. Digital Image Processing skills in remote sensing data to careers in precision agriculture, allowing individuals to analyse imagery for crop health assessment, yield prediction, and resource optimization.
4. Graduates may contribute to urban planning and development, utilizing Digital Image Processing for remote sensing data to assess urban growth, monitor infrastructure changes, and support sustainable city planning initiatives, to assess and monitor resources such as forests, water bodies, and minerals, contributing to sustainable resource utilization. Monitoring climate patterns, studying environmental changes, and assessing the impact of climate-related phenomena.
5. Expertise in Digital Image Processing for remote sensing data is valuable for wildlife conservation, allowing individuals to analyse habitat changes, track animal movements, and contribute to biodiversity conservation efforts.

Paper Title- RSS 201 - SPATIAL MODELING AND ANALYSIS

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Competence in Geographic Information System (GIS): Students will be introduced to the Geographic Information System (GIS), its components, product generation, and map analysis tools. They'll also learn about the integration of GIS
2. Learn about Spatial modeling and an important instrument to conduct geospatial analysis to understand the world and projection system.
3. Gain knowledge of GIS, spatial models is formal languages to express mechanisms of geographic processes and design analytical workflows to understand these processes.
4. Spatial analysis can aid in traffic management in an urban setting, thereby allowing authorities to take steps toward building resilient cities.
5. It is primarily used to determine the feasibility of a location for certain systems or to make weather predictions for a specific geographic area. It allows users to model problems and finds comprehensive solutions that have geographical attributes associated with them.

III Semester

Paper Title- RSH 301: GI Application in Earth and Atmospheric Sciences

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Proficiency in remote sensing applications for spectra of rocks and minerals enables individuals to mineral exploration geologists, identifying and mapping mineral deposits using spectral signatures in satellite and airborne imagery, careers in geological resource assessment, employing remote sensing data to analyse spectral information and characterize the composition of rocks and minerals for resource estimation.
2. Expertise in Digital Image Processing equips individuals with the skills to advanced algorithms for image recognition and object detection, and also to analyse satellite and aerial imagery for environmental monitoring, agriculture, and disaster assessment, land cover classification.
3. Remote sensing specialists can engage in lithological mapping, employing spectral analysis to differentiate rock types and contribute to comprehensive terrain analysis for geological and geomorphologic studies.
4. Expertise in remote sensing spectra analysis can lead to careers as a mineral processing consultant, assisting in the optimization of ore processing methods based on spectral characteristics of rocks and minerals.
5. Excellence in remote sensing for geomorphology equips individuals to specialize in landform classification, utilizing satellite and aerial imagery to identify and analyse various landforms based on their spectral characteristics.

Paper Title- RSH 302: GI Application in Water Resources

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Proficiency in remote sensing and GIS applications for water resources management enables individuals to specialize in hydrological modeling, assessing water flow, distribution, and quality for effective water resource planning.
2. Graduates may pursue careers as water quality analysts, utilizing remote sensing and GIS to monitor and analyse water quality parameters, facilitating the identification of pollution sources and implementing mitigation measures.
3. Opportunities exist for individuals to contribute to watershed management, using remote sensing and GIS to assess land cover changes, identify potential sources of runoff, and plan sustainable watershed management practices.
4. Graduates can engage in flood risk mapping, employing remote sensing and GIS to analyze topography, precipitation patterns, and land cover for accurate flood risk assessments, aiding in disaster preparedness, to analyse land surface conditions, vegetation patterns, and geological features for sustainable groundwater management.
5. Careers in drought monitoring involve using remote sensing and GIS to assess vegetation health, soil moisture, and precipitation patterns, contributing to early warning systems and drought mitigation strategies, and contribute to water infrastructure planning, utilizing remote sensing and GIS to assess reservoir storage capacities, monitor sedimentation, and optimize water supply management.

Paper Title- RSH 303: GI Application in Agriculture and Forestry

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Excellence in remote sensing and GIS applications for agriculture and forestry enables individuals to specialize in precision agriculture, using satellite imagery to analyse crop health, optimize irrigation, and enhance overall farm management.
2. Graduates may pursue careers in crop yield prediction, utilizing remote sensing and GIS to analyse factors such as soil moisture, temperature, and vegetation indices for accurate forecasting and resource planning.
3. Opportunities exist for individuals to contribute to land use planning, employing remote sensing and GIS to assess soil fertility, land suitability, and crop productivity, facilitating informed agricultural zoning decisions.
4. Graduates can engage in forest inventory and biodiversity mapping, utilizing remote sensing and GIS to assess forest structure, species distribution, and ecosystem health for sustainable forest management, to detect and monitor agricultural pests and diseases, facilitating early intervention and minimizing crop losses.
5. Graduates may work in soil erosion control, using remote sensing and GIS to identify erosion-prone areas, assess sedimentation, and implement watershed management strategies for soil conservation, to assess suitable areas for integrated farming practices, combining agriculture and forestry for sustainable land use.

Paper Title- RSS 301: GI Application in Urban Planning and Disaster Management

Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Mapping and monitoring of the urban environment including land cover, land use, morphology, and urban structural types.
2. Proficiency in remote sensing and GIS applications for urban planning enables individuals to specialize in analysing urban growth patterns, assessing changes in land use, and contributing to informed decisions in urban development.
3. Graduates may pursue careers as infrastructure development planners, utilizing remote sensing and GIS to assess existing infrastructure, identify areas for improvement, and plan for sustainable urban development.
4. Opportunities exist for individuals to contribute to transportation network optimization, employing remote sensing and GIS to analyze traffic patterns, assess road conditions, and enhance transportation planning in urban areas.
5. Graduates may specialize in disaster risk reduction, utilizing remote sensing and GIS to assess vulnerability and exposure, analyze potential hazards, and develop strategies to mitigate the impact of disasters in urban areas.
6. Opportunities exist for professionals to contribute to critical infrastructure protection, using remote sensing and GIS to assess the vulnerability of key infrastructure elements, such as power lines and water supply systems, to natural and man-made disasters.
7. Understand Environmental Geology: Students will learn fundamental principles of disaster management, including the causes and remedies of geological hazards such as landslides, earthquakes, and volcanic hazards. They'll also gain an understanding of atmosphere pollution, deforestation, global warming, and water pollution.
8. Build knowledge of Landslide, Earthquakes, Flood, and Drought hazard mapping techniques, and forecasting and management of natural hazards.

IV Semester

RSPW – 401: Project Work

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Project-based learning is an immersive, hands-on experience that can help students learn life and career skills. It can also help students prepare for real-world challenges.
2. Will be able to understand Project management, Empathy, Systems thinking, Exploration, Problem-solving.
3. Use effectively oral, written and visual communication. identify, analyze, and solve problems creatively through sustained critical investigation. integrate information from multiple sources.
4. Students learn and apply relevant concepts from multiple sub-disciplines while addressing real world geoscience problems.

Kuvempu University

Faculty of Science and Technology

School of Physical Sciences

Computer Applications

Computer Science

Electronics

Library and Information Science

Mathematics

Physics

Programme: Master of Computer Applications (MCA)

Programme Outcome

1. Apply the knowledge of mathematics and computing fundamentals to various real life applications for any given requirement
2. Design and develop applications to analyze and solve all computer science related problems
3. Design applications for any desired needs with appropriate considerations for any specific need on societal and environmental aspects
4. Analyze and review literatures to invoke the research skills to design, interpret and make inferences from the resulting data
5. Integrate and apply efficiently the contemporary IT tools to all computer applications
6. Solve and work with a professional context pertaining to ethics, social, cultural and cyber regulations
7. Involve in perennial learning for a continued career development and progress as a computer professional
8. Function effectively both as a team leader and team member on multi disciplinary projects to demonstrate computing and management skills
9. Communicate effectively and present technical information in oral and written reports
10. Utilize the computing knowledge efficiently in projects with concern for societal, environmental, and cultural aspects

Programme Specific Outcome

1. Design, develop and implement interdisciplinary application software projects to meet the demands of industry requirements using modern tools and technologies.
2. Analyze the societal needs to provide novel solutions through technological based research.

Course outcome

Master of Computer Applications (MCA)

Sem – I

Course Title: - MCA 1.1: COMPUTER ORGANIZATION ARCHITECTURE

Course Outcomes: The students will be able to understand digital logic design, including logic elements, and their use in combinational and sequential logic

circuit design, the basic architecture of processing, memory and I/O organization in a computer system.

Course Title: - MCA 1.2: OPERATING SYSTEM

Course Outcomes: Master functions, structures and history of operating systems. Master understanding of design issues associated with operating systems. Master various process management concepts including scheduling, synchronization, and deadlocks. Be familiar with multithreading. Master concepts of memory management including virtual memory. Master system resources sharing among the users. Master issues related to file system interface and implementation, disk management. Be familiar with protection and security mechanism.

Course Title: - MCA 1.3: APPLIED MATHEMATICS

Course Outcomes: A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies. A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning. A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences. A student is able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.

Course Title: - MCA 1.4: C PROGRAMMING

Course Outcomes: Develop modular programs using control structures, pointers, arrays, strings, structures, Linked list, Trees and Graph .Design and develop solutions to real world problems using C.

Course Title: - MCA 1.5: DATABASE MANAGEMENT SYSTEM

Course Outcomes: Solve real world problems using appropriate set, function, and relational models. Design E-R Model for given requirements and convert the same into database tables. Use SQL.

Course outcome

Master of Computer Applications (MCA)

Sem – II

Course Title: - MCA 2.1: COMPUTER NETWORKS

Course Outcomes:- The students will be able to appreciate the concepts of different types of networks and different layers along with the network devices and protocols at each layer

Course Title: - MCA 2.2: THEORY OF COMPUTAION

Course Outcomes:- Model, compare and analyze different computational models using combinatorial methods. Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata. Construct algorithms for different problems and argue formally about correctness on different restricted machine models of computation. Identify limitations of some computational models and possible methods of proving them. Have an overview of how the theoretical study in this course is applicable to and engineering application like designing the compilers.

Course Title: - MCA 2.3: DATA STRUCUTRES

Course Outcomes:- The students will be able to appreciate the data structures types, analysis of algorithms, linear and non linear lists. To use well-organized data structures in solving various problems. To differentiate the usage of various structures in problem solution. Implementing algorithms to solve problems using appropriate data structure.

Course Title: - MCA 2.4: JAVA PROGRAMMING

Course Outcomes:- Student will gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc. Student will understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. Student will understand the principles of inheritance, packages and interfaces.

Student will able to use the Java SDK environment to create, debug and run simple Java programs. Student will able to implement object oriented concept like inheritance, polymorphism, encapsulation and data abstraction practically. Student will learn how to implement concurrent applications using threads; describe problems related to concurrent programming and how to solve these problems.

Course Title: - MCA 2.5: SOFTWARE ENGINEERING

Course Outcomes:- The students will able to under the theoretical concepts of software development models, system, system engineering, design engineering, testing strategies and estimation strategies.

Course outcome

Master of Computer Applications (MCA)

Sem – III

Course Title: - MCA 3.1: ANALYSIS AND DESIGN OF ALGORITHEMS

Course Outcomes:- Students will learn fundamental concepts of asymptotic notations of an algorithm, Space & Time Complexity, Searching & Sorting Algorithms, Divide and Conquer techniques. Students will know various design and analysis techniques such as greedy algorithms, dynamic programming. Student will understand the techniques used for designing of different graph algorithms. Students will learn how to apply backtracking, branch and bound techniques for real time problems. Students will know the concepts of P, NP and NP-Complete problems.

Course Title: - MCA 3.2: COMPUTER GRAPHICS

Course Outcomes:- To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. To describe the importance of viewing and projections. To define the fundamentals of animation, virtual reality and its related technologies. To understand a typical graphics pipeline. To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations. To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations. The computer graphics course

prepares students for activities involving in design, development and testing of modeling, rendering, shading and animation.

Course Title: - MCA 3.3: DIGITAL IMAGE PROCESSING

Course Outcomes:- Interpret image storage, sampling, and frequency domain processing operations. Evaluate current technologies and issues that are specific to image processing systems. Analyze different motion compensation techniques. Integrate concepts of various image processing algorithms

Course Title: - MCA 3.4: WEB PROGRAMMING

Course Outcomes: - Design web pages. Use technologies of Web Programming .Apply object-oriented aspects to Scripting. Create databases with connectivity using JDBC. Build web-based application using sockets.

Course Title: - MCA 3.5: DATA SCIENCE

Course Outcomes: - Build statistical models and understand their power and limitations. Use machine learning and optimization to make decisions**.** Acquire, clean, and manage data**.** Visualize data for exploration, analysis, and communication. Collaborate within teams. Deliver reproducible data analysis. Manage and analyze massive data sets

Course outcome

Master of Computer Applications (MCA)

Sem – IV

Course Title: - MCA 4.1: ARTIFICIAL INTELLIGENCE

Course Outcomes:-To learn various types of algorithms useful in Artificial Intelligence (AI).To convey the ideas in AI research and programming language related to emerging technology. To understand the numerous applications and huge possibilities in the field of AI that goes beyond the normal human imagination.

Course Title: - MCA 4.2: PHP PROGRAMMING

Course Outcomes: - To implement PHP script using Decisions and Loops. To develop PHP applications using Strings, Arrays and Functions. To design

object-oriented programming (OOP) principles for PHP and use HTML form elements that work with any server-side language. To display and insert data using PHP and MySQL.

Course Title: - MCA 4.3: DOT NET PROGRAMMING

Course Outcomes: - Gain a go the principle od knowledge of object-oriented programming. Write clear and effective C# code. Access data using ADO.NET. Develop web applications using ASP.NET Web Forms. Develop and use ASP.NET Web Services.

Course Title: - MCA 4.4: PYTHON PROGRAMMING

Course Outcomes: - Install, debug and run a Python program, differentiate between brackets, braces, and parentheses, define variables, identify keywords, Operators and Operands, Expressions, perform type conversion, use if, if-else, for, while loop. access elements in lists, traverse a list, delete elements from list, perform concatenation, repetition, In operator, builtin list, tuple and dictionary functions, methods and operators, basic tuples operations, updating, deleting elements from dictionary, dictionary keys, operations, file, directories and exc eption handling.

Course Title: - MCA 4.5: PROJECT WORK

Course Outcomes: - Undertake problem identification, formulation and solution. Design solutions to complex problems utilizing a systems approach. Conduct a project. Acquire skills to develop the software project. Understand the software development life cycle**.** Project-based learning connects students to the real world. Prepares students to accept and meet challenges in the real world.

Programme: M.Sc. (Computer Science)

Objectives

The discipline of computer science is concerned with the design of computers, computational processes and information transfer and transformation. Computer science engineers design and analyze software for many different applications, including networks, graphics, and artificial intelligence, Machine learning and database systems. Also focus on improving software reliability, network security or information retrieval systems.

Broad outcome of the Programme

1. Develop programs in various computer science technologies.
2. Acquire the knowledge of working principles of computers.
3. Improve analytical and critical thinking.
4. Analyze a problem and identify the requirements for solution.
5. To develop problem solving abilities using a computer.
6. To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
7. To train students in professional skills related to Software Industry.
8. To prepare necessary knowledge base for research and development in Computer Science.
9. To help student build-up a successful career in Computer Science and to produce entrepreneurs who can innovate and develop software products.
10. To develop the ability to analyze a problem and devise an algorithm to solve it.
11. To formulate algorithms, pseudo codes and flowcharts for arithmetic and logical problems.
12. To understand structured programming approach.
13. To develop the basic concepts and terminology of programming in general.
14. To implement algorithms in the ‘C’ language.

Program specific outcomes

1. The Master of Science in Computer Science Program provides the students with knowledge, general competence, and analytical skills on an advanced level, needed in academics, industry, research.
2. Have demonstrated the ability to tackle challenging computing problems using a comprehensive knowledge of computer science, while reflecting a commitment to quality, innovation, critical thinking, and continuous improvement.
3. Have demonstrated the ability of analyzing and solving complex technical problems from a broad perspective of computer science.
4. Identify the software and hardware aspects of computer systems.
5. Solve mathematical and statistical problems.
6. Define the various stages of software system.
7. Acquire in depth knowledge of computer technologies.
8. Analyze the various applications of computer science.
9. Enrich the knowledge in the areas like Artificial Intelligence, Web Services, Cloud Computing, Paradigm of Programming language, Design and Analysis of Algorithms, Database Technologies Advanced Operating System, Mobile Technologies, Software Project Management and core computing subjects.
10. Students understand all dimensions of the concepts of software application and projects.
11. Students understand the computer subjects with demonstration of all programming and theoretical concepts with the use of ICT.
12. Developed in-house applications in terms of projects.
13. Provides technology-oriented students with the knowledge and ability to develop creative solutions. Develop skills to learn new technology.
14. Apply computer science theory and software development concepts to construct computing-based solutions.
15. Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Machine Learning.

Course outcome

M.Sc. (Computer Science) Sem – I

Course Title: - MCS 1.1: COMPUTER ARCHITECTURE

Course Outcomes: - Able to comprehend operations and arithmetic of computer systems. Able to identify data-path and control-path operations involved in the execution of a processor instruction. Able to understand and analyze the CPU, memory and IO architecture of a processor at the system level. Able to analyze the trade-offs involved in the CPU and memory organization of a processor system. The basic architecture of processing, memory and I/O organization in a computer system.

Course Title: - MCS 1.2: DATA STRUCTURE

Course Outcomes: - The students will be able to appreciate the data structures types, analysis of algorithms, linear and non linear lists. To use well-organized data structures in solving various problems. To differentiate the usage of various structures in problem solution. Implementing algorithms to solve problems using appropriate data structure.

Course Title: - MCS 1.3: JAVA PROGRAMMING

Course Outcomes: - Student will gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc. Student will understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. Student will understand the principles of inheritance, packages and interfaces.

Student will able to use the Java SDK environment to create, debug and run simple Java programs. Student will able to implement object oriented concept like inheritance, polymorphism, encapsulation and data abstraction practically. Student will learn how to implement concurrent applications using threads; describe problems related to concurrent programming and how to solve these problems.

Student will implement applications with simple graphical user interfaces. Student will create web applications by using servlet, JSP etc. Student will implement database handling by using jdbc tool.

Course Title: - MCS 1.4: DATA COMMUNICATION

Course Outcomes: - Student will be able to understand network communication using the layered concept, Open System Interconnect (OSI) and the Internet Model. Student will be able to understand various types of transmission media, network devices; and parameters of evaluation of performance for each media and device. Student will be able to understand the concept of flow control, error control and LAN protocols; to explain the design of, and algorithms used in, the physical, data link layers.

Student will understand the working principles of LAN and the concepts behind physical and logical addressing, subnetting and supernetting. Student shall understand the functions performed by a Network Management System and to analyze connection establishment and congestion control with respect to TCP Protocol. Student shall understand the principles and operations behind various application layer protocols like HTTP, SMTP, and FTP.

Course Title: - MCS 1.5: APPLIED MATHEMATICS

Course Outcomes:- A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies. A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning. A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

A student is able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.

Course outcome

M.Sc. (Computer Science) Sem – II

Course Title: - MCS 2.1: COMPUTER NETWORKS

Course Outcomes: - The students will be able to appreciate the concepts of different types of networks and different layers along with the network devices and protocols at each layer

Course Title: - MCS 2.2: ANALYSIS AND DESIGN OF ALGORITHMS

Course Outcomes:-Students will learn fundamental concepts of asymptotic notations of an algorithm, Space & Time Complexity, Searching & Sorting Algorithms, Divide and Conquer techniques. Students will know various design and analysis techniques such as greedy algorithms, dynamic programming. Student will understand the techniques used for designing of different graph algorithms. Students will learn how to apply backtracking, branch and bound techniques for real time problems. Students will know the concepts of P, NP and NP-Complete problems.

Course Title: - MCS 2.3: COMPUTER GRAPHIC

Course Outcomes:-To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. To describe the importance of viewing and projections. To define the fundamentals of animation, virtual reality and its related technologies. To understand a typical graphic s pipeline.

To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations. To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations. The computer graphics course prepares students for activities involving in design, development and testing of modeling, rendering, shading and animation.

Course Title: - MCS 2.4: THEORY OF COMPUTATION

Course Outcomes:-Model, compare and analyze different computational models using combinatorial methods. Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata. Construct algorithms for different problems and argue formally about correctness on

different restricted machine models of computation. Identify limitations of some computational models and possible methods of proving them. Have an overview of how the theoretical study in this course is applicable to and engineering application like designing the compilers.

Course Title: - MCS 2.5: DIGITAL IMAGE PROCESSING

Course Outcomes:-Interpret image storage, sampling, and frequency domain processing operations. Evaluate current technologies and issues that are specific to image processing systems. Analyze different image enhancement techniques. Integrate concepts of various image processing algorithms.

M.Sc. (Computer Science) Sem – III

Course Title: - MCS 3.1: WIRELESS COMMUNIATIONS

Course Outcomes: - How to model wireless channels? How to design and analyze diversity techniques? Understand cellular system design. Understand MIMO and OFDM techniques.

Course Title: - MCS 3.2: MACHINE LEARNING

Course Outcomes: Recognize the characteristics of machine learning that make it useful to real-world problems. Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problem. Able to estimate Machine Learning models efficiency using suitable metrics.Design application using machine learning techniques.

Course Title: - MCS 3.3: LINUX INTERNAS

Course Outcomes: To gain strong knowledge of OS programming by taking Linux as a case .Build proficiency on the Linux API's and system calls**.** To get the knowledge of high performance and secure coding by using OS capabilities create multitasking applications using various IPC Mechanisms

Course Title: - MCS 3.4: SOFTWARE ENGINEERING

Course Outcomes: The students will able to understand the theoretical concepts of software development models, system, system engineering, design engineering, testing strategies and estimation strategies.

Course Title: - MCS 3.5: CLOUD COMPUTING

Course Outcomes: To understand the principles and paradigm of Cloud Computing. To appreciate the role of Virtualization Technologies. Ability to design and deploy Cloud Infrastructure. Understand cloud security issues and solutions.

Course outcome

M.Sc. (Computer Science) Sem – IV

Course Title: - MCS 4.1: ARTIFICIAL INTELLIGENCE

Course Outcomes: To learn various types of algorithms useful in Artificial Intelligence (AI).To convey the ideas in AI research and programming language related to emerging technology. To understand the numerous applications and huge possibilities in the field of AI that goes beyond the normal human imagination.

Course Title: - MCS 4.2: DATA SCIENCE

Course Outcomes: Build statistical models and understand their power and limitations. Use machine learning and optimization to make decisions**.** Acquire, clean, and manage data**.** Visualize data for exploration, analysis, and communication. Collaborate within teams. Deliver reproducible data analysis. Manage and analyze massive data sets.

Course Title: - MCS 4.3: INTERNET OF THINGS (IOT)

Course Outcomes: able to design circuit diagrams for Wi-Fi, Bluetooth, SIM808 GPS/GSM/GPRS, Zigbee. Able to program communication devices using PC and "AT" Commands. Able to implement IoT applications using PC, Mobile, Web services, API, etc.

Course Title: - MCS 4.4: PROJECT WORK

Course Outcomes: Undertake problem identification, formulation and solution. Design solutions to complex problems utilizing a systems approach. Conduct a project. Acquire skills to develop the software project. Understand the software development life cycle**.** Project-based learning connects students to the real world. Prepares students to accept and meet challenges in the real world.

Kuvempu University

Department of PG Studies and Research in Electronics

Broad outcome: Electronics has a profound impact on various aspects of modern society and culture, such as communication, entertainment, education, health care, industry, and security. Electronic devices have become an important part of our day-to-day life. It has become difficult for us to do work without using electronic devices. We live in a generation that uses electronics and technologies where robots and artificial intelligence are capable of doing human work with more ease and efficiency. The program helps in generating competent professionals with an aim to meet challenges in the field of Electronics.

Program specific outcome: With the degree of M.Sc. Electronics, students can get a variety of career options in Research and Development Laboratorial Organizations, IT Industry, Process and Manufacturing Industry, Electronics and Telecommunication Industry, etc. The M.Sc. Electronics syllabus delivers graduates a thorough learning of subjects with a realistic approach which includes practicals, internships, projects, industrial visits, etc.

Course outcome: The course has many advanced papers designed to expose the learners to all the industry-relevant knowledge and concepts. By the end of course, Student will acquire Analytical skills, Research skills, Hardware deployment skills, Operating system knowledge skills, Problem-Solving skills. Students can join institutions and industries as a Lecturers, Instrumentation engineers, R&D scientists, Programmers, service engineers etc.

M. Sc., Electronics Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

- The M.Sc. in Electronics program is designed to equip students with a comprehensive skill set and knowledge base in electronic research and development. Throughout the program, students are instilled with a strong commitment to safety measures, ethical practices, and responsible conduct in the field. The curriculum emphasizes advanced microelectronics skills, covering theoretical understanding, practical implementation, and research project execution. Graduates are equipped to innovate and contribute to cutting-edge electronic tools and technologies, enhancing efficiency across various domains.

- Expertise in microwave and antenna systems is a key outcome, with graduates demonstrating proficiency in understanding microwave properties, transmission media, and antenna selection for specific applications. The program places a significant emphasis on microcontroller programming, ensuring mastery in the architecture and programming of Basic Microcontrollers, PIC, and ARM microcontrollers. Signal processing competence is cultivated, with students showcasing their ability to classify and analyze signals and systems in time and frequency domains, employing techniques such as convolution and Z-transforms.

- The curriculum also delves into control systems knowledge, digital design, and Verilog proficiency, providing students with a solid foundation in fundamental electronics. Power electronics competency is developed, focusing on the design and operation of components, circuits, and systems, including converters, inverters, and motor control. Wireless communication and satellite understanding are integral components, contributing to advancements in communication technology.

- Advanced expertise in digital communication, computer networks, image processing, multimedia knowledge, information theory, and coding are emphasized, addressing real-world applications and security considerations. Additionally, the program imparts

VLSI design and testing skills, covering MOS transistor theory, CMOS technologies, architectural choices, and subsystem design processes.

- In response to emerging trends, students gain exposure to machine learning applications, embedded systems development using Cortex M3, and pattern recognition proficiency. Graduates are well-prepared to identify problems suitable for machine learning, design and develop embedded systems, and contribute to the design and implementation of pattern recognition systems.

- In essence, the M.Sc. in Electronics program produces graduates with a multidisciplinary skill set, blending theoretical knowledge with practical applications, innovation, and a commitment to ethical and responsible practices in the field of electronic research and development.

Semester I Paper Title- ELH: 1.1 PROGRAMMING IN C++

Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Explain the principles of object-oriented programming and identify characteristics of an object-oriented language.
2. Recognize and use C++ language components, including tokens, keywords, identifiers, and constants.
3. Apply basic data types, user-defined data types, and derived data types in C++.
4. Use arithmetic, relational, logical, assignment, increment, and decrement operators in programming.
5. Implement decision-making structures (if, if-else, else-if, switch) and loop constructs (for, while, do-while).
6. Define functions, handle function arguments, and explore function overloading and virtual functions.
7. Understand and apply data structures, including arrays, pointers, and dynamic memory allocation.

8. Explore object-oriented concepts such as classes, objects, constructors, destructors, and inheritance.
9. Manage console I/O operations and handle file stream operations, opening, closing, and detecting end-of-file.
10. Work with class templates, function templates, and understand non-type template arguments.
11. Familiarize the basics of exception handling, including throwing, catching, and rethrowing mechanisms.
12. Manipulate strings and understand components of the Standard Template Library (STL) for containers, algorithms, iterators, and function objects.

Semester I Paper Title- ELH - 1.2 MICROWAVES AND ANTENNAS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Apply the knowledge gained to design and analyze microwave systems and devices.
2. Analyze the working principles of microwave tubes, focusing on Reflex Klystron Oscillator and its modes of oscillations.
3. Understand microwave network theory, using Symmetrical Z and Y-Parameters for Reciprocal Networks and S matrix representation.
4. Familiarize with microwave passive devices, including Coaxial Connectors, Attenuators, Phase Shifters, and Waveguide Tees.
5. Explore microwave transmission lines, reviewing equations, reflection coefficient, transmission coefficient, and impedance matching using the Smith Chart.
6. Describe fundamental antenna parameters, patterns, beam area, radiation intensity, directivity, and gain.
7. Analyze characteristics of electric dipoles, including short electric dipoles and thin linear antennas.
8. Explore point sources and arrays, understanding power patterns, radiation intensity, field patterns, and arrays of isotropic point sources.
9. Classify and describe different antenna types, including loop antennas, horn antennas, helical antennas, Yagi-Uda arrays, and parabolic antennas.
10. Analyze loop antennas, including far-field patterns and radiation resistance.

11. Understand the design considerations and properties of helical antennas and explore strip lines, including microstrip lines, parallel strip lines, and coplanar strip lines.

Semester I Paper Title- ELH: 1.3 PIC & ARM MICROCONTROLLER

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the architecture of basic microcontrollers, including PIC and ARM.
2. Program PIC and ARM microcontrollers.
3. Interface microcontrollers with various peripherals and devices.
4. Demonstrate knowledge of different microcontroller architectures, processor types, and memory organization.
5. Apply programming skills for controlling stepper motors, generating waveforms, displaying information on different interfaces, and implementing serial communication.
6. Utilize ARM processors for embedded systems, understanding registers, instruction sets, and architectural support for high-level languages.
7. Implement practical projects involving microcontroller interfacing for real-world applications.

Semester I Paper Title- ELH - 1.4 SIGNALS AND SYSTEMS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Define and classify signals as even, odd, periodic, non-periodic, deterministic, non-deterministic, energy, and power signals.
2. Familiarize and analyze elementary signals/functions, including exponential, sine, impulse, step, ramp, rectangular, triangular, signum, and sync functions.
3. Define and categorize systems as linear/non-linear, time variant/invariant, causal/non-causal, static/dynamic, stable/unstable, and invertible.
4. Explain convolution, impulse response representation, and properties of impulse response for Linear Time-Invariant (LTI) systems.

5. Discuss Fourier representations of discrete-time periodic signals, Discrete Time Fourier Series (DTFS), continuous-time periodic signals, Fourier series, and transforms.
6. Apply Fourier transform representations for periodic signals, convolution, modulations, and Fourier transform representation for discrete-time signals.
7. Lead Z-Transform, its properties, Region of Convergence (ROC), inversion, and its application in transform analysis of LTI systems.
8. Demonstrate the ability to analyze signals and systems using different representations, including Fourier transforms and Z-Transforms.
9. Formulate mathematical models for signals and systems, solving problems involving convolution, Fourier representations, and Z-Transforms.
10. Apply the acquired knowledge to solve real-world problems in communication and control systems.
11. Demonstrate proficiency in analyzing and designing linear systems using time and frequency domain techniques.

Semester II Paper Title- ELH 2.1 CONTROL SYSTEMS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Identify and explain the fundamental features, configurations, and applications of control systems.
2. Define and apply various terminologies related to control systems, establishing a comprehensive understanding of the subject.
3. Formulate mathematical models for electrical, mechanical, and electro-mechanical systems, emphasizing the importance of differential equations.
4. Determine time and frequency responses from the transfer function, illustrating the connection between mathematical modeling and system behavior.
5. Evaluate stability in both time and frequency domains, employing concepts such as Routh stability criterion and frequency domain analysis.
6. Utilize block diagrams and signal flow graphs to represent and analyze control systems, including transfer functions and algebraic manipulations.

7. Analyze time responses of feedback control systems using standard test signals, focusing on first and second-order systems.
8. Assess steady-state errors and error constants in control systems, understanding their significance in system performance.
9. Apply stability analysis techniques, including the Routh stability criterion and frequency domain analysis with Bode plots and Nyquist stability criterion.
10. Introduce concepts of digital control systems, sampling processes, and state variable analysis. Design control systems using various controllers, including PD, PI, PID, Phase-Lead, and Phase-Lag controllers.

Semester II Paper Title- ELH - 2.2 Digital design using Verilog

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Differentiate between Verilog and VHDL descriptions for digital design.
2. Acquire various Verilog HDL constructs and understand their application in digital systems.
3. Familiarize with different levels of abstraction in Verilog, including data flow, behavioral, and structural modeling.
4. Gain knowledge of Verilog tasks and directives, and their role in digital circuit design.
5. Understand timing and delay simulation in the context of digital design.
6. Acquire a comprehensive overview of digital systems, embedded systems, and real-world circuits.
7. Master combinational basics, including components and verification of combinational circuits.
8. Explore sequential basics, covering sequential data paths, control clocked synchronous timing methodology.
9. Comprehend lexical conventions, data types, system tasks, and compiler directives in Verilog HDL.
10. Apply gate-level modeling techniques, dataflow modeling, and behavioral modeling in Verilog for effective digital circuit design.

Semester II Paper Title- ELH - 2.3 DIGITAL SIGNAL PROCESSING

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the frequency domain representation of discrete time signals, including the Discrete Time Fourier Transform (DTFT) and the Discrete Fourier Transform (DFT).
2. Comprehend the properties and algorithms for efficiently computing the DFT, including the Fast Fourier Transform (FFT) and its decimation-in-time and decimation-in-frequency variants.
3. Realize the implementation of Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) filters using different structural forms.
4. Learn the design procedures for IIR filters through impulse invariance and bilinear transformation methods.
5. Gain knowledge of digital filter characteristics, including simple digital filters, all-pass functions, complimentary transfer functions, and digital two pairs.
6. Understand the concepts of sampling and reconstruction in the context of digital filters.
7. Explore analog filter design principles, including maximally flat low-pass filter approximation, Chebyshev filter approximation, and frequency transformations.
8. Familiarize oneself with various digital filter structures, such as direct, parallel, cascade, ladder, and lattice for IIR, as well as possible realizations for FIR, including polyphase and all-pass structures.
9. Acquire skills in IIR filter design using impulse invariance and bilinear transformations, spectral transformations, and FIR filter design using methods like windowing, frequency sampling, and computer aids.
10. Differentiate between IIR and FIR filters, understanding their respective characteristics and applications.

Semester II Paper Title- ELE - 2.5 BASIC ELECTRONICS (ELE)

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the principles of amplifiers and oscillators, including the concept of decibels, half-power points, and the Barkhausen Criterion for oscillations.
2. Gain knowledge of operational amplifiers (OPAMPs), including their ideal properties, inverting and non-inverting circuits, and various applications such as voltage follower, addition, subtraction, integration, and differentiation.
3. Explore communication systems, covering elements of communication, modulation techniques (amplitude, frequency, and phase modulation), spectrum power, and amplitude modulation detection (demodulation).
4. Gain insights into transducers, including passive electrical transducers like resistance thermometers and thermistors, as well as active electrical transducers like piezoelectric and photoelectric transducers. Understand the functioning of basic measuring instruments such as voltmeters, ammeters, multimeters, and oscilloscopes.
5. Learn about flip-flops, including NAND Gate Latch, NOR Gate Latch, and RS Flip-Flop, and their applications in digital electronics.
6. Introduce microcontrollers and their architecture, with a specific focus on the 8051 microcontroller. Understand the block diagram approach in the context of a microcontroller-based stepper motor control system.
7. Apply the knowledge gained in this course to comprehend the building blocks of electronic devices and systems.
8. Demonstrate an understanding of the qualitative aspects of single-stage and two-stage CE amplifiers, negative feedback effects, and various types of oscillators.
9. Gain familiarity with communication system components and modulation techniques, specifically amplitude modulation and its detection.
10. Apply the knowledge of transducers to recognize and understand passive and active electrical transducers, as well as basic measuring instruments used in electronics.

Semester II Paper Title- ELS: 2.4.1 POWER ELECTRONICS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Demonstrate an understanding of power semiconductor devices and their control characteristics.
2. Design and analyze thyristor circuits for converters, inverters, and motors.
3. Apply knowledge of controlled rectifiers, AC voltage controllers, and cycloconverters in power electronics systems.
4. Implement control strategies for choppers and analyze step-up and step-down chopper circuits.
5. Classify different types of motors and explain their working principles.
6. Design and analyze DC motor drives, including closed-loop and PLL control.
7. Analyze AC motor drives, including torque-speed characteristics, speed control, and synchronous motors.
8. Apply the principles of power electronics in real-world applications and solve related engineering problems.

Semester II Paper Title- ELS: 2.4.2 WIRELESS COMMUNICATION AND SATELLITE COMMUNICATION

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the evolution of mobile radio communications and recognize examples of wireless communication systems, including paging and cordless telephone systems.
2. Differentiate between various wireless systems, with a focus on second-generation cellular networks, third-generation wireless networks, and wireless local area networks.
3. Comprehend the fundamentals of cellular system design, including spectrum allocation, frequency reuse, channel assignment strategies, handoff strategies, and interference management.
4. Explore multiple access techniques in wireless communication, such as FDMA, TDMA, spread spectrum multiple access, and space division multiple access.

5. Compare wireless and fixed telephone networks, analyze the development of wireless networks, and understand traffic routing in wireless networks.
6. Study the principles of Orthogonal Frequency Division Multiplexing (OFDM) and its application in wireless communication systems.
7. Examine satellite orbits and trajectories, including orbital parameters, injection velocity, types of satellite orbits, and orbital effects on satellite performance.
8. Understand the subsystems of communication satellites, including power supply, attitude and orbit control, tracking, telemetry, command subsystems, and payload.
9. Explore earth stations, their types, architecture, design considerations, testing, hardware, and satellite tracking.
10. Analyze communication satellites, their applications in satellite telephony, television, radio, regional satellite systems, and national satellite systems.

Semester III Paper Title- ELH –3.1: ADVANCED DIGITAL COMMUNICATION

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Apply knowledge of digital modulation techniques in real-world communication scenarios.
2. Analyze and design convolutional codes for channel coding.
3. Evaluate the impact of channel characteristics on communication performance.
4. Implement and analyze spread spectrum digital communication systems.
5. Demonstrate an understanding of advanced techniques for mitigating channel impairments, such as equalization and adaptive filtering.
6. Apply coding techniques for error detection and correction in digital communication.
7. Design and implement communication systems in the presence of noise, interference, and fading channels.
8. Evaluate the performance of various modulation and coding schemes in practical communication scenarios.

Semester III Paper Title- ELH – 3.2 ADVANCED COMPUTER NETWORKS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Gain a thorough understanding of computer network protocols, standards, and architectures, including the OSI and TCP/IP reference models.
2. Demonstrate knowledge of hardware components such as connectors, transceivers, and networking devices, and comprehend principles underlying telephone networks.
3. Understand packet switching protocols like X.25, their operational theory, and functions at the network layer. Grasp internetworking protocols, SMDS, addressing, and traffic control.
4. Acquire multiplexing techniques (FDM, TDM, SM) and different types of LANs (Ethernet, token ring, FDDI), as well as the concepts of switching, circuit switching, packet switching, and multicasting.
5. Explore SONET/SDH standards, DWDM in optical networking, and the history and layers of Integrated Service Digital Network (ISDN).
6. Understand the basics of Internet protocols, including IP, TCP, UDP, ICMP, HTTP, and the World Wide Web. Gain insights into internet security and email security.
7. Comprehend ATM protocols, operations, WAN aspects, and the B-ISDN reference model. Explore ATM layers, traffic descriptors, congestion control, AAL protocol, and network management in ATM.
8. Acquire about network management concepts, SNMP components, SMI, MIB, and SNMP message formats.
9. Understand cryptography, symmetric and public key algorithms, digital signatures, management of public keys, communication security, web security, and basics of traffic management.
10. Gain insights into QoS, queue analysis, and the basics of traffic management, including requirements for web security and the use of Secure Socket Layer (SSL).

Semester III Paper Title- ELH – 3.3: IMAGE PROCESSING

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Develop a comprehensive understanding of Digital Image Processing, including elements of visual perception, image sensing, and acquisition.
2. Apply mathematical tools in Digital Image Processing and grasp the fundamental algorithms related to intensity transformations and spatial filtering.
3. Gain proficiency in frequency domain filtering, including concepts of Fourier Transform, DFT of two variables, and properties of 2D DFT.
4. Acquire skills in image restoration and reconstruction, considering models of image degradation/restoration processes and addressing noise reduction.
5. Understand morphological image processing techniques such as erosion, dilation, opening, closing, and the Hit or Miss Transformation.
6. Explore advanced morphological algorithms and grasp the concepts of gray-scale morphology.
7. Develop expertise in image segmentation, covering point, line, and edge detection, as well as thresholding and region-based segmentation.
8. Gain insights into color image processing, including color fundamentals, color models, and transformations for smoothing and sharpening.
9. Implement image processing algorithms to solve real-world problems, demonstrating practical application.
10. Be prepared to engage with current image processing research literature and stay updated with advancements in the field.

Semester III Paper Title- ELS-3.4.1: INFORMATION THEORY & CODING

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Acquire a deep understanding of information and entropy, assessing average information content in independent and dependent symbol sequences.
2. Gain expertise in source coding methods, including encoding of source output, application of Shannon's encoding algorithm, and implementation of Huffman coding and the Source Coding Theorem.
3. Grasp the core principles of channel coding, including mutual information and the channel capacity theorems for discrete memoryless channels.
4. Demonstrate proficiency in block codes, covering Hamming weight, minimum distance decoding, and types of errors. Evaluate examples such as Single Parity Codes, Hamming Codes, and Repetition Codes.
5. Apply knowledge in linear block codes, matrix descriptions, and error detection and correction techniques.
6. Implement binary cyclic codes, understand algebraic structures, and apply encoding using (n-k) bit shift registers. Implement Syndrome calculation and BCH codes.
7. Apply advanced coding techniques including Reed-Solomon (RS) codes, Golay Codes, shortened cyclic codes, particularly in the context of correcting burst and random errors.
8. Understand convolution codes and their representation in both time and transform domains.
9. Demonstrate proficiency in designing encoders and decoders, and evaluate the efficacy of different code types in information transmission.
10. Apply acquired knowledge practically in designing, analyzing, and implementing error control codes for efficient communication across various channels.

Semester III Paper Title- ELS – 3.4.2: MULTIMEDIA

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Define Multimedia Communication Models and understand the principles of multimedia information representation.

2. Explain Multimedia Transport in Wireless Networks, including issues related to quality of service (QoS) at both the network and application levels.
3. Solve security issues in multimedia networks, demonstrating an understanding of measures to ensure the confidentiality and integrity of multimedia data.
4. Illustrate real-time multimedia network applications, emphasizing the practical implementation of multimedia in various scenarios.
5. Understand and apply application and networking terminology relevant to multimedia networks.
6. Discuss and analyze network QoS (Quality of Service) and its impact on application QoS in the context of multimedia.
7. Explain the principles of digitization for text, images, audio, and video in the context of multimedia networks.
8. Demonstrate knowledge of compression techniques for text, images, audio, and video, including standards such as Runlength, Huffman, LZW, GIF, TIFF, JPEG, DPCM, ADPCM, and MPEG.
9. Explore video compression standards (H.261, H.263, MPEG, MPEG-1, MPEG-2, MPEG-4) and understand the process of multimedia content description standardization (MPEG-7).
10. Introduce the concept of synchronization, presentation requirements, and the reference model for synchronization, including an overview of multimedia operating systems, resource management, and process management techniques.

Semester III Paper Title-ELE 3.5 FUNDAMENTALS OF DIGITAL ELECTRONICS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the fundamentals of binary systems, including binary numbers, conversions, octal and hexadecimal numbers, complements, binary codes, storage, and registers in digital computers.
2. Gain proficiency in Boolean algebra, logic gates, and the axiomatic definition of Boolean algebra. Apply theorems and properties, simplify Boolean functions using the map method, and implement them with NAND and NOR gates.

3. Explore combinational logic, covering design procedures, adders (binary parallel and decimal), subtractors, code conversion, magnitude comparators, decoders, and multiplexers.
4. Delve into sequential logic, including flip flops (SR, JK, D & T types), triggering mechanisms, analysis of clocked sequential circuits, state reduction and assignment, flip-flop excitation tables, shift registers, and counters.
5. Apply the tabulation method for simplifying Boolean functions and understand the use of don't care conditions in logic design.
6. Demonstrate the ability to work with multi-variable maps (Two-Three-Four-Five-Six variable maps) for Boolean function simplification.
7. Develop skills in determining and selecting prime implicants in Boolean function simplification.
8. Apply knowledge of sequential logic to design shift registers and counters.
9. Gain hands-on experience in analyzing and designing digital circuits using integrated circuits.
10. Demonstrate a comprehensive understanding of digital electronics principles and apply them to real-world problems in computer systems and digital technology.

Semester III Paper Title- ELR-3.9 Industrial Training

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. **Practical Application:** Apply theoretical knowledge gained during the academic program to real-world industrial scenarios.
2. **Professional Skills:** Develop and enhance professional skills such as teamwork, communication, time management, and problem-solving in an industrial setting.
3. **Industry Exposure:** Gain exposure to industry practices, standards, and processes relevant to the field of electronics.
4. **Hands-on Experience:** Acquire hands-on experience with industrial tools, equipment, and technologies used in the electronics industry.
5. **Project Execution:** Demonstrate the ability to plan, execute, and manage a project within the constraints of an industrial environment.
6. **Adaptability:** Adapt to the work culture, environment, and dynamics of an industrial organization.
7. **Networking:** Establish professional networks and connections within the industry.
8. **Critical Analysis:** Analyze and evaluate real-world challenges and propose practical solutions based on acquired knowledge.
9. **Professional Ethics:** Understand and adhere to professional and ethical standards in the workplace.
10. **Documentation and Reporting:** Develop effective documentation and reporting skills for tasks and projects undertaken during the industrial training period.

These outcomes reflect the typical goals of industrial training, where students are expected to bridge the gap between theoretical knowledge and practical application, preparing them for future professional roles in the electronics industry.

Semester III Paper Title- ELH – 4.1: VLSI Design

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the fundamentals of MOS transistor theory and its application in CMOS technologies.
2. Analyze architectural choices and performance tradeoffs in the design and realization of circuits using CMOS technology.
3. Demonstrate knowledge of subsystem design processes in VLSI design.
4. Explain the concepts of CMOS testing, including semiconductor technology overview and process considerations.
5. Discuss the characteristics and design aspects of CMOS inverters, including static load, differential, tristate, and BiCMOS inverters.
6. Comprehend the CMOS process technology, covering semiconductor technology overview, p/n well processes, and current CMOS enhancement techniques.
7. Understand the basics of digital CMOS design, including combinational and sequential MOS logic circuits.
8. Explore dynamic logic circuits, including pass transistor circuits, voltage bootstrapping, and dynamic CMOS circuit techniques.
9. Discuss sheet resistance, standard unit capacitance concepts, and factors affecting delay in dynamic CMOS circuits.
10. Gain knowledge of clocking techniques in VLSI design, covering clock generation, distribution, clocked storage elements, and the advantages of CMOS over NMOS.

Semester IV Paper Title- ELH -4.2: MACHINE LEARNING

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Identify and articulate problems suitable for machine learning applications, selecting appropriate paradigms (supervised, unsupervised, or reinforcement learning).

2. Apply foundational principles of probability and statistics to machine learning, utilizing these concepts in model development and evaluation.
3. Implement and understand concept learning algorithms, including Find-S, Candidate Elimination, and concepts like Version Space and inductive bias.
4. Apply decision tree learning algorithms to solve practical problems, considering hypothesis space search and inductive bias.
5. Demonstrate a fundamental understanding of artificial neural networks (ANN), construct neural network representations, and implement Perceptrons and Backpropagation for training.
6. Apply Bayesian learning, utilizing Bayes theorem, maximum likelihood, and least squares error hypotheses, implementing practical applications like Naive Bayes classifier and Bayesian belief networks.
7. Justify the importance of hypothesis evaluation, estimate accuracy, derive confidence intervals, and compare learning algorithms.
8. Understand instance-based learning, implement k-nearest neighbor learning, and explore locally weighted regression, radial basis function, and case-based reasoning.
9. Grasp the fundamentals of reinforcement learning, formulate learning tasks, and implement the Q Learning algorithm for sequential decision-making.

Semester III Paper Title-ELH – 4.3: EMBEDDED SYSTEMS

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the core components of embedded systems, including processors, memory, sensors, actuators, and communication interfaces.
2. Demonstrate knowledge of hardware-software co-design principles and computational models in embedded system design.
3. Apply Unified Modeling Language (UML) concepts for hardware-software trade-offs in embedded systems.

4. Utilize Electronic Design Automation (EDA) tools for schematic design, printed circuit board (PCB) layout, and netlist creation.
5. Design and develop embedded firmware using appropriate approaches and programming languages.
6. Comprehend the basics of the ARM Cortex-M3 architecture, including operation modes, registers, and data types.
7. Implement interrupt controllers, understand exception handling, and program ARM Cortex-M3 for real-time applications.
8. Explore advanced programming features and the Memory Protection Unit in ARM Cortex-M3 microcontrollers.
9. Familiarize with the embedded system development environment, including Integrated Development Environment (IDE), cross-compilation, and debugging tools.
10. Apply knowledge through case studies on target hardware debugging, boundary scan, and real-world embedded system development scenarios.

Semester III Paper Title- ELH – 4.4: PATERN RECOGNITION

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the basics of pattern recognition systems, including their applications and the pattern recognition life cycle.
2. Design and construct a pattern recognition system, applying major approaches in statistical and syntactic pattern recognition.
3. Demonstrate knowledge of probability theory, Gaussian distribution, and Bayes decision theory for statistical pattern recognition.
4. Implement optimal solutions for minimum error and minimum risk criteria, considering decision surfaces.
5. Apply parameter estimation methods such as Maximum-Likelihood estimation, Expectation-maximization method, and Bayesian parameter estimation.

6. Comprehend the concept of feature extraction, dimensionality, and dimension reduction methods, including Fisher discriminant analysis and Principal component analysis.
7. Understand Hidden Markov Models (HMM) and Gaussian mixture models as non-parametric methods for pattern recognition.
8. Apply non-parametric techniques for density estimation, such as the Parzen-window method and K-Nearest Neighbour method.
9. Implement decision trees, linear discriminant-based algorithms (Perceptron, Support Vector Machines), and classifier ensembles (Bagging, Boosting/Ada Boost).
10. Demonstrate proficiency in unsupervised learning, particularly clustering techniques like K-means and Hierarchical methods, along with cluster validation.

Semester III Paper Title- ELP- 4.7 Project Work

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. **Project Planning and Management:**
    - Develop the ability to plan and manage a project, including defining objectives, scope, and timelines.
2. **Technical Proficiency:**
    - Demonstrate enhanced technical skills relevant to the chosen project, showcasing expertise in the application of electronics concepts.
3. **Problem Identification and Solving:**
    - Identify and analyze problems related to the project, applying critical thinking and problem-solving skills to propose effective solutions.
4. **Team Collaboration:**

- Work collaboratively within a team, demonstrating effective communication, teamwork, and coordination to achieve project goals.

5. **Documentation and Reporting:**
    - Develop skills in documenting project progress, methodologies, and outcomes, and present findings in a structured and coherent manner.
6. **Innovation and Creativity:**
    - Encourage innovative thinking and creativity in approaching project challenges, fostering a spirit of exploration and experimentation.
7. **Adaptability:**
    - Adapt to unforeseen challenges and changes in project requirements, showcasing flexibility and resilience in the face of evolving circumstances.
8. **Presentation Skills:**
    - Present the project outcomes effectively, including the ability to communicate complex technical information to both technical and non-technical audiences.
9. **Quality Assurance:**
    - Implement quality assurance measures to ensure the reliability and robustness of the project deliverables.
10. **Professional Ethics:**
    - Apply ethical considerations in decision-making and project execution, adhering to professional standards and integrity.
11. **Project Evaluation:**
    - Evaluate the success of the project based on predefined criteria, reflecting on lessons learned and areas for improvement.
12. **Integration of Learning:**
    - Integrate knowledge gained from various courses throughout the academic program into the project work, showcasing a holistic understanding of electronics.

These outcomes reflect the broader skills and competencies that students might be expected to develop as a result of completing a project work course. The specific outcomes may vary depending on the nature and scope of the projects undertaken by the students.

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M.LISc. Library and Information Science Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. The MLISc program offers a comprehensive and well-rounded education in Library and Information Science.
2. Throughout the program, students develop a deep understanding of fundamental principles, including information management, cataloging, and classification.
3. They acquire essential computer skills and become proficient in technology, digital libraries, and automation.
4. The curriculum places a strong emphasis on research methodology, information literacy promotion, and resource management.
5. Graduates emerge with the ability to appreciate the historical and philosophical foundations of librarianship and the Information Society.
6. They are adept at navigating the complexities of information resources, conducting research, and applying ethical standards in their work.
7. The program equips them to address contemporary challenges in libraries and information centers while staying current with emerging trends and technologies.
8. Furthermore, students gain valuable hands-on experience in managing academic library systems and services, including collection development, user education, and various library services.

Semester I Paper Title - 1.1: Foundation of Library and Information Science

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand the concept of professionalism in librarianship, encompassing generic attributes, ethical considerations, and essential qualities.
2. Explore the Science of Librarianship, including aspects such as the universe of knowledge, classification, cataloging, indexing, thesaurus development, abstracting, and Knowledge Organization Systems (KOS).
3. Assess the role of librarians as knowledge managers and information specialists in organizing and disseminating information effectively.
4. Investigate the genesis, development, and roles of national and international Professional Associations and Organizations in the field of Library and Information Science.
5. Analyze the contributions of key organizations, including ILA, IASLIC, IATLIS, KALA, ALA, SLA, CILIP, IFLA, RRRLF, and UNESCO, in advancing LIS services and advocacy.
6. Recognize the necessity and objectives of Library Legislation.
7. Examine the functions and principles underlying library legislation, with a focus on specific acts such as the Karnataka Public Library Act, 1965, and the Digital Millennium Act, 1996.

8. Assess the impact of legislative frameworks on the development and governance of libraries.
9. Critically analyze the Five Laws of Library Science and their relevance in the contemporary information society.
10. Explore variations and adaptations of the Five Laws and their implications for modern library practices.

Semester I Paper Title - 1.2: Information Sources and Services
Student Learning Course Outcomes
After successful completion of this course, students will be able to: -

1. Understanding the significance of information sources in research and decision-making processes across various domains.
2. Identifying and categorizing different types of information sources, including primary, secondary, and tertiary sources.
3. Analyzing the characteristics of information sources to determine their suitability for specific research needs and contexts.
4. Exploring the diverse uses of information sources in academic, professional, and personal settings to acquire knowledge and support decision-making.
5. Recognizing the importance of primary sources in original research and knowledge creation, including periodicals, technical reports, patents, etc.
6. Evaluating the role of secondary sources such as dictionaries, encyclopedias, and bibliographies in providing background information and aiding in literature review.
7. Understanding the significance of tertiary sources like directories and guides to subject literature in facilitating access to specialized information.
8. Appreciating the value of human sources such as consultants, experts, and information brokers in providing specialized knowledge and expertise.
9. Exploring the role of institutional sources, including national and international agencies, government departments, and academic institutions, in generating and disseminating information.
10. Analyzing the impact and implications of electronic information sources, including e-journals, databases, and e-learning resources, in the digital age, and evaluating their benefits and challenges for users.

Semester I Paper Title - 1.3: Library Classification (Theory)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understanding the concept of library classification, its meaning, and definition, and recognizing its importance in organizing and retrieving information efficiently.
2. Exploring the need, purpose, and functions of library classification systems in facilitating access to knowledge resources for users.

3. Analyzing the modes of formation of subjects and understanding the processes involved in knowledge classification and book classification.
4. Examining the history, development, and structure of prominent library classification schemes such as Dewey Decimal Classification (DDC), Universal Decimal Classification (UDC), and Colon Classification (CC).
5. Investigating the theory of library classification, including the planes of work, laws, canons, principles, and postulates underlying the organization of information.
6. Understanding fundamental categories in library classification such as PMEST (Personality, Matter, Energy, Space, Time), facet analysis, facet sequence, phase relation, and common isolates, and special isolates.
7. Exploring the concept of notation in library classification, its meaning, definition, need, types, functions, and qualities, and understanding mnemonic techniques used for notation.
8. Analyzing trends in library classification, including automatic classification techniques and web-based systems like Web Dewey.
9. Understanding knowledge organization systems (KOS), including concepts like ontology, folksonomy, Web Ontology Language (OWL), Simple Knowledge Organization System (SKOS), and taxonomy.
10. Exploring the role of library classification systems in the digital age and their adaptation to emerging technologies and user needs.
11. Evaluating the challenges and opportunities in implementing and managing library classification systems in diverse information environments.
12. Investigating current research and developments in library classification, including efforts to enhance interoperability, multilingual access, and semantic enrichment of classification systems.

Semester I Paper Title - 1.4 Basics of Computer (Theory)

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

1. Understand IT evolution, application in libraries, and efficient information management and dissemination.
2. Explore computers' types, generations, capabilities, limitations, and their role in information management.
3. Identify computer hardware components: memory, storage devices, input/output devices.
4. Understand computer software: systems software, operating systems, application software packages like MS Office.
5. Explore data representation, manipulation techniques, including bits, bytes, codes, number systems.
6. Understand programming basics: steps, algorithms, flowcharts, programming languages like BASIC, PASCAL, C++.

7. Explore file organization concepts, including fields, records, files, databases, and their methods.
8. Analyze Internet's historical development, role of web browsers, search engines, and search strategies.
9. Evaluate IT's impact on library practices, including digitization, online cataloging, and democratization of information.
10. Investigate emerging IT trends, challenges, and implications for libraries, including cybersecurity and artificial intelligence.

Semester I Paper Title-1.5: Information Sources and Services (Practical - I)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand information sources in print, electronic, and multimedia formats across subjects.
2. Identify and evaluate credibility, accuracy, and authority of information from various sources.
3. Develop search skills for effective retrieval from online catalogs, databases, and repositories.
4. Synthesize information from multiple sources to support research and construct arguments.
5. Recognize ethical and legal considerations in information use and adhere to best practices.
6. Apply critical thinking to analyze, interpret, and make informed decisions based on evidence.

Semester I Paper Title-1.6: Library Classification (Practical - I)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Mastery in categorizing documents (simple, compound, complex, electronic) using the latest Dewey Decimal Classification Scheme.
2. Efficient navigation of the Dewey Decimal Classification system for assigning classification numbers to various document types.
3. Understanding the vital role of Dewey Decimal Classification in organizing information for easy retrieval and access in libraries and information centers.

Semester I Paper Title-1.7: Basics of Computer (Practical - I)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Practical familiarity with computer hardware components and operating systems including MS-DOS, MS-Windows, Linux, and software applications like MS-Office (Word, Excel, PowerPoint).
2. Proficiency in hands-on tasks and work assignments involving the utilization of various computer components and software platforms.
3. Ability to perform tasks effectively using MS-DOS, MS-Windows, Linux, and MS-Office applications (Word, Excel, PowerPoint) to meet academic and professional requirements.

Semester II Paper Title - 2.1: INFORMATION SOCIETY AND LITERACY
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand data, information, and knowledge; their characteristics and practical applications.
2. Proficient in communication modes, channels, and overcoming barriers for effective exchange.
3. Analyze the evolution of the information society and the roles within the industry.
4. Evaluate social, political, and ethical implications, including IP rights and data security.
5. Demonstrate competence in various literacies across proficiency levels.
6. Apply established models like SCONUL, Empowering 8, ALA, and IFLA ACRL.
7. Develop skills for user education, addressing current challenges.
8. Engage in critical thinking for navigating complex information landscapes.
9. Utilize information resources ethically, respecting copyright and fair use.
10. Contribute to national and international information policies and programs.

Semester II Paper Title - 2.2: MANAGEMENT OF HYBRID AND DIGITAL LIBRARIES
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the concepts, scope, and various management styles applicable to library and information centers.
2. Gain proficiency in human resource management, including recruitment, motivation, training, and performance appraisal within library contexts.
3. Learn financial management techniques such as budgeting, costing, and outsourcing relevant to library operations.
4. Acquire skills in maintaining library records, compiling annual reports, and utilizing library statistics for decision-making.
5. Master library operations including collection development, technical processing, circulation control, and stock management.
6. Explore the design and planning of libraries as systems, incorporating total quality management and technology management principles.

7. Understand the principles and factors involved in designing hybrid and digital library buildings, adhering to relevant standards.
8. Learn marketing concepts and strategies for information products and services, including market segmentation and promotion techniques.
9. Develop the ability to analyze and assess information needs and effectively position library services within the market.
10. Recognize the role of librarians in marketing LIS products and services, conducting marketing audits, and adapting to changing user needs.

Semester II Paper Title - 2.3 : LIBRARY CATALOGUING (THEORY)

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Understand the purpose and functions of library catalogues, including OPAC and Web-OPAC systems.
2. Learn about normative principles governing library cataloguing, including laws, canons, and ethical principles.
3. Explore the history and features of key catalogue codes such as the Classified Catalogue Code and AACR-II(R).
4. Master catalogue entries and filing principles, including different kinds of entries and filing rules.
5. Study subject heading systems like the Chain Procedure, Sears List, and Library of Congress Subject Headings.
6. Understand cooperative and centralized cataloguing concepts, union catalogues, and tools like IndCat, OCLC, and WorldCat.
7. Analyze trends in cataloguing electronic and internet resources, including standards for bibliographic description such as ISBD and MARC 21.
8. Explore metadata standards like Dublin Core, FRBR-RDA, and BIBFRAME for organizing electronic resources.
9. Apply cataloguing standards and metadata principles to ensure consistency and interoperability in bibliographic records.
10. Keep abreast of evolving practices and technologies in cataloguing to adapt to the changing landscape of information organization.

Semester II Paper Title - 2.4: LIBRARY AUTOMATION (THEORY)

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Understand the concept, history, and necessity of library automation, along with its various application areas.
2. Analyze internal and external factors influencing library automation strategies, identifying prerequisites and tasks involved.

3. Identify infrastructure requirements for library automation, including manpower, hardware, software, and associated costs.
4. Explore the automation of housekeeping operations such as acquisition, cataloguing, circulation, and serial control, emphasizing roles and rationale.
5. Evaluate different library software packages like SOUL, Easylib, and Koha, considering their features and suitability for automation needs.
6. Examine library technologies including security systems, discovery tools, and semantic technology, and their role in enhancing library services.
7. Explore the concept and evolution of artificial intelligence in libraries, its applications, advantages, and limitations, along with relevant tools like ChatBots and Semantic Scholar.

Semester II Paper Title - 2.5: INFORMATION LITERACY
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Gain insight into library types, functions, and services across academic, special, public, corporate sectors.
2. Understand information source hierarchy and essential library tools, services, and facilities.
3. Explore electronic resources like e-journals, e-books, databases, e-learning platforms, and open access initiatives.
4. Examine open access resources' concept, impact, including OA journals, books, directories, OER, and MOOCs.
5. Delve into information literacy concept, recognizing its importance, and historical development.
6. Learn effective information organization and presentation methods, including style manuals and citation formats.
7. Develop information literacy skills through structured programs, studying international initiatives, and lifelong learning components.

Semester II Paper Title - 2.6: LIBRARY CATALOGUING (PRACTICAL)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Practice cataloguing simple documents like books and journal articles according to AACR-II (R) guidelines.
2. Learn to catalogue composite documents such as edited volumes or conference proceedings accurately.
3. Master cataloguing complex materials like multimedia resources or multi-volume sets with attention to detail.

4. Ensure uniformity and consistency in cataloguing practices throughout, following AACR-II (R) rules.
5. Apply additional standards or conventions, such as ISBD for serials, as required for specific formats.
6. Engage in hands-on exercises to create cataloguing records for various materials and formats.
7. Participate in discussions and feedback sessions to reinforce learning and clarify doubts.

Semester II Paper Title - 2.7: LIBRARY AUTOMATION (PRACTICAL)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Gain practical experience with library software packages, specifically SOUL and Koha.
2. Complete hands-on assignments utilizing functionalities within SOUL and Koha.
3. Learn to perform tasks such as cataloguing, circulation management, and patron management using the software.
4. Each student must maintain a practical record documenting their work with the software.
5. Practical records will be assessed during practical examinations to evaluate students' proficiency with the software.
6. Explore the features and capabilities of SOUL and Koha for library automation purposes.
7. Engage in troubleshooting and problem-solving exercises to address issues encountered during software usage.
8. Develop familiarity with the user interface and navigation of both SOUL and Koha platforms.
9. Gain practical insights into the management of library automation systems.
10. Apply theoretical knowledge of library automation concepts to real-world scenarios through practical exercises with SOUL and Koha.

Semester III Paper Title - 3.1: RESEARCH METHODOLOGY
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand research's purpose, types, and scientific methods in Library and Information Science.
2. Learn literature review, problem identification, and research design essentials.
3. Grasp hypothesis formation principles and types, ensuring quality.
4. Explore research methods like historical, experimental, and survey techniques, along with bibliometrics and webometrics.
5. Familiarize with sampling techniques and considerations, including sample size and bias.
6. Acquire data analysis skills using statistical methods and software tools like SPSS.
7. Master report writing basics, referencing styles, and e-citation tools like Mendeley.
8. Recognize ethical research practices, plagiarism avoidance, and using detection software.

Semester III Paper Title - 3.2: INFORMATION SYSTEMS AND SERVICES

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Understand the concept and importance of information services, including planning and design considerations.
2. Explore reference services, covering objectives, types, reference process, and the role of technology, with a focus on virtual reference desks and referral services.
3. Learn about document delivery services, their significance, types, and the integration of technology, including examples from INFLIBNET and DELNET.
4. Discover web-based library services, including virtual library tours, Ask a Librarian, online user education, and evaluation methods for web-based information services.
5. Examine bibliographic services, their types, and roles in facilitating information access and use, including the preparation of bibliographies, trend reports, and digests.
6. Explore national documentation centers and information systems like NISCAIR, DESIDOC, NASSDOC, ENVIS, and NIMSME (SENDOC).
7. Understand international information systems and services such as BIOSIS, INSPEC, ERIC, AGRIS, and INIS, and their significance in global information dissemination.

Semester III Paper Title - 3.3: INDEXING SYSTEM (THEORY)

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

Understand indexing's definition, objectives, characteristics, and its role in information retrieval systems.

1. Explore indexing components including theories, methods, and indexing languages like thesauri.
2. Learn about pre-coordinate and post-coordinate indexing systems such as PRECIS, POPSI, and KWIC.
3. Study bibliographic description, its historical development, and standards like ISBD for bibliographic records.
4. Discover the concept and importance of bibliographic control, including its role in managing non-book materials.
5. Explore international bibliographic control, its need, standards, and the role of international organizations.
6. Evaluate indexing systems based on criteria such as recall, precision, coverage, and currency, studying evaluation studies like ASLIB and MEDLARS.

Semester III Paper Title - 3.4: Information and Communication Technology (Theory)

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Explore multimedia, hypertext, and hypermedia concepts, including audio, video, and image representation, along with hardware and software requirements.
2. Understand database design, development, and management, covering DBMS and RDBMS types, structure, organization, and data security.
3. Study WINISIS system overview, installation, database construction, techniques, menus, tools, and database creation.
4. Learn about the Internet of Things, its characteristics, applications, and implications for handling big data.
5. Explore online databases like SCOPUS, Web of Science, and PUBMED across various disciplines, along with research information management systems like Pure and VIVO.
6. Understand cloud computing's concept, characteristics, models, architecture, and its advantages and disadvantages.
7. Explore e-publishing concepts, categories, impact metrics like Impact Factor and h-index, and study e-publishing software like MS Publisher and OJS.

Semester III Paper Title - 3.5: Information Sources on Social Sciences and Science and Technology

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Explore various print sources like dictionaries, encyclopedias, biographical, geographical, statistical sources, directories, and bibliographies, along with abstracting and indexing sources including citation indexes.
2. Understand different types of databases including bibliographic databases like INSPEC and Scopus, and full-text databases like JSTOR and ERIC.
3. Learn about electronic information sources, their growth, and development, covering e-journals, e-books, e-theses, e-newspapers, blogs, wikis, and online dictionaries.
4. Explore electronic and internet resources such as OCLC, UGC-INFONET, DELNET, and CSIR e-journal consortia, along with subject gateways and portals.
5. Discover search tools including OPAC, web OPAC, directories, subject gateways, and search engines like Google and Google Scholar, along with meta search engines like Dogpile and MetaCrawler, and develop effective searching strategies.
6. Learn guidelines for finding authentic resources on the internet to ensure reliability and credibility.
7. Understand intellectual property rights including copyright, patent, plagiarism, fair use, creative commons, trademarks, and tools for checking plagiarism.

Semester III Paper Title - 3.6: Information Processing and Retrieval (Practical - 1)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Follow AACR-II(R) guidelines for cataloguing audio/video recordings and computer-generated files, including web resources.
2. Ensure accurate description of non-book materials, including title, statement of responsibility, edition, publication details, and physical description.
3. Use appropriate subject headings and classification numbers to facilitate access to the materials.
4. Apply prescribed rules for notes and added entries, such as performers, producers, and series statements.
5. Include any accompanying material or supplementary content in the cataloguing record.
6. Familiarize with the principles and rules of PRECIS indexing system.
7. Analyze the content of the documents to be indexed and identify key concepts and terms.
8. Create index records using controlled vocabulary and standardized indexing terms.
9. Apply PRECIS principles for main entry, coordination, and subordination of index terms.
10. Include cross-references and scope notes to enhance the usability of the index.
11. Ensure consistency and accuracy in indexing practices to facilitate information retrieval.

Semester III Paper Title - 3.7: Information and Communication Technology (Practical - II)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the MARC21 tags for bibliographic and authority records, including common fields like 245 for title and 100 for author.
2. Learn the design and development of databases using WINISIS, covering database creation, structure, data entry, and indexing.
3. Explore e-publishing software like MS Publisher and OJS for creating and managing electronic publications, including journals and newsletters.
4. Gain proficiency in using SPSS for statistical analysis, including chi-square tests, correlation analysis, t-tests, and ANOVA.
5. Develop skills in formulating research objectives, hypotheses, and designing questionnaires for data collection in quantitative research studies.

Semester IV Paper Title- 4.1:Information and Communication Technology (Theory - II)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Comprehend telecommunication basics, analog vs. digital signals, and various transmission technologies.
2. Learn about LAN, MAN, WAN networks, hardware components, topologies, and security measures.

3. Familiarize with NICNET, BSNL, ERNET, INFLIBNET, DELNET, CALIBNET, and understand consortia concepts.
4. Acquire knowledge of video conferencing, email, e-commerce, and network protocols.
5. Explore Internet usage in libraries, resources, and internet-based services.
6. Gain insight into cyber laws, DRM, digital signatures, and electronic contracts.
7. Understand web evolution, HTML basics, and criteria for effective web design.

Semester IV Paper Title 4.2: Digital Libraries
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand Digital Library fundamentals, collections, services, and initiatives like Shodhganga.
2. Learn Digitization tools, techniques, file formats, and Document Management Systems.
3. Explore Digital Library Architecture, metadata standards, access control, DRM, and preservation.
4. Study features of Digital Library Software like GSDL, DSpace, and E-Prints.
5. Explore Content Management Systems, Open Archives Initiative, and Deep Web understanding.
6. Understand Data Visualization, tools, techniques, and application in libraries.
7. Manage Digital Libraries, handle IPR, Copyright, evaluate trends, and issues.

Semester IV Paper 4.3 (A): Public Library Systems and Services
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the meaning, objectives, functions, and historical development of public libraries in India, including the roles of government and non-government agencies.
2. Recognize the need and importance of public library legislation, including examples from the UK, USA, and India, such as the Karnataka State Public Library Act 1965.
3. Identify different categories of public library users, their information needs, and the importance of user education and studies.
4. Develop policies and procedures for collection development in public libraries, including resource sharing networks and examples from the USA, UK, and India.
5. Manage human resources and finances effectively in public libraries, including recruitment, qualification, budget preparation, and performance evaluation.
6. Plan and organize various types of information services for different user categories in public libraries, along with library publicity, extension activities, and mobile library services.
7. Understand the roles played by national and international associations and organizations such as Raja Ram Mohan Roy Library Foundation, UNESCO, and IFLA in the development and promotion of public libraries.

Semester IV Paper Title 4.3 (b): Academic Library Systems and Services
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the concept, objectives, functions, and characteristics of academic libraries, along with their role in education. Explore the history and development of academic libraries in India.
2. Recognize the role of organizations like UGC in academic library development, including their powers, functions, and committees. Understand the influence of the New Education Policy on academic libraries.
3. Develop skills in collection development and management, including book selection procedures, preservation, conservation, weeding, and addressing challenges. Explore the advantages of online bookshops and the role of resource sharing networks like INFLIBNET.
4. Identify different categories of library users, their information needs, and the importance of user studies, education, and information literacy.
5. Plan and provide various library services such as reference services, CAS services, SDI service, indexing and abstracting services, email alerting services, electronic document delivery services, and database services. Learn to design and evaluate library and information services effectively.
6. Understand the need, objectives, design, planning, and factors involved in library building construction. Learn about the furniture and equipment required for a functional library.
7. Manage human resources and finances in academic libraries, including recruitment, qualifications, training, duties, responsibilities, performance evaluation, and budget preparation. Gain insights into financial sources and mobilization.

Semester IV Paper Title 4.3 (c): Health Science Library Systems and Services
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Understand the concept, objectives, functions, and characteristics of health science libraries, including their growth and development. Identify user categories, their information needs, and the importance of user education and studies.
2. Survey basic information sources used in medicine, nursing, allied health, and healthcare administration. Explore traditional and innovative services offered by health science libraries, including databases and electronic resources like ADONIS.
3. Develop skills in collection management, including policies, procedures, methods, resource sharing, conservation, preservation, evaluation, and weeding.
4. Manage human resources and finances in health science libraries, including recruitment, qualifications, duties, responsibilities, performance evaluation, continuing education programs, and budget preparation and management.

5. Design and plan various information services for different categories of users in health science libraries, including doctors, nurses, and patients. Explore national information policies and access to external information.
6. Understand the design, planning, factors, furniture, and equipment requirements for health science library buildings.
7. Explore the role and functions of organizations like the National Library of Medicine, USA, and international organizations delivering health science information such as WHO, ICMR, and various national institutes.

Semester IV Paper Title 4.4 : Project

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Formulate a scientific question
2. Develop the ability to apply the tools and techniques of library and information science in conducting independent research.
3. List the objectives and state the hypothesis of the research project
4. Outline the library and information science that will be followed to achieve the listed objectives
5. Employ the finalized methodology to solve the problem which has been undertaken
6. Analyze the data which has been generated by carrying out several research methods
7. Create document and report on the research results and conclusions
8. Present and explain their research findings to the audience effectively.

Semester IV Paper Title 4.5 : Library Classification (Practical - II)

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Gain understanding of library classification systems, specifically Universal Decimal Classification Scheme principles.
2. Apply UDC rules to accurately classify diverse documents into appropriate categories.
3. Develop practical skills in navigating classification schedules and assigning class numbers.
4. Enhance critical thinking by analyzing document content and determining suitable classifications.
5. Learn importance of documentation and record-keeping for efficient library management.
6. Build confidence and competence for practical examination assessment through regular practice.

Semester IV Paper Title 4.6: Information and Communication Technology (Practical - II)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Gain familiarity with Internet resources, search engines, and search techniques for effective information retrieval.
2. Develop skills in web page designing and publishing using Notepad, HTML Editors like Expression Web.
3. Acquire proficiency in Content Management Systems (CMS) software such as Drupal, WordPress, Joomla.
4. Apply knowledge of ICT tools to create and manage web content efficiently.
5. Enhance understanding of web technologies and their practical applications in communication and information dissemination.
6. Prepare for practical tasks and assessments related to internet usage, web design, and CMS software

Semester IV Paper Title 4.7: Digital Library (Practical)
Student Learning Course Outcomes
After successful completion of this course, students will be able to:

1. Develop proficiency in designing and developing digital libraries using D-Space Digital Library Software.
2. Gain practical experience in organizing and managing digital collections effectively within the D-Space platform.
3. Acquire skills in customizing and configuring D-Space to meet specific institutional or user requirements.
4. Understand the principles of digital library architecture and apply them to create user-friendly interfaces and access mechanisms.
5. Enhance knowledge of metadata standards and practices for describing and indexing digital library resources.
6. Foster collaboration and sharing of digital resources among peers through the implementation of D-Space digital libraries.
7. Prepare for practical examinations by maintaining comprehensive records of digital library design and development activities.

Internship

Student Learning Course Outcomes

After successful completion of this course, students will be able to:

1. Gain practical experience through a one-month internship in a reputed library.
2. Apply theoretical knowledge acquired during the course to real-world library settings.
3. Develop professional skills in library management, organization, and service provision.
4. Acquire hands-on experience in handling library resources, cataloging, and circulation systems.
5. Enhance communication and interpersonal skills through interactions with library staff and patrons.
6. Learn about current trends and best practices in library and information science.
7. Explore career opportunities and potential areas of specialization within the field of librarianship.
8. Prepare for future employment or further studies in library and information science.

M. Sc., Mathematics Program and Course Outcome.

Program Specific Outcomes

After successful completion of program, students will be able to:

1. Understanding of the fundamental laws/axioms/postulates in pure mathematics and capability of developing new mathematical ideas.
2. Understanding of the concepts and theories of mathematics and their application in the real world.
3. Acquire knowledge in recent developments in various branches of Mathematics and thus pursue research.
4. Prepare and motivate students for research studies in advanced mathematics and related applications in different field like scientific, engineering and technology domains.
5. Provide advanced knowledge in pure mathematics, it empowering the students to pursue higher degrees at reputed national/ international universities /research institutions like IISc, TIFR, CMI and NBHM.
6. Good understanding of Differential Geometry/Riemannian Geometry/Finsler Geometry, which have very good applications in Einstein Theory of Relativity and cosmology.
7. Strong foundation in Fluid Mechanics/MHD it provides an applications in Mechanical Engineering.
8. Real word problem solving skills, creative thinking, assist to new project works and preparing the students for competitive examinations, in particular JRF/NET/GATE etc.

I Semester

Paper Title: MSM 1.1: ALGEBRA

Student Learning Course Outcomes

After successful completion of this course, students will be able to: -

To introduce the concepts and to develop elementary working knowledge of algebra. This course is a foundation for next course in Algebra. At the end of the course students will have the knowledge and skills to understand in fundamental concepts of:

- Groups and Structure of Groups
- Permutation Groups
- Rings and Euclidean Ring
- Fields and Extension Fields
- Splitting Fields

Paper Title: MSM 1.2: REAL ANALYSIS-I

Course Specific Outcome: At the end of the course students will have the knowledge and skills

- To study the real number system and their properties in detail.
- To develop skills to work with sequences in arbitrary metric spaces.
- To develop skills to work with series of real numbers.
- To study the concepts of continuous functions and differentiable functions.

Paper Title: MSM 1.3: COMPLEX ANALYSIS-I

Course Specific Outcome: At the end of the course students will possess a strong foundation in complex number theory, analytic functions, power series, and complex integration demonstrating both knowledge and practical skills in these areas and :

- Understand the basics of complex numbers, covering arithmetic operations, square roots, and geometric interpretations.
- Demonstrate expertise in limits, continuity, and differentiability for complex-valued functions.
- Acquire proficiency in solving power series, encompassing concepts of uniform convergence and radius of convergence.
- Develop skills in complex integration, including line integrals, conformal mappings, and applications like Cauchy's theorems and the Cauchy integral formula.

Paper Title: MSM 1.4: ORDINARY DIFFERENTIAL EQUATIONS

Course Specific Outcome: Upon completion of the course, students will have achieved the following specific outcomes:

- Mastery in Solving First-Order Differential Equations
- Advanced Understanding of Higher Order Equations:
- Expertise in Oscillations and Power Series Solutions:
- Proficiency in Systems and Successive Approximations:

Paper Title: MSM 1.5: DISCRETE MATHEMATICS AND C-PROGRAMMING

Course Specific Outcome: After study the course, students will have achieved the following specific outcomes:

- Develop a robust foundation in lattice theory, Boolean algebra, and number theory, honing skills in comprehending ordered sets, Boolean expressions, and number properties.
- Gain proficiency in 'C' programming language, covering development, features, data types.
- Understand essential concepts in number theory,
- Attain proficiency in programming control structures and functions.

Paper Title: MSM 1.6: LAB: C-PROGRAMS

Course Specific Outcome: Upon completion of the course, students will have achieved the following specific outcomes:

- Develop the ability to write and execute programs for algebraic operations.
- Acquire skills in designing programs for converting binary to decimal and vice versa.
- Demonstrate competence in writing programs for mathematical computations.
- Develop proficiency in array manipulation.

II Semester

Paper Title: MSM 2.1: LINEAR ALGEBRA

Course Specific Outcome: At the end of the course students will have the knowledge and skills.

- To acquaint knowledge in the theory of vector spaces
- Exploration of Inner Product Spaces
- Explore the matrix representation of linear transformations,
- Explore concepts of Hermitian adjoints

Paper Title: MSM 2.2: REAL ANALYSIS-II

Course Specific Outcome: At the end of the course Students will have the knowledge and skills to explain:

- The Riemann-Stieltjes, Integral, Rectifiable curves, Improper Integrals.
- Sequences and Series of Functions, Uniform convergence, and continuity.
- Integration, differentiation, Equicontinuous families of functions.
- The Stone-Weierstrass theorem.
- Functions of several variables: Differentiation, The contraction principle, The inverse function
- theorem, The implicit function theorem.

Paper Title: MSM 2.3: COMPLEX ANALYSIS-II

Course Specific Outcome: At the end of the course students will have the knowledge and skills on:

- Understand singularities, Taylor's theorem, and meromorphic functions, including applications like Weierstrass theorem.
- Explore the calculus of residues, the residue theorem, and techniques for evaluating specific integrals.

- Comprehend harmonic functions, Laplace's equation, mean value property, and principles governing their behavior.
- Learn about partial fractions, infinite products, the gamma function, Stirling's formula, and properties of entire functions.

Paper Title: MSM 2.4: PARTIAL DIFFERENTIAL EQUATIONS

Course Specific Outcome: At the end of the course Students will have the knowledge and skills to understand, explain in depth and apply in various situations the techniques to

- Master the construction and solutions of first-order partial differential equations and delve into second-order equations with variable coefficients and canonical forms.
- Solve parabolic equations using separation of variables, eigenfunction expansion, Laplace and Fourier transform methods, Duhamel's Principle, and apply them to higher-dimensional spaces.
- Explore hyperbolic equations, employing characteristics method, separation of variables, eigenfunctions expansion, Laplace and Fourier transform methods, Duhamel's Principle, and solutions in higher dimensions.
- Understand elliptic equations, solving them through separation of variables, eigenfunctions expansion, Fourier transform method, and similarity transformation method, with applications in cylindrical and spherical coordinate systems.

Paper Title: MSM 2.5: DIFFERENTIAL GEOMETRY

Course Specific Outcome: At the end of the course students will have the knowledge and skills.

- Explore the basics, including parametrized curves, level curves, curvature, and smooth surfaces.
- Understand tangent vectors, vector fields, and directional derivatives in Euclidean space.
- Explore 1-forms, differential forms, and mappings on Euclidean spaces.
- Delve into calculus on surfaces, Frenet formulas, and curvature of unit-speed curves.
- Understand arbitrary speed curves, covariant derivatives, and connection forms of a frame field.
- Explore calculus on surfaces, tangent vectors, tangent planes, and vector fields on surfaces.
- Understand first and second fundamental forms, length of curves on surfaces, and curvature of curves on surfaces.
- Define shape operators, normal curvature, Gaussian curvature, and explore special curves in surfaces.

Paper Title: MSM 2.6: LAB: MATLAB PROGRAMMING

Course Specific Outcome: Students will have the knowledge and skills to implement the programmes listed below in the Scilab programming language. They can be expected to apply these programming skills of computation in science and Engineering.

- Develop a program to find solutions to a system of linear equations using matrix inversion.
- Implement a program to find solutions to a system of linear equations using Cramer's rule.
- Design a program to find the area of geometric figures (circle, triangle, rectangle, square) using switch statements.
- Develop a program to find the approximate solution of a differential equation with an initial condition using Picard's method of successive approximation.
- Implement a program to find the numerical solution of a differential equation with an initial condition using Euler's modified method.
- Create a program to plot a neat labeled graph of sine and cosine functions on the same graph.
- Implement a program to plot a neat labeled graph of functions.
- $f(x) = x^2, g(x) = x^3 - 1, and\ h(x) = e^x$ on the same graph.
- Develop a program to obtain the graph of plane curves cycloid and astroid in separate figures on a single run.
- Design a program to obtain a neat labeled graph of surfaces elliptic paraboloid and hyperbolic paraboloid in separate figures on a single run.

Paper Title: MSM 2.7: Elective: BASIC MATHEMATICAL MODELLING

Course Specific Outcome: At the end of the course students will have the knowledge and skills.

- Understand the concept of mathematical modeling, including its definition, classification, characteristics, and limitations.
- Explore the development of model equations, focusing on special types of differential equations, the origin of ODEs and PDEs, and methods for solving nonlinear ODEs.
- Gain insights into techniques for solving differential equations.
- Learn about function fitting, model estimation, least squares methods.

III Semester

Paper Title: MSM 3.1: Measure Theory and Integration

Course Specific Outcome: At the end of the course students will have the knowledge and skills to-

- Gain a comprehensive understanding of Lebesgue measure, including outer measure, measurable sets, translation invariance, algebra of measurable sets, Borel sets, and properties like countable subadditivity.

- Analysis of Measurable Functions: - Analyze measurable functions, covering characteristic functions, constant functions, continuous functions, and properties like Littlewood's three principles.
- Master techniques related to Lebesgue integral, including the Riemann integral, integral of simple functions, and the bounded convergence theorem.
- Explore principles of integration and differentiation, including differentiation of monotone functions, Lebesgue differentiation theorem, functions of bounded variation, and properties like Jordan's theorem.

Paper Title: MSM 3.2: TOPOLOGY-I

Course Specific Outcome: At the end of the course Students will have the knowledge and skills. To explain demonstrate accurate and efficient use of the following advanced topics in various situations –

- Review fundamental concepts in set theory, logic, and well-ordered sets.
- Explore basic topological spaces, continuity principles, and convergence theorems.
- Understand the product topology, weak topology, and the concept of quotient space.
- Study properties of connected and compact spaces, including path-connectedness, components, and various compactness theorems.

Paper Title: NUMERICAL ANALYSIS-I

Course Specific Outcome: At the end of the course students will have the knowledge and skills

- Obtain the solutions of Transcendental and Polynomial Equations.
- Solve by Direct methods and Iteration methods for solving system of equations.
- Understand eigenvalues and eigenvectors computation.
- Apply Hermite Interpolation
- Solve problems using interpolation.
- Solve Ordinary Differential Equations using Numerical methods.

Paper Title: MSM-3.4: RIEMANNIAN GEOMETRY

Course Specific Outcome: At the end of the course students will have the knowledge and skills

- Understand preliminary concepts on Euclidean space, topological manifolds
- Understand about the Differentiable Manifolds and examples
- Study Riemannian metrics, Riemannian manifolds, local representations of metrics, connections
- Delve into curvature, Gauss and Codazzi-Mainardi equations, tangential and normal curvature equations, tensor concepts,
- Explore hypersurfaces, Gauss map, Weingarten map, fundamental theorems of hypersurface theory, and Gauss-Bonnet theorem.

Paper Title: MSM 3.5: FLUID MECHANICS

Course Specific Outcome: At the end of the course Students will have the knowledge and skills to understand, explain in depth and apply in various situations the concepts –

- Explore pressure in fluids at rest and in motion, Euler's equation, Barotropic flows, Bernoulli's equations, vortex motion, circulation, Kelvin's circulation theorem.
- Study two-dimensional flows, stream function, complex potential, line sources, line sinks, line doublets, and line vortices., explore Milne Thomson circle theorem.
- fluid flow measurement
- the losses in a flow system, flow through pipes, boundary layer flow and flow past immersed bodies.

Paper Title: MSM 3.6: LAB: NUMERICAL METHODS

Course Specific Outcome: At the end of the course Students will have the knowledge and skills to write and execute –

- Develop a C-program to handle polynomial coefficients, print the polynomial, and evaluate it at a specified value.
- Implement C-programs for fundamental matrix operations, including finding the transpose, product, trace, and norm of matrices.
- Write C-programs to determine whether a matrix is symmetric or skew-symmetric, showcasing applications in linear algebra.
- Create programs for solving systems of linear equations using Gauss Elimination, Gauss Jordan, Jacobi Iterative, and Gauss Seidal methods.
- Find the root by different methods.

Paper Title: MSM 3.7: Elective: STATISTICAL TECHNIQUES

Course Specific Outcome: At the end of the course Students will have to understand, explain in depth and apply in various situations the concepts like–

- Understand the fundamentals of probability,
- Master interpolation concepts using finite difference operators, Newton's forward and backward formulas
- Learn finite difference formulas for numerical differentiation and numerical integration methods like Trapezoidal and Simpson's rules.
- Solve systems of linear algebraic equations using both direct methods (Gauss elimination, LU decomposition) and iterative methods (Jacobi, Gauss-Seidel, SOR).

IV Semester

Paper Title: MSM 4.1: FUNCTIONAL ANALYSIS

Course Specific Outcome: At the end of the course Students will have the knowledge and skills to understand–

- the concept of normed linear spaces and Banach spaces.
- Explore isometric isomorphism, operators, equivalent norms, and Reisz lemma.
- Study functional conjugate spaces, Hahn-Banach theorem, and related consequences.
- Grasp the fundamentals of Hilbert spaces, inner product, orthogonal complements.
- Understand Reisz representation theorem, adjoint operators, self-adjoint, normal, and unitary operators, as well as projections.

Paper Title: MSM 4.2: TOPOLOGY-II

Course Specific Outcome: At the end of the course Students will have the knowledge and skills to understand -

- Explore countability, separation axioms, and other properties.
- Study Urysohn's Lemma, Tietze's extension theorem, and Urysohn's metrization theorem,
- Understand Tychonoff's theorem and its implications, as well as the Stone-Čech compactification.
- Explore paracompactness, Nagata-Smirnov metrization theorem.
- Study covering spaces, including the fundamental group of circles.

Paper Title: MSM 4.3: NUMERICAL ANALYSIS-II

Course Specific Outcome: At the end of the course students will have the knowledge and skills to:

- Explore numerical differentiation techniques.
- Delve into methods for solving initial value problems in ordinary differential equations (ODEs), including Euler's method and Runge-Kutta methods.
- Explore shooting methods and the midpoint method.
- Study finite difference approximations to derivatives and numerical solutions for Laplace, heat, and wave equations in partial differential equations

Paper Title: MSM 4.4: TENSOR ANALYSIS AND RELATIVITY

Course Specific Outcome: At the end of the course students will have the knowledge and skills to ;

- Understand the concept of tensors and their operations, Einstein summation convention, coordinate transformations, and properties of vectors and tensors.
- Explore contravariant and covariant tensors, tensors of various orders, and operations like addition and multiplication.
- Examine Riemannian metrics, Christoffel symbols, and covariant differentiation for vectors and tensors. Einstein tensor, Ricci tensor
- Gain insights into inertial and non-inertial frames, the special theory of relativity, and Minkowski space.

- Explore gravity as space-time curvature, geodesics, and the essentials of space-time in a relativistic framework.
- Understand the energy-momentum tensor and the heuristic approach to derive Einstein's field equations.
- Explore solutions, including the Schwarzschild, de Sitter, Schwarzschild-de Sitter, and Reissner-Nordstrom solutions:

Paper Title: MSM 4.5A: FINSLER GEOMETRY

Course Specific Outcome: At the end of the course students will have the knowledge and develop the skills on-

- Explore inner product, contraction, and the concepts of symmetric and antisymmetric tensors through examples.
- Understand the Christoffel symbols and their significance in connection with Riemannian metrics.
- Understand the Finsler space, examine the Hamiltonian function, and discuss generalized Christoffel symbols and geodesics.
- Explore Cartan's and Berwald's covariant differentiation, along with parameters and deductions.
- Generalize Bianchi identities, explore spaces of scalar and constant curvature, and delve into recurrent and symmetric spaces.

Paper Title: MSM 4.6: LAB: NUMERICAL METHODS

Course Specific Outcome: At the end of the course students will have the knowledge and skills-

- Develop a C-program to efficiently evaluate a given integral using the Trapezoidal rule
- Develop a C-program to find the solution of an initial value problem using the Runge-Kutta II, III, IV order Method.
- Develop a C-program to find the value of a function using Lagrange Interpolation Method.
- Develop a C-program for the numerical solution of the Heat equation using Schmidt method.
- Implement a C-program for the numerical solution of the wave equation using Finite difference method.

Paper Title: MSM 4.5: PROJECT WORK

Course Specific Outcome: general outcomes that can result from engaging in project work:

- Gain the ability to apply theoretical knowledge and academic skills to real-world problems.
- Develop critical thinking skills by identifying, analyzing, and solving complex problems, fostering a capacity for independent thought and decision-making.
- Enhance communication skills through project documentation, presentations, and possibly collaboration.

- Acquire project management skills, including planning, organization, time management, and the ability to meet deadlines.

M. Sc., Physics Program and Course Outcome

Program Specific Outcomes

After successful completion of program, students will be able to:

1. Have a proper theoretical understanding of the subject and ability to set up experiments based on these concepts.

2. Demonstrate and explain various mathematical techniques, numerical methods, experimental techniques to broaden independent thinking and scientific temper.

3. Formulate concepts in physics, give effective presentation and acquire good communication skills through seminars and group discussions

4. Enhance experimental, analytical skills and research aptitude in areas such as materials science, thin film technology, radiation dosimetry, solar energy, energy generation and storage for academic research and industrial applications.

5. Develop social awareness through internships and science popularization programs.

6. Emphasize on academic and research ethics, need and value of lifelong learning, importance of awareness on human rights, scientific misconduct, intellectual property rights and issues related to cyber laws and plagiarism

7. Gain a through grounding in the subject and develop good communication skills to be able to teach at university/college or even at school level.

8. Understand the hazardous effects of exposure to nuclear radiations and implement safety measures in the Laboratory and spread awareness amongst people.

9. Understand the importance of interdisciplinary research and working in a team.

10. Appreciate physics as an important discipline that develops a critical attitude and the faculty of logical reasoning that can be applied to various fields.

M.Sc., in Physics: Course Outcomes

Semester I: Paper Title PHYH 1.1 Mathematical methods in Physics

After successful completion of this course, students will be able to: -

1. Acquire necessary mathematical skills required for working with and understanding concepts in physics.
2. Solve problems in involving vectors and tensors. The knowledge of these topics are essential in learning physics: Knowledge of tensors is essential to understand General Relativity
3. Learn essential basics about integral transforms such as Fourier and Laplace transforms. This will enable them to understand important physical concepts in optics and spectroscopy; For Eg., Fourier Transform Infrared Spectroscopy (FTIR) is a characterization technique having immense application in characterization of materials; Theory of diffraction also involves subtle ideas of Fourier transform and the students will be able to comprehend these ideas by hands-on experience with Fourier transforms.
4. Work with special functions such as Hermite polynomials, Spherical harmonics, Laguerre polynomials etc., which are the basic requirement for understanding the concepts in quantum mechanics.
5. Gain deeper knowledge in complex number theory. Evaluating residues, handling singularities, Taylor's and Laurent's expansion of functions of complex variables etc., are helpful for the students in their journey of learning physics.
6. Learn the calculus of variation, Euler-Lagrange equations in one and more dependent and independent variables; These will help them to learn the methods adopted in Classical Mechanics

Semester I: Paper Title PHYH 1.2: Classical Mechanics

After successful completion of this course, students will be able to:-

1. Gain a basic understanding of mechanical systems subjected to constraints
2. Understand the equivalence of Lagrangian and Hamiltonian mechanics with Newtonian mechanics and their need in dealing with mechanical systems subjected to constraints.
3. Analyze the behaviour of objects under central force such as gravitational force and thereby the motion of celestial bodies. In particular, they will learn the importance of theoretical analysis of the motion of astronomical objects through the derivation of the exact form of celebrated Kepler's laws (which were obtained by Kepler based on the data of Tyco Brahe thus being empirical laws.)
4. Learn the methods of Hamiltonian mechanics; Hamilton's equations of motion, Hamilton's least action principle, canonical transformations and illurstrative problems related to these.
5. Gain an insight into the dynamics of fluids, their streamline and turbulent flow; Significance of Navier-Stokes's law; Helps in understanding several phenomena in every-day life: Fluid dynamics being a research area of immense applicability, studying this course will help the students to join in this field of research.

Semester I: Paper Title- PHYH 1.3: Classical Electrodynamics

After successful completion of this course, students will be able to: -

1. Gain a basic understanding of the nature of electric and magnetic field. Distinction between the fields generated by static charges, uniformly moving charges and accelerated charges.
2. Understand the equivalence between electromagnetic waves and light, an observation of immense significance . They will also gain an insight into transmission of light through conductors and plasma. Learn to work on problems to evaluate skin depth of conductors.
3. Establish laws of reflection and refraction, Fresnel's laws of reflection and refraction which helps to evaluate the amplitudes of reflected and refracted light.
4. Prove Poynting theorem, the theorem on energy conservation in electromagnetic field.
5. Understand the atomic model of dispersion, the variation of refractive index with frequency of light, more commonly known as the splitting of light into different colors.
6. Learn the concept of gauge transformations, Coulomb Gauge and Lorentz gauge which respectively are of immense importance in quantum field theory and special theory of relativity
7. Explain the concept of retarded potentials; Work out the Lienard-Wichert potentials and understand their significance.
8. Learn the concept of electric and magnetic dipole radiation, power radiated from a moving point charge, which are of great practical importance.
9. Gain a theoretical understanding of covariant formulation of electrodynamics which helps the student to discern the electromagnetic phenomena happening between two observers in uniform relative motion.

Semester I: Paper Title- PHYH 1.4 : Electronics

After successful completion of this course, students will be able to:-

1. Design and study the performance of various electronic amplifier circuits.
2. Have the experimental expertise in IC 741 and IC 555
3. Design phase shifter using opamp and precision voltage reference.
4. Fabricate electronic devices.
5. Understand need of logic in digital ICs
6. Identify different types of logic families
7. Know about evolution of different logic families
8. Understand the difference between latches and flip flops.
9. Learn about construction and working of RS, D, JK and T flip flops
10. Know the applications of flip flops.
11. Know the construction and working of A/D and D/A converters
12. Know the working of semiconductor memories.

Semester II: Paper Title- PHYH 2.1 Mathematical Methods in Physics-II

After successful completion of this course, students will be able to: -

1. Acquire the mathematical skills to work with wavefunctions associated with subatomic particles. Studying this course, helps them immensely to understand the formalism of the all important area in physics; *Quantum Mechanics*. The entire formalism of quantum mechanics for systems isolated with the surrounding is contained in this course and will benefit the students who aspire to join research in either applied or theoretical physics.
2. Work with matrix representation of linear operators. With the physical quantities of interest such as position, linear and angular momentum etc., being represented by linear operators in quantum mechanical scenario, students will learn an important method to deal with the formalism of measurement in subatomic regimes.
3. Get a purview of Lie groups such as rotation and Lorentz group, their representations in different dimensions and their significance in physics. Especially the students will understand the concept of special relativity with the help of Lorentz group SO(3,1); They will understand and appreciate the nature of elementary particles including Higg's boson through the eight dimensional group SU(3)
4. Learn about integral equations, their different types and methods of solving them. The significance of learning this technique lies in obtaining intensity distribution in diffraction of light and thus helps the students to gain theoretical understanding of the patterns when light is diffracted.
5. Acquire sound knowledge of Green's functions and their properties
6. Gain insights into the significance of Green's functions in dealing with scattering of microparticles (which provide immense information about nature of particles).

Semester II: Paper Title- PHYH 2.2 : Elements of Nuclear and Particle Physics

After successful completion of this course, students will be able to:-

1. Understand the fundamental properties and forces governing nuclear structure.
2. Gain proficiency in analyzing radioactive decay processes and nuclear reactions.
3. Gain mastery of concepts in particle physics including fundamental forces and symmetries.
4. To apply mathematical models in decay processes, Yukawa's theory etc.,
5. Gain competence in calculating cross-sections and understanding nuclear reaction.
6. Acquire thorough knowledge of quark model and its implication on Hadrons structure and interactions.
7. Learn symmetry principles and conservation laws in particle interactions.
8. Acquire capacity to critically evaluate experimental data and theoretical models in nuclear and particle physics.

Semester II: Paper Title- PHYH 2.3: Elements of Condensed Matter Physics

After successful completion of this course, students will be able to:-

1. Know the basics of crystal structure
2. Get to know about the crystal structures of well known crystals such as sodium chloride and diamond
3. Understand the concept of diffraction of X-rays, matter waves (electron, neutron etc.,), from crystals;
4. Understand the significance of Bragg's law and know about the experimental techniques of diffraction
5. Have a knowledge about free electron theory of metals, its successes and failures in explaining the properties of metals
6. Understand the importance of quantum theory in arriving at band structure in solids
7. Gain the basic idea of band theory of solids and the need of band theory to understand the properties of solids.
8. Understand the classification of semiconductors on the basis of conductivity and energy gap.
9. Gain an insight into the magnetic properties of materials based on their response to applied magnetic field
10. Acquire basic knowledge of superconductivity and the elements of the theory explaining the superconducting behavior.
11. Acquire basic knowledge on Alloys, Nanomaterials and glasses
12. Acquire Problem solving skills in condensed matter physics and electronics

Semester II: Paper Title- PHYH: 2.4 Quantum mechanics-I

After successful completion of this course, students will be able to:-

1. Gain insights into the failure of classical physics, need for quantum physics; and a brief history of emergence of quantum mechanics
2. Comprehend the wave nature of light as well as matter.
3. Understand the probabilistic interpretation of wavefunctions
4. Gain insights on the Heisenberg uncertainty principle; Learn to establish a generalized uncertainty relation
5. Solve Schrodinger equation to obtain quantized energy levels in particles executing simple harmonic motion; Learn the importance of this model to explain several phenomena including specific heat of solids.
6. Discern the concepts of Angular momentum algebra; and methods to obtain matrix representation for angular momentum operators, both orbital and spin angular momentum.
7. Solve Schrodinger equation for hydrogen atom to obtain correct values for quantized energy levels.
8. Understand the need for approximation methods such as time-independent perturbation theory, and variational method to evaluate ground state energy of a multi-atom system. Solve problems in each of the approximation methods.

Semester II: Paper Title - PHYE 2.5 Bio-physics

After successful completion of this elective course, students will be able to: -

1. Understand the basic physico-chemical techniques needed to study biomolecules
2. Learn the separation techniques such as chromatography and electrophoresis
3. Familiarize with the basics of neuro biophysics

Semester III: Paper Title- PHYH 3.1 Atomic and Molecular Physics

After successful completion of this course, students will be able to: -

1. Use spectroscopy as a tool for studying the structures of atoms and molecules.
2. Identify analytical methods for finding the constituents of material having unknown chemical composition.
3. Use the knowledge acquired in astronomy to study spectral emission lines of distant galaxies in order to understand rapidly expanding universe.
4. Understand the fine structure and hyperfine structure of spectral line
5. Learn the concepts of rotational energy levels, microwave spectra and instrumentation of microwave spectra
6. Learn the concept of vibrational energy levels, infrared spectra and instrumentation of IR spectroscopy.
7. Outline the importance of Raman spectroscopy and correlations between Raman spectroscopy and IR spectroscopy
8. Develop the skill to get employed in various laboratories, for carrying out research and developmental activities using spectroscopic techniques.
9. Acquaint with different types of atomic clocks and their characterization, stability, accuracy and applications.

Semester III: Paper Title- PHYH 3.2 Quantum Mechanics II

After successful completion of the following courses, students will be able to:-

1. Learn about the different formalisms of quantum dynamics; Schrodinger, Heisenberg and Dirac pictures; Will be able to work in all these formalisms;
2. Arrive at the time evolution of spin vectors under the action of constant and time-varying magnetic fields
3. Learn the concept of density matrices for mixed states, establish their properties and work out expectation values for two-level systems
4. Acquire knowledge of time-dependent perturbation theory and understand how it gives the model for laser action, in terms of spontaneous, stimulated emissions and resonant absorption
5. Learn the terminologies used in scattering of particles;
6. Evaluate Rutherford scattering cross-section in Born approximation;
7. Learn the method of partial wave analysis to understand the low energy scattering processes.
8. Understand the need for relativistic quantum theory; The drawbacks of Klein-Gordon relativistic equation and the adaptability of Dirac equation for fermions.
9. Understand the need for quantum field theory and learn its basics

Semester III: Paper Title- PHYH 3.3 Statistical Mechanics

After successful completion of the following course, students will be able to:-

1. Understand the need for statistical description to explain empirical laws of thermodynamics
2. Gain insights on phase space and probabilistic description for different types of ensembles
3. Comprehend the statistics of distinguishable and indistinguishable particles
4. Understand the concept of partition function and obtain thermodynamic quantities from it.
5. Learn to obtain the classical limit of quantum statistics; Maxwell Boltzmann distribution function from Fermi-Dirac as well as Bose-Einstein distribution functions
6. Understand the physical process in Bose-condensation phenomena
7. Comprehend the statistical approach needed to explain irreversible thermodynamic phenomena
8. Understand the importance of random walk problem in explaining the behaviour of tiny particles immersed in a fluid
9. Gain deeper knowledge on Brownian motion and Einstein's fluctuation-dissipation theorem.

Semester III: Paper Title PHYS 3.4.1 : CONDENSED MATTER PHYSICS – I

After successful completion of the following course, students will be able to:-

1. Familiarize with measurement of electrical conductivity of different metals and study their behavior with temperature,
2. Understand the anisotropy, thermal expansion and thermal conductivity of crystalline solids.
3. Carry out a detailed analysis on dielectrics, ferroelectric and piezoelectric materials based on their anisotropic structures.
4. Learn Experimental techniques on the determination of optical constants of metals.
5. Study the characteristics of various optoelectronic devices.
6. Understand the use of thermoelectric generator as a thermocouple which acts as a temperature sensor.

Semester III, Paper Title: PHYS 3.4.2: Nuclear Physics-I

After successful completion of this course, students will be able to: -

1. Get a good understanding of interaction radiation with matter
2. Be Proficient in employing diverse measurement techniques for radiation detection and analysis.
3. Gain Competence in operating different types of nuclear detectors through a proper understanding of their principles.
4. Analyze and interpret data obtained from Gas-filled detectors, Scintillation and Semiconductor detectors.
5. Acquire skill in designing and implementing radiation measurement setups with appropriate shielding and calibration.
6. Gain a proper understanding of electronic circuits and signal processing techniques for specific radiation detection.
7. Capability to perform spectral analysis and extract meaningful information from radiation spectra.
8. Application of knowledge in nuclear safety, medical imaging, materials analysis and other relevant fields.

Semester III: Paper Title PHYE 3.5: Fundamentals of Radiation Physics
After successful completion of this elective course, students will

1. Understand the basics of radioactivity and different types of nuclear radiations
2. Know about the Radiation Quantities and Units;
3. Learn the different techniques of radiation detection and measurement

Semester IV: Paper Title- PHYS 4.1: Experimental Techniques
After successful completion of this course, students will be able to :

1. Have a good knowledge of experimental methods to produce high vacuum and the different kind of gauges to measure vaccum
2. Learn the experimental techniques of producing magnetic fields of desired magnitude and their measurement
3. Know about the production and measurement of low temperature and design of cryostats
4. Have a vast knowledge of different types of radiation detectors
5. Know about useful ideas of thin film technology

Semester IV: Paper Title- PHYS 4.2.1: Condensed Matter Physics-II
After successful completion of this course, students will be able to :

1. Understand the quantum theory of ferromagnetic, anti-ferromagnetic and ferromagnetic materials and learn about their application
2. Get a sound knowledge of laser action in different types of lasers
3. Study quantum dots and quantum wires and their technological applications
4. Acquire a good knowledge about preparation and characterization of nanomaterials
5. Acquaint with thin film preparation by various methods
6. Have a sound knowledge of working of different types of solar cells
7. Learn the concepts of improving efficiency of solar cells

Semester IV Paper Title- PHYS 4.2.2: Nuclear Physics-II
After successful completion of this course, students will be able to :

1. Gain Comprehensive understanding of nuclear forces, nucleon-nucleon interactions and nuclear models.
2. Get Proficiency in theoretical formalisms and mathematical interpretations to nuclear physics, such as wave equations and scattering theory.
3. Analyze experimental data and interpret the results in the context of nuclear reactions and scattering phenomenon.
4. Gain competence in applying various nuclear models to describe nuclear structure and dynamics.
5. Acquire familiarity with advanced topics like compound nuclear reactions, resonance phenomena and evaporation processes.
6. Acquire skill in performing calculations of cross sections and probabilities for specific nuclear reactions.
7. Get Proficiency in utilizing theoretical models and predict results
8. Gain ethical understanding and responsibility in conducting research and analyse the data in the light of possible hazardous outcomes.

Semester IV: Paper Title PHYS 4.3.1: CONDENSED MATTER PHYSICS
After successful completion of this elective course, students will

1. Acquire a thorough knowledge of crystal defects and their types.
2. Get an experimental knowledge of preparation of glasses
3. Have good theoretical understanding of mechanical properties of different crystal systems
4. Have a deep understanding of the phenomena of superconductivity and superfludity,
5. Get a thorough knowledge of carbon nanomaterials and their technological applications
6. Acquire sufficient necessary background to pursue research in the topics discussed under this course.

Semester IV Paper Title- PHYS 4.3.2: Nuclear Physics-III
After successful completion of this course, students will be able to:

1. Have a sound understanding of nuclear fission and fusion processes.
2. Be proficient in neutron physics, including neutron interaction with matter.
3. Understand diverse measurement techniques of neutron radiations in various detectors
4. Understand working principle of nuclear reactors including criticality calculations and reactor design.
5. Gain good knowledge of nuclear fuels and their properties, cycling and recycling processes.
6. Apply theoretical concepts to practical nuclear engineering problems.
7. Be proficient in using relevant tools and techniques for neutron detection and dosimeter.
8. Gain awareness of safety and regulatory aspects in nuclear engineering.
9. Critical thinking and problem-solving skills in the field of nuclear science.
10. Effective communication and team working skills for handling minor projects.
11. Ethical understanding and responsibility in the practice of nuclear engineering.