1. B.A. (Programme)

PAPERS OFFERED BY ECONOMICS DEPARTMENT

Discipline specific Elective Papers (DSE):

Economic Development & Policy in India I (PDE53)

This course will help students understand the key issues related to the Indian economy.It will broaden their horizons and enable them to analyze current economic policy thus improving their chances of getting employed, and be more effective, in positions of responsibility and decision making. The course also serves as the base for further study of sector specific policy discussion that is pursued in the course in the next semester.

Economic Development & Policy in India II (PDE62)

Students will have capability to understand government policies and will enable informed participation in economic decision making, thus improving their employment prospect s and career advancement.

Economic History of India (PDE63)

The course exposes students to the intricacies of India's economic, political and social developments both in the past and present times. It develops their analytical skills that will be useful in a variety of careers in academics, research, journalism, private sector and government.

Environmental Economics (PDE51)

The module aims to introduce students to the main concepts in environmental economics, equip students with a thorough analytical grasp of environmental policy theory, starting with externalities, and familiarise students with the main issues in environmental valuation. At the end of the module the students should be able to demonstrate their understanding of the economic concepts of environmental policy, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various environmental policy options, and demonstrate their understanding of theusefulness and problems related to environmental valuation

Money and Banking (PDE52)

It allows students to analyse financial market outcomes and evaluate policies.

Principles of Macroeconomics I (PD31)

This course is useful for understanding various real economic issues and evaluate policy outcomes.

Principles of Macroeconomics II (PD41)

This course provides students with an analytical framework to understand the basic functioning of the macroeconomy. It also allows them to critically examine and comment on effectiveness of various policies.

Principles of Microeconomics I (PD11)
The students learn some basic principles of microeconomics and interactions of supply and demand, characteristics of perfect competition, efficiency and welfare.

Principles of Microeconomics II (PD21)
This course helps the students to understand different forms of market imperfections and market failures observed in real life situations. The students learns about the environment where the the standard market mechanism fails to generate the desirable outcomes. They develop a sense of how the production is distributed among the different factors of production and the demand for inputs. Some preliminary concepts of international trade is also covered in this course.

Public Finance (PDE61)
The module aims to introduce students to the main concepts in public finance, equip students with a thorough analytical grasp of government taxes: direct and indirect taxes, and familiarise students with the main issues in government expenditure. At the end of the module the students should be able to demonstrate their understanding of the economic concepts of public finances, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various government policy options, and demonstrate their understanding of the usefulness and problems related to government revenues and expenditures

Generic Elective - (GE)

Principles of Macroeconomics (PGE61)
This course is useful for understanding various real economic issues and evaluate policy outcomes.

Principles of Microeconomics (PGE51)
The students learn some basic principles of microeconomics and interactions of supply and demand, characteristics of perfect competition, efficiency and welfare.

The Indian Economy (PGE62)
Students will develop a critical understanding of the contemporary issues in the Indian economy. Students will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service, and NGO sectors.

Skill-Enhancement Courses (SEC)
Data Analysis (PS51)
Students will learn to input, visually represent and analyse data.

Research Methodology (PS41)

The student will develop an understanding of how commonly available data is collected and analyzed. This would help in the interpretation of secondary data and in the management of small primary surveys.

Issues in Economic Development (PGE52)
Students will develop a critical understanding of the contemporary issues in Indian economic development. Students will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service and NGO sectors.

Understanding Economic Survey and Union Budget (PS31)
Students will have the capability to understand government policies and will be informed participants in economic decision-making.

PAPERS OFFERED BY ENGLISH DEPARTMENT

Core Papers

English Language Through Literature
Understanding concepts

English Fluency
Expressing concepts through writing

English Proficiency
Demonstrating conceptual and textual understanding in tests and exams

Selections from the *The Individual and Society: Essays, Stories and Poems*
A working knowledge of how to read literary texts and enables them to use such knowledge to enhance and augment their professional job opportunities. Introducing students to contemporary literary ideas and issues in an increasingly complex world. Allowing the student a familiarity with literary texts through different genres and time periods.

Ability enhancement compulsory course

English A

Students will master the art of persuasive speech and writing. Students will master the art of listening, reading, and analyzing. Students will spend the bulk of their time in class in practical exercises of reading and writing. Students will develop critical thinking skills.They will be introduced to established principles of academic reading and writing.

Selections from *Modern Indian Literature*

Provides an introduction to the short story genre with especial references to Indian writers in the syllabus. Helps to understand Indian poetry and cultural underpinnings

British Literature: Poetry and a Play, selections from *Living Literatures: An Anthology of Prose and Poetry*

The course attributes to the students a working knowledge of how to read literary texts and enables them to use such knowledge to enhance and augment their professional job opportunities. The course introduces students to contemporary literary ideas and issues in an increasingly complex world. The course allows the student a familiarity with literary texts through different genres and time periods

Skill-Enhancement Courses (SEC)

Modes of Creative Writing: Poetry, Fiction and Drama

Through this course, students will be introduced to a variety of tropes and figures of speech, and sensitised to the texture of literary language; understand the importance of reading with a view to unlocking the writers' craft; be introduced to various forms of poetry, fiction and drama and the wide range of possible genres within them; be made aware of the range of career opportunities that exist within the field of creative writing as well as within the realm of theatre and performance; and be encouraged to revise their work critically and inculcate the skills of editing and preparing their work for publication

English Core

English Language Through Literature

Giving students the skills to document their own lives meaningfully;students are trained to use the techniques of poetry to write in poetic form; they understand how the concept of beauty works through access to aesthetic forms; To highlight the rhetorical possibilities of drama through an understanding of its form and mechanics; Using language skills learned over the course, students are to create academic documents such as term papers, reports and assignments

English Fluency

The course will help students to describe or express their opinions on topics of personal interest such as their experiences of events, their hopes and ambitions read and understand information on topical matters and explain the advantages and disadvantages of a situation write formal letters, personal notes, blogs, reports, and texts on familiar matters comprehend and analyse texts in English; organise and write paragraphs and a short essays in a variety of rhetorical styles

English Proficiency

The course that is spread over two semesters aims to redress these issues and aims to enhance comprehension skills and enrich vocabulary through the reading of short and simple passages with suitable tasks built around these ; introduce simple syntactical structures and basic grammar to students through contextualized settings and ample practice exercises so that they can engage in short independent compositions ; introduce the sounds of the language and the essentials of English pronunciation to students in order to remove the inhibitions experienced by them while speaking English; acquaint students with social formulae used to perform various everyday functions so that they can converse in English in simple situations

English Discipline

Literary Crosscurrents: Selections from Living Literatures: An Anthology of Prose and Poetry

The course attributes to the students a working knowledge of how to read literary texts and enables them to use such knowledge to enhance and augment their professional job opportunities. The course introduces students to contemporary literary ideas and issues in an increasingly complex world, The course allows the student a familiarity with literary texts through different genres and time periods

Skill-Enhancement Courses (SEC)

Translation Studies

The student will develop ability to sensitively translate literary and non-literary texts including official and technical documents from one language to another; interpret from one language to another; examine what is translated and why; discern the difference in language systems through the practice of translation; understand the processes involved in translation in mass media, especially news reporting, advertising and films; engage with the demands of subtitling and dubbing; evaluate and assess translated texts; and edit translated texts

Skill-Enhancement Courses (SEC)

English Language Teaching

The course intends to enable students to recognize the role of affect in language learning, and account for individual differences among learners in regard to motivation and attitude, personality factors, and cognitive styles; identify and adapt to the needs and expectations of the learner; be aware of the significant and current approaches in the fields of cognition and language pedagogy; understand the importance of teaching materials (in relation to the teaching-learning context and their teaching purposes); recognise the importance of planning in ELT and develop lessons in the framework of a planned strategy adapted to learners' levels; strengthen concepts of the fundamentals of the English language; and understand the need for assessmentand devise techniques for an evaluation plan that is integrated into the learning process.

Generic Elective - (GE)

Academic Writing and Composition

Develop ability for academic composition; Developing Critical Thinking; Structuring an argument; Learning how to cite sources

English Discipline: Children's Literature

Understanding various aspects of children's literature; Unravelling themes of childhood, education and societal conditioning

Generic Elective - (GE)

Readings on Indian Diversity and Literary Movements

Gain knowledge about linguistic plurality**;** Understanding different literary cultures such as Sindhi and Gujarati; Understanding marginalised literary voices of women, tribal verse and dalit narratives.

Skill-Enhancement Courses (SEC)

Business Communication
Developing skills of writing formal letters, making oral presentations; Learning how to communicate effectively in formal and academic situations.

English Language Through Literature
Giving students the skills to document their own lives meaningfully.

English Fluency
Expressing concepts through writing

English Proficiency
Demonstrating conceptual and textual understanding in tests and exams

PAPERS OFFERED BY HISTORY DEPARTMENT

Core Courses

History of India from earliest times up to c. 300 CE
Delineate changing perceptions on 'Ancient/early' India. Explain the importance of archaeological sources for study of proto-history and recognize the belated growth of literacy. Distinguish between civilization and culture, particularly in the context of first ever civilization in the Indian subcontinent. Outline the key features of the first ever empire under the Mauryas. Locate the shift of historical focus from Gangetic belt to newer areas. Discuss the processes of assimilations of people and ruling houses from outside the Indian subcontinent in to the mainstream.

Communicating Culture: Tellings, Representations and Leisure
Identify significant features of India's intangible cultural heritage. Distinguish between various technical forms like myth, folklore, theatrical and ritual performance, as well as know about evolving patterns of sporting traditions. Identify how culture is communicated through narrative strategies and performative acts. Appreciate that textuality and performance are not binary opposites and are mutually interactive. Develop analytical skills that are necessary for students of literature, sociology, anthropology, religion, psychology, political science and South Asian studies.

History of India, c. 300 to 1200
Identify the historical importance of the accelerated practice of land grants issued by ruling houses. Delineate changes in the realm of polity and culture; puranic religion; the growth of vernacular languages and newer forms of art and architecture. Contextualize the evolution and growth of regional styles of temple architecture and the evolving role of these temples as centers of socio-economic and political activities.

Communicating Culture: Tellings, Representations and Leisure
Identify significant features of India's intangible cultural heritage. Distinguish between various technical forms like myth, folklore, theatrical and ritual performance, as well as know about evolving patterns of sporting traditions. Identify how culture is communicated through

narrative strategies and performative acts. Appreciate that textuality and performance are not binary opposites and are mutually interactive. Develop analytical skills that are necessary for students of literature, sociology, anthropology, religion, psychology, political science and South Asian studies.

History of India, c. 1200-1700

Identify the major political developments in the History of India during the period between the thirteenth and the seventeenth century. Outline the changes and continuities in the field of culture, especially with regard to art, architecture, bhakti movement and Sufi movement. Discuss the economic history of the period under study in India especially, where agrarian production and its implications are concerned. Delineate the development of trade and urban complexes during this period.

History of Inequalities

Outline how hierarchies and inequalities are a part of their histories and everyday experiences. Explain the contexts that produce these inequalities. Identify the importance of social justice. They learn the difficulty in studying the impoverished and the disadvanted. Delineate the problems associated with the hegemonic historical narratives which are circulated by the elites.

History of India, c. 1700-1950

Trace the British colonial expansion in the political contexts of eighteenth-century India and the gradual consolidation of the colonial state power in the nineteenth century. Identify the key historiographical debates around the colonial economic policies, including the land revenue collection, commercialisation of agricultural production, trade policies and deindustrialisation. Delineate and explain the ideological, institutional, and political formations of the anticolonial nationalist movement. Discuss the colonial context of the emergence of communal politics in India and the subsequent partition of India.

Discipline specific Elective Papers (DSE):

Issues in Twentieth Century World History -I

Define world history and explain the evolving polities. Categorise the economies and cultures of the twentieth century world. Define the making of the geopolitical order and 'North-South' distinctions. Delineate the complex character of modernity and its differences. Demonstrate critical skills to discuss and analyze diverse social movements and cultural trends.

Issues in Twentieth Century World History – II

Define world history. Discuss and explain the evolving polities, economies and cultures of the twentieth century world. Analyze the interconnectedness in world history. Demonstrate critical skills to discuss diverse social movements and cultural trends.

Skill-Enhancement Courses (SEC)

Heritage and Tourism

Enhance his/her ability to discern the nature of the cultural heritage of the nation. Contextualise his/her country's history of heritage representation, to effectively comprehend the present. Draw inference from different aspects of tourism, its varieties and be sensitive to the impact of overkill tourism in different geographical areas with specific local sensibilities, thus making a case for sustainable tourism. Equip himself / herself with theoretical knowledge of heritage and tourism.

History and Archaeology

Describe various stages of development of archaeology as a discipline. Discuss the methods of excavations. Explain various dating methods employed by the archaeologists. Identify and contextualize the past objects found during explorations and excavations of sites. Interpret aspects of past societies. Analyse the role of institutions and individuals in the development of Indian archaeology. Undertake projects related to the search of places related to the epics, Sangama texts and the Buddhist tradition.

Archives and Museum

Examine these two repositories of history from close quarters. Contextualise how the heritage is preserved and kept alive here and the difficulties faced in the process. Demonstrate the way in which museums are organised and managed. Examine the considerations which govern the way exhibitions in museums are managed. Assessment will be based on assignments and projects involving visits to the archives and museum, which is an essential component of this course.

Popular Culture

Engage with a range of theoretical perspectives in an attempt to define popular culture. Describe the methodological issues involved in a historical study of popular culture. Identify the relevant archives necessary for undertaking a study of popular culture, while pointing out the problems with conventional archives and the need to move beyond it. Interpret the above theoretical concerns to actual historical studies, through a case study. Estimate the popular aspects of everyday experience of religion and religiosity, through a wide range of case studies relating to festivals and rituals, healing practices as well as pilgrimage and pilgrim practices. Examine the role of orality and memory in popular literary traditions. Demonstrate the evolution of theatre and dance within the popular performative traditions. Analyse the role of technology in the transformation of music from elite to popular forms. Examine the relationship between recipes/recipe books and the construction of national/ regional identities. Identify the history of the cultures of food consumption and its relationship with the constitution of a modern bourgeoisie. Examine the process of emergence of a pattern of 'public consumption' of culture in contemporary times, with specific reference to art, media and cinema.

Generic Elective - (GE)

Investigating Inequalities

Critique the prevalent dominant understanding of Caste, Gender, and Tribe. Discuss the complex relations between differences and inequalities. Examine the inherent politics in the creation of inequalities and differences. Critically engage with various initiatives taken by the state to prohibit caste-gender atrocities and upliftment of deprived sections of society.

Delhi through the Ages

Analyze the historical contexts of tangible and intangible heritage of Delhi. Discuss the Ecology of Delhi and outline changes in it through the ages. Describe the archaeological cultures that flourished in and around Delhi. Analyze the processes leading to the establishment of urban settlements of Delhi. Outline the importance of Shahjahanabad and its importance in the development of the great imperial city of Delhi. Trace the role of Delhi College in the political and literary culture of Delhi. Discuss various aspects of the Revolt of 1857 and its consequences for the future development of Delhi. Delineate the processes leading to the making of the New Imperial Capital under the British. Analyze the impact of Partition on the structure and settlement pattern of Delhi. Describe Delhi's importance as economic and cultural centre.

PAPERS OFFERED BY HINDI DEPARTMENT

सेमेस्टर - 1

Core Courses -1

हिंदी भाषा साहित्य का इतिहास Paper Code - BAPHCC01

इतिहास के प्रति आलोचनात्मक -विश्लेषणात्मक ज्ञान के द्वारा हिंदी भाषा और साहित्य को संतुलित रूप से प्रस्तुत किया जा सकेगा।

Ability enhancement compulsory course

हिंदी योग्यता संवर्द्धक पाठ्यक्रम Paper Code - BAPAECC01

स्नातक स्तर के छात्रों को भाषायी संप्रेषण की समझ और संभाषण से संबंधित विभिन्न पक्षों से अवगत करवाया जाएगा। भाषा के शुद्ध उच्चारण ,सामान्य लेखन ,रचनात्मक लेखन तथा तकनीकी शब्दों से अवगत हो सकेंगे। भाषा की समृद्धि के लिए वार्तालाप, भाषण, उसके पल्लवन ,पुस्तक समीक्षा ,फिल्म समीक्षा का भी अध्ययन कर सकेंगे।

सेमेस्टर- 2

Core Courses-2

हिंदी कविता (मध्यकाल और आधुनिक काल)- BAPHCC02

कविताओं का अध्ययन - विश्लेषण करने की पद्धति सीख सकेंगे। साहित्य के सामाजिक - राजनीतिक - सांस्कृतिक पहलुओं की जानकारी प्राप्त हुई।

(क)आधुनिक भारतीय भाषा - हिंदी भाषा और साहित्य BAPMILHA01

हिंदी साहित्य और भाषा के विकास की स्पष्ट समझ विकसित होगी, आधुनिक आवश्यकताओं के अनुरूप राष्ट्रभाषा , राजभाषा और संपर्कभाशा की जानकारी होगी ।

(ख)आधुनिक भारतीय भाषा - हिंदी भाषा और साहित्य - BAPMILHB01

हिंदी साहित्य और भाषा के विकास की स्पष्ट समझ विकसित होगी , विशिष्ट कविताओं के अध्ययन - विश्लेषण के माध्यम से कविता संबंधी समझ विकसित करना, हिंदी साहित्य और भाषा। के विकास की स्पष्ट समझ विकसित होगी , विशिष्ट कविताओं के अध्ययन से साहित्य की समझ विकसित होगी।

(ग)आधुनिक भारतीय भाषा - हिंदी भाषा और साहित्य - **BAPMILHC01**

हिंदी साहित्य और भाषा के विकास की स्पष्ट समझ विकसित होगी, विशिष्ट कविताओं के अध्ययन से साहित्य की समझ विकसित होगी।

सेमेस्टर - 3

Core Courses- 3

हिंदी कथा साहित्य BAPHCC03

कथा साहित्य के विकास का परिचय, प्रमुख उपन्यास और कहानियों का अध्ययन।

हिंदी कौशल - संवर्धक पाठ्यक्रम

(क) रचनात्मक लेखन -BAPHSEC01

इस पाठ्यक्रम के अध्ययन के पश्चात विद्यार्थियों में -

मौखिक और लिखित अभिव्यक्ति कौशल को विकसित होने में मदद मिलेगी , उनमें कल्पनाशीलता और रचनात्मकता का विकास हो सकेगा, साहित्य की विविध विधाओं और उनकी रचनात्मक शैली का परिचय होगा जिसमें वे स्वयं भी इन विधाओं में लेखन की अग्रसर हो सकेंगे, प्रिंट एवं इलेक्ट्रॉनिक माध्यमों के लिए लेखन के ओर भी वे अग्रसर होंगे।

सेमेस्टर 4

अन्य गद्य विधाएँ (BAPHCC04)

अन्य गद्य विधाओं की स्पष्ट समझ विकसित होगी । आलोचनात्मक समझ विकसित होगी।

आधुनिक भारतीय भाषा

- हिंदी : भाषा और साहित्य (हिंदी -क) (BAPMILHA01)

हिंदी साहित्य और भाषा के विकास की स्पष्ट समझ विकसित होगी।

आधुनिक आवश्यकता के अनुरूप राष्ट्रभाषा राजभाषा और संपर्क भाषा की जानकारी प्राप्त होगी

आधुनिक भारतीय भाषा- हिंदी: भाषा और साहित्य(हिंदी- ख) (BAPMILHB01)

हिंदी साहित्य और भाषा के विकास की स्पष्ट समझ विकसित होगी।

विशिष्ट कविताओं के अध्ययन से साहित्य की समझ विकसित होगी।

आधुनिक भारतीय भाषा- हिंदी: भाषा और साहित्य(हिंदी - ग) BAPMILHCO1

हिंदी साहित्य और भाषा के विकास की स्पष्ट समझ विकसित होगी। विशिष्ट कविताओं के अध्ययन से साहित्य की समझ विकसित होगी।

Skill-Enhancement Courses (SEC)
कंप्यूटर पर हिंदी भाषा BAPHSEC06

कंप्यूटर पर हिंदी भाषा के प्रयोग पर बल, सिद्धांत और व्यवहारिक ज्ञान विकसित होगा

सेमेस्टर 5

Discipline specific Elective Papers (DSE):
विषय आधारित ऐच्छिक पाठ्यक्रम (डिसीप्लिन स्पेसिफिक इलेक्टिव 1)

(क) हिंदी भाषा का व्यावहारिक व्याकरण(BAPHDSE01)

अनुवाद की सैद्धांतिक और व्यावहारिक जानकारी , विभिन्न क्षेत्रों के अनुवाद का विश्लेषणात्मक अध्ययन , प्रयोगात्मक कार्य

अथवा

(ग) हिंदी रंगमंचBAPHDSE03

रंगमंच के विकास के साथ-साथ विभिन्न शैलियों की जानकारी प्राप्त होगी , प्रमुख विचार को की रंग दृष्टि से अवगत हो पाएंगे, पारंपरिक और आधुनिक रंगमंच की समझ विकसित होगी, भारत बोध विकसित होगा

Generic Elective - (GE) (any one)
(क) अनुवाद: व्यवहार और सिद्धांत BAPHGE01

अनुवाद के विभिन्न क्षेत्रों की आवश्यकता को समझने में मदद मिलेगी

सिद्धांत विज्ञान के साथ साथ व्यवहारिक ज्ञान निर्मित होगा

सेमेस्टर 6

Discipline specific Elective Papers DSE 2
(क) साहित्य चिंतन BAPHDSEC04

साहित्य और समाज की पारस्परिक अर्थ बता और महत्व के साथ-साथ आलोचनात्मक विवेक का निर्माण

साहित्य की व्याख्या के लिए शास्त्रीय सिद्धांतों का ज्ञान प्राप्त करना

विद्यार्थी के सैद्धांतिक सोच और समझ के स्तर को समृद्ध करते हुए साहित्य के साथ अन्य कलाओं की समझ विकसित करना

Generic Elective - (GE)

(क)अस्मिता मूलक अध्ययन और हिंदी साहित्यBAPHGE03

अस्मिता मूलक विमर्श का ज्ञान

टिफिन अस्मिता ओं की समस्याओं और उसके परिवेश को समझना

प्रमुख कृतियों का परिचय

अथवा

(ख) हिंदी सिनेमा और उसका अध्ययन(BAPHGE04)

सिनेमा की व्यवहारिक और आलोचनात्मक समझ विकसित होगी

सिनेमा के विकास के माध्यम से भारत के मनोरंजन जगत में आ रहे बदलाव को समझ सकेंगे

PAPERS OFFERED BY GEOGRAPHY DEPARTMENT

Physical Geography

This paper shall enable the students to understand the basic concepts, definition and scope of physical geography. This course shall enable the students to comprehend the dynamics of atmosphere, lithosphere and fluvial erosion cycle. Students shall be well-versed with hydrological processes, ocean bottom relief, tides and currents.

Human Geography

This paper shall enable the students to understand the basic concepts, nature and relevance of human geography, enable the students to appreciate the interrelationships between space and society, characteristics of cultural regions, race, religion and language. Students shall be well-versed with the world population growth patterns, demographic transition theory, settlement patterns and urbanization process.

General Cartography

This is a practical, hands-on course; when completed it, students will be able to: Explain how maps work, conceptually and technically and will be able to understand science and art of cartography, Recognize the benefits and limitations of some common map projections and their use. Understand and perform interpretation of topographical maps and weather maps.

Environmental Geography

This paper shall enable the students to understand basic concepts and approaches related to environmental geography. This course shall enable the students to comprehend about human-environment relationship, and different environmental problems and its management. Students shall be well-versed with the analysing the environmental programmes and policies.

Skill-Enhancement Courses (SEC)

SEC 1: Regional Planning and Sustainable Development

This paper shall enable the students to understand the basic concepts and types of regional planning. This course shall enable the students to analyze various characteristics and parameters used for delineating the planning regions. Students shall be well-versed with models of regional planning and appreciate the relevance of the case studies of regional planning.

SEC 2: Fundamentals of Remote Sensing and GPS/GNSS

This paper shall enable the students to understand fundamental issues related to remote sensing, its development and types. This course shall enable the students to comprehend about aerial photography, satellite remote sensing, EMR and sensors.Students shall be well-versed with the interpretation and applications of remote sensing, and GPS/GNSS.

SEC 3: Introduction to GIScience

This is a practical, hands-on course; when completed, students will be able to Develop basic understanding of GIScience and roles of various intuitions in data sharing ;Perform preparing different maps integrating spatial and no-spatial data; Learn and use GIS for natural resource management, urban and land use land cover study;

SEC 4. Field Techniques and Surveying Methods

This paper shall enable the students to understand fundamental concepts and issues related to field work in geographical studies. This course shall enable the students to comprehend about field work and field techniques. Students shall be well-versed with the development of questionnaire and writing the field report.

Generic Elective - (GE)

GE1. Disaster Management

This paper shall enable the students to understand basic concepts and issues related to disaster management. This course shall enable the students to comprehend about causes, impact, distribution and mapping of disasters in India. Students shall be well-versed with the analysing the response and mitigation of disasters.

Disaster Risk Reduction

This paper shall enable the students to understand basic concepts and issues related to disaster risk reduction. This course shall enable the students to comprehend about causes, impact, distribution and mapping of disasters in India. Students shall be well-versed with the analysing the programmes and policies related to disaster risk reductions.

PAPERS OFFERED BY POLITICAL SCIENCE DEPARTMENT

Paper I - Introduction to Political Theory (62321101)

After completing this course students will be able to: Understand the nature and relevance of Political Theory . Understand different concepts like liberty, equality, justice and rights. Reflect upon some of the important debates in Political Theory

Paper II - Indian Government and Politics (62321201)

On completion of the course, students would be able to: Demonstrate an understanding of the different viewpoints on Indian politics and the nature of Indian state Show knowledge of the text of the Indian Constitution and an awareness of constitutional and legal rights. Understand the structure of society in India and how social inequalities have an impact on political institutions and processes. Show awareness of the party system in India and the development policies adopted by various governments so far. Understand how social movements are formed and how they impact the political Processes.

Paper III - Comparative Government and Politics (62324306)

The paper will equip students with an in-depth understanding of nature, and scope of comparative politics. The course will enhance student's understanding of comparative analysis both in developed and developing countries. The course will enable students in understanding historical context of modern state, constitutional development and their political economy with specific references; such as capitalism as a case of reference to Britain, socialism with reference to China, colonialism and decolonization with reference to Brazil and Nigeria. The course will develop analytical skills of students to discuss the contemporary debates on the changing nature of state in the context of globalisation.

Paper IV - Introduction to International Relations. (62324407)

Students will learn about major theoretical approaches and the history of International Relations. The course will enhance students' understanding on the major political developments in international relations since 1945. The paper will develop in-depth knowledge on the emerging centers of power like European Union, China, Russia and Japan. Students will also learn about basic determinants of India's foreign policy and understand it in the context of India as an emerging power.

Discipline specific Elective Papers (DSE):

DSE1. Themes in Comparative Political Theory (62327503)

After completing this course, the students will be able to: Understand how Political Theory draws from and is shaped by both western and Indian traditions. Appreciate the value and distinctiveness of Comparative Political Theory.

DSE4. Understanding Globalization (62327601)

The students will learn about meaning and significance of globalization in contemporary times. The course will enhance students' understanding on economic, political, technological and cultural dimensions of globalization. Understanding the role of global actors in the process of globalization will enhance students' knowledge on world actors like United Nations, World Trade Organization and G-77. Students will also learn about contemporary pressing issues like global warming, poverty & inequality and international terrorism.

Generic Elective - (GE)

GE1 - Understanding Gandhi (62325501)

This course will help students to understand fundamental concept of Gandhi philosophy through his words firstly and secondly it will help them understand these concepts in a critical and analytical manner.

GE2 - Human Rights Gender and Environment (62325602)

The study of the course will equip the students with theoretical and conceptual understanding of caste, gender, ethnicity and class as distinct categories and their interconnections.The course will further analyse socio-economic and political problems of marginalised groups in society such as women, Dalits, minorities and adivasis and repercussions of globalisation on them. The paper will enhance understanding on the meaning of human rights, universalization of human rights and human rights institutions in India. The course will equip students with a conceptual understanding of gender and patriarchy, and issues of women's political participation and rights in India.The paper will enhance knowledge on the concept of sustainable development, and national and international programmes and policies on environment.

Skill-Enhancement Courses (SEC)

SEC 1 - Public Opinion and Survey Research

On the completion of the course, students will be able to Understand the importance of public opinion in a democracy and the role of survey research in comprehending the working of a democratic political system. Learn about the methods used for conducting surveys and interpreting survey data. Acquire basic skill sets related to understanding public opinion formation and conducting. Research through the use of sample date, framing a questionnaire, etc. Acquire basic skill sets related to measurement of public opinion such as data analysis using statistical methods.

SEC 2 - Legislative Support

On successful completion of the course, students will be able to: Demonstrate knowledge of the structure and the functions of legislating bodies in India . Demonstrate knowledge of the law making procedure in India. Acquire skills related to a close reading of legislative documents .Understand the relationship between the people and their elected representatives. Develop basic skills to become a part of a support team engaged at different levels of the law making functions.

SEC 3 - Conflict and Peace Building

The course will enhance students' understanding on the meaning, nature and significance of peace, conflict management, conflict resolution and conflict transformation. The students will also learn the importance of resource sharing in the conflict zones. The paper will develop students' knowledge on ideological and socio-cultural dimensions of conflict at local, sub-national and international levels. Students will also learn about negotiation and mediation skill for conflict resolution through active listening, different tracks of diplomacy and Gandhian methods.

2. B.A. (Hons.) Economics

Core Courses

Mathematical Methods for Economics I (HC11)

The course hones and upgrades the mathematical skills acquired in school and paves the way for the second semester course Mathematical Methods in Economics II. Collectively, the two papers provide the mathematical foundations necessary for further study of a variety of disciplines including economics, statistics, computer science, finance and data analytics. The analytical tools introduced in this course have applications wherever optimisation techniques are used in business decision-making. These tools are necessary for anyone seeking employment as an analyst in the corporate world. The course additionally makes the student more logical in making or refuting arguments.

Introductory Microeconomics (HC12)

The course introduces the students to the first course in economics from the perspective of individual decision making as consumers and producers. The students learn some basic principles of microeconomics, interactions of supply and demand, and characteristics of perfect and imperfect markets.

Mathematical Methods for Economics II (HC21)

The course provides the mathematical foundations necessary for further study of a variety of disciplines including postgraduate economics, statistics, computer science, finance and data analytics. The analytical tools introduced in this course have applications wherever optimization techniques are used in business decision-making for managers and entrepreneurs alike. These tools are necessary for anyone seeking employment as an analyst in the corporate world.

Introductory Macroeconomics (HC22)

This course aims to develop the broad conceptual frameworks which will enable students to understand and comment upon real economic issues like inflation, money supply, GDP and their interlinkages. It will also allow them to critically evaluate various macroeconomic policies in terms of a coherent logical structure.

Intermediate Microeconomics I (HC31)
The course trains the students of Economics about the basic elements of consumer theory and production theory and the functioning of perfectly competitive market. This course aims to give students a solid grasp of microeconomic analysis at the intermediate-level using mathematical techniques whereappropriate.

Intermediate Macroeconomics I (HC32)
This course enables students to analyse the macroeconomic performance of various countries using formal analytical tools. It also allows them to evaluate important macroeconomic policies and their implications.

Statistical Methods for Economics (HC33)
At the end of the course, the student should understand the concept of random variables and be familiar with some commonly used discrete and continuous distributions of random variables. They will be able to estimate population parameters based on random samples and test hypotheses about these parameters. An important learning outcome of the course will be the capacity to analyse statistics in everyday life to distinguish systematic differences among populations from those that result from random sampling.

Intermediate Microeconomics II (HC41)
This course helps the students to understand efficiency of markets and the environment where the standard market mechanism fails to generate the desirable outcomes. The issues of market imperfection and market failures are important building blocks of this course.

Intermediate Macroeconomics II (HC42)
This course will enable students to combine their knowledge of the working of the macroeconomy with long run economic phenomena like economic growth, technological progress, R&D and innovation. It will also enable students to understand business cycles and the concomitant role of policies.

Introductory Econometrics (HC43)
Students will learn to estimate linear models using ordinary least squares and make inferences about population parameters. They will also understand the biases created through mis-specified models, such as those that occur when variables are omitted.

Indian Economy I (HC51)
At the end of the course, a student should be able to understand the development paradigm adopted in India since independence and evaluate its impact on economic as well as social indicators of progress and well being.

Development Economics I (HC52)

This course introduces students to the basics of development economics, with in- depth discussions of the concepts of development, growth, poverty, inequality, as well as the underlying political institutions.

Indian Economy II (HC61)
At the end of the course, a student should be able to understand the role of economic policies in shaping and improving economic performance in agriculture, manufacturing and services.

Development Economics II (HC62)
This course teaches the student various aspects of the Indian economy, as well as important themes relating to the environment and sustainable development. It also introduces them to some issues of globalisation.

Discipline Specific Elective Courses

Game Theory (HE51)
The students will learn how to model multi-person decision making in an interactive setting. They will understand how to formulate different real life situations as games and learn to predict the optimal strategies of players and how the players can exploit strategic situations for their own benefit.

International Trade (HE52)
The module aims to introduce students to the main theoretical and empirical concepts in international trade, equip students with a thorough analytical grasp of trade theory, ranging from Ricardian comparative advantage to modern theories of intra-industry trade, and familiarise students with the main issues in trade policy and with the basic features of the international trading regime. At the end of the course, the students should be able to demonstrate their understanding of the economic concepts of trade theory. In some models, the student will be required to deal with simple algebraic problems that will help them to better understand these concepts, use diagrammatic analysis to demonstrate and compare the economic welfare effects of free trade and protection, demonstrate their understanding of the usefulness and problems related to topics in international trade, and demonstrate their critical understanding of trade policies.

Public Economics (HE53)
The module aims to introduce students to the main theoretical and empirical concepts in public economics, equip students with a thorough analytical grasp of implications of government intervention for allocation, distribution and stabilization, and familiarise students with the main issues in government revenues and expenditure. At the end of the module the students should be able to demonstrate their understanding of the public economics. In some models, the student will be required to deal with simple algebra problems that will help them to better understand these concepts, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various environmental policy options, demonstrate their understanding of the usefulness and problems related to taxation and government expenditure, and demonstrate their critical understanding of public policies

Financial Economics (HE54)

Students acquire extensive theoretical knowledge in portfolio risk management, capital asset pricing, and the operation of financial derivatives. The course familiarises students with the terms and concepts related to financial markets and helps them comprehend business news/articles better. The course also helps to enhance a student's understanding of real life investment decisions. The course has a strong employability quotient given the relatively high demand for skilled experts in the financialsector.

Applied Econometrics (HE55)

Students will learn the theoretical basis for techniques widely used in empirical research and consider their application in a wide range of problems.

Economic History of India 1857-1947 (HE56)

The course develops critical analytical skills and exposes students to understanding the intricacies of India's economic, political and social developments both in the past and present times. It increases their employability by enhancing their ability to deal with a variety of textual and statistical sources, and to draw upon them to construct a coherent argument. These skills would be useful in a variety of careers in academics, research, journalism and thegovernment.

Political Economy I (HE57)

This course prepares the students to develop critical thinking by exposing them to elements of economic thought, juxtaposing ideas and theoretical structures based largely on original texts and journal articles. Students learn to assimilate from a diverse range of opinions and crystallize their own thought processes and standpoints. This also helps them to develop advanced writing, presentation and research skills. It further enables them to comprehend a larger view of the world around us by analysing the existing social and political structures and their links with the economic processes. It is thus a crucial course, which exposes the social science dimension of economics to the students and also provides them skills to think and analyse in an interdisciplinary manner. The exposure to interdisciplinary thinking further enables the students for pursuing studies in diverse related areas such as development studies, economic sociology, critical geography, gender studies and social work as also for taking up employment in organisations ranging from international development agencies to development NGOs and corporate CSR. It also prepares the students to face the practical world of work, where economics, business, civil society organisations, social institutions and politics often cohabit in a complex inter linked structure.

Economics of Health and Education (HE62)

The students will learn the role of health and education in human development. They will be able to apply economic theory to understand the demand for health care, market failure in health insurance, economic evaluation of health care programmes and the role of public policy in the healthcare industry. They will also learn to analyse the returns to education, its

role in labor market signalling, and the progress of schooling in India. They will also be exposed to the theories of discrimination.

Environmental Economics (HE63)

The module aims to introduce students to the main theoretical and empirical concepts in environmental economics, equip students with a thorough analytical grasp of environmental policy theory, ranging from externalities to international environmental agreements, and familiarise students with the main issues in environmental valuation and with the basic features of the environmental policy tools. At the end of the module the students should be able to demonstrate their understanding of the economic concepts of environmental policy. In some models, the student will be required to deal with simple algebra problems that will help them to better understand these concepts, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various environmental policy options, demonstrate their understanding of the usefulness and problems related to environmental valuation, and demonstrate their critical understanding of environmental policies.

Open Economy Macroeconomics (HE64)

The student will know how exchange rates, interest rates and capital movements between currencies are determined within different institutional settings for monetary policy (e.g. inflation targeting versus money supply targeting or exchange rate targeting), how a country's current account balance is determined, or, which amounts to the same, how capital movements between countries are determined, how shocks emanating abroad or in the foreign exchange market affect output, employment, inflation and interest rates, how the effects of changes in fiscal and monetary policy and shifts in private sector behaviour are modified through the foreign exchange markets and foreign trade, the role of cost competitiveness in the determination of economic activity, the different responses to economic shocks in the traded-goods and non-traded goods sectors of the economy, how the effects of policy actions and economic shocks are transmitted from country to country in the world economy, and the merits of different exchange rate systems (fixed versus flexible, monetary unions). In particular, you will learn more about the effects over time as flows accumulate to stocks and as the economy moves towards long-run equilibrium. At the end of course the will acquire to analyze the effects of macroeconomic events on the future time path of the economy, analyse how forces inherent in the initial state of the economy will tend to change the economy over time, discuss how current and future events may influence the exchange rate through expectations, and come up with policy suggestions and consider their effects overtime.

Money and Financial Markets(HE65)

This allows students to understand current monetary policies and financial market outcomes. It also enables them to critically evaluate policies.

Comparative Economic Development: 1850-1950 (HE66)

By analysing the history of industrialisation and economic transition, students will be able to visualise economic development in a historical perspective and assimilate material from

a diverse range of opinions. It will help them to think in an interdisciplinary manner and therefore aid them in jobs where developing and presenting comparative perspectives are key tasks.

Law and Economics (HE67)

This course will familiarise students with the economic approach towards thinking about the law and public policy. Students will come to recognise the law as an important organising force that influences the actions of private citizens as well as government agencies. Students will also learn how the law can support and, at times conflict with, the functioning of the market and the government, the other two important organising forces of an economy. The course will enhance critical thinking and an inter-disciplinary approach towards the law, economics, and policymaking. Thereby, the course will help to develop an inter-disciplinary approach and enhance the employability of students.

Political Economy II (HE68)

This course exposes the students to the realities of the contemporary world economy and teaches them to develop critical analysis in an integrated and broader political economy framework. It thus enables them to form a more informed view of the world we inhabit by analyzing some of the most contemporary trends and developments from different perspectives. It also exposes the students to interdisciplinary skills and written argumentation, and prepares them for a more holistic research framework. The exposure to interdisciplinary thinking further enables the students for pursuing studies in diverse related areas such as development studies, economic sociology, critical geography, gender studies and social work as also for taking up employment in organisations ranging from international development agencies to development NGOs and corporate CSR. It also prepares the students to face the practical world of work, where economics, business, civil society organisations, social institutions and politics often cohabit in a complex interlinked structure, and employees are expected to comprehend and synthesize materials from diverse sources and perspectives.

Generic Elective Courses

Introductory Microeconomics (GE11)

The course introduces the students to the first course in Economics from the perspective of individual decision making as consumers and producers. The students learn some basic principles of microeconomics, interactions of supply and demand and characteristics of perfect and imperfectmarkets.

Introductory Macroeconomics (GE21)

This course will allow students to understand the basic functioning of the macroeconomy.

Data Analysis (GE31)

The course will use data simulations and publicly available data sources to help students learn about data types, their organization and visual representation. They will learn how to compute summary statistics and do some basic statistical inference.

Money and Banking (GE32)
This course exposes students to the theory and functioning of the monetary and financial sectors of the economy.

Indian Economy I (GE33)
This course will help students understand the key issues related to the Indian economy. It will broaden their horizons and enable them to analyze current economic policy thus improving their chances of getting employed, and be more effective, in positions of responsibility and decisionmaking. The course also serves as the base for further study of sector specific policy discussion that is pursed in the course in the next semester.

Economic History of India (GE34)
The course exposes the students to understanding the intricacies of India's economic, political and social developments both in the past and present times. It develops analytical skills, and will be useful in a variety of careers in academics, research, journalism, private sector and government.

Public Finance (GE41)
The module aims to introduce students to the main concepts in public finance, equip students with a thorough analytical grasp of government taxes: direct and indirect taxes, and familiarise students with the main issues in government expenditure. At the end of the module the students should be able to demonstrate their understanding of the economic concepts of public finances, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various government policy options, and demonstrate their understanding of the usefulness and problems related to government revenues and expenditures.

Indian Economy II (GE42)
Students will have capability to understand government policies and will enable informed participation in economic decision making, thus improving their employment prospects and career advancement.

Global Political Economy (GE43)
This course enables students who have not studied economics at the undergraduate level to develop a critical understanding of the contemporary global economy. It enables them to form a more informed view of the world we inhabit by analyzing some of the economic trends and developments over the last five or six decades. As the economy is a crucial sphere both of social life in general and the world of work in particular, an analytical exposure to the structures, institutions and processes of the global economy will thus enrich their comprehension of the contemporary world. With such a comprehension, students from all backgrounds will thus be better prepared to face the professional world and can use the knowledge base of this course for facing the challenges of group discussions and general interviews for corporate or civil service jobs. Students of other social sciences and humanities, who intend to pursue higher studies and research, will also immensely benefit

from this course by being able to develop an interdisciplinary understanding of basic economic structures and processes, which are often crucial to the understanding of their core subjects.

Game Theory (GE44)
The students will learn how to model multi-person decision-making in an interactive setting. They will understand how to formulate different real life situations as games and learn to predict the optimal strategies of players and how the players can exploit strategic situations for the benefit of their own.

Skill Enhancement Courses
Data Analysis (HS31)
The course will use data simulations and publicly available data sources to help students learn about data types, their organization and visual representation. They will learn how to compute summary statistics and do some basic statistical inference.

Research Methodology (HS41)
The course imparts skills to undertake data based research. The student enrolling in this course would develop competency in executing sample surveys and would have reasonable exposure to a variety of secondary data sources.

Contemporary Economic Issues (HS42)
Students will have the capability to understand government policies and will in general be informed participants in economic decision making.

Discipline Core Course :
Principles of Microeconomics I (PD11)
The students learn some basic principles of microeconomics and interactions of supply and demand, characteristics of perfect competition, efficiency and welfare.

Principles of Microeconomics II (PD21)
This course helps the students to understand different forms of market imperfections and market failures observed in real life situations. The students learn about the environment where the standard market mechanism fails to generate the desirable outcomes. They develop a sense of how the production is distributed among the different factors of production and the demand for inputs. Some preliminary concepts of international trade are also covered in this course.

Principles of Macroeconomics I (PD31)
This course is useful for understanding various real economic issues and evaluating policy outcomes.

Principles of Macroeconomics II (PD41)

This course provides students with an analytical framework to understand the basic functioning of the macroeconomy. It also allows them to critically examine and comment on effectiveness of various policies.

Discipline specific Elective Papers (DSE):

Environmental Economics (PDE51)

The module aims to introduce students to the main concepts in environmental economics, equip students with a thorough analytical grasp of environmental policy theory, starting with externalities, and familiarise students with the main issues in environmental valuation. At the end of the module the students should be able to demonstrate their understanding of the economic concepts of environmental policy, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various environmental policy options, and demonstrate their understanding of the usefulness and problems related to environmental valuation

Money and Banking (PDE52)

It allows students to analyse financial market outcomes and evaluate policies.

Economic Development & Policy in India I (PDE53)

This course will help students understand the key issues related to the Indian economy. It will broaden their horizons and enable them to analyze current economic policy thus improving their chances of getting employed, and be more effective, in positions of responsibility and decisionmaking. The course also serves as the base for further study of sector specific policy discussion that is pursed in the course in the next semester.

Public Finance (PDE61)

The module aims to introduce students to the main concepts in public finance, equip students with a thorough analytical grasp of government taxes: direct and indirect taxes, and familiarise students with the main issues in government expenditure. At the end of the module the students should be able to demonstrate their understanding of the economic concepts of public finances, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various government policy options, and demonstrate their understanding of the usefulness and problems related to government revenues and expenditures

Economic Development & Policy in India II (PDE62)

Students will have capability to understand government policies and will enable informed participation in economic decision making, thus improving their employment prospects and career advancement.

Economic History of India (PDE63)

The course exposes students to the intricacies of India's economic, political and social developments both in the past and present times. It develops their analytical skills that will be

useful in a variety of careers in academics, research, journalism, private sector and government.

Generic Elective Courses

Principles of Microeconomics (PGE51)

The students learn some basic principles of microeconomics and interactions of supply and demand, characteristics of perfect competition, efficiency and welfare.

Issues in Economic Development (PGE52)

Students will develop a critical understanding of the contemporary issues in Indian economic development. Students will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service and NGO sectors.

Principles of Macroeconomics (PGE61)

This course is useful for understanding various real economic issues and evaluating policy outcomes.

The Indian Economy (PGE62)

Students will develop a critical understanding of the contemporary issues in the Indian economy. Students will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service, and NGO sectors.

Skill-Enhancement Courses (SEC)

Understanding Economic Survey and Union Budget (PS31)

Students will have the capability to understand government policies and will be informed participants in economic decision-making.

Research Methodology (PS41)

The student will develop an understanding of how commonly available data is collected and analyzed. This would help in the interpretation of secondary data and in the management of small primary surveys.

Data Analysis (PS51)

Students will learn to input, visually represent and analyse data.

Introductory Microeconomics (BCOM GE 1)

The course introduces the students to the first course in Economics from the perspective of individual decision making as consumers and producers. The students learn some basic principles of microeconomics, interactions of supply and demand and characteristics of perfect and imperfectmarkets.

Introductory Macroeconomics (BCOM GE 2)

This course will allow students to understand the basic functioning of the macroeconomy.

3. B.A. (Hons.) English

Core Courses

Indian Classical Literature

To study significant sections of Vyasa's Mahabharata in order to determine conceptualisation and representation of class, caste, gender, and disability in the context of the epic battle over rights and righteousness. To examine selections from Ilango's Cilapattikaram to understand the interplay of Tamil poetics and the lifestyle of communities, negotiating ideas related to love, justice, war, governance, and conduct in private and public domains. To study Sanskrit drama, a Nataka, and a Prakarna, to appreciate its debts to Natyashastra in their formal aspects. To explore the central concerns of Sanskrit drama in relation to notions of the ideal ruler, lover, friend, and spouse; the presence of Buddhist edicts, the voices of the poor and the marginalised, the position of women in different social strata, the subversive use of humour, and the performative aspects of Sanskrit theatre. To introduce students to selections elucidating Tamil and Sanskrit poetics; a critical overview of the theorisation of Akam, Puram, and Thinai in Tolkappiyam, juxtaposed to lyrics from Sangam poetry; the Rasa theory from Natyashastra, to help students appreciate the inter-connections between theory and practice in theatre; a representation of disability in theatre, examined through the portrayal of Vidushaka.

European Classical Literature

To explore the historical, cultural, and philosophical origins of tragedy and comedy. To engage with both genres in their distinctive form, style, and characterization, including their representation of human aspirations, foibles, grandeur, and vulnerability. To examine representations of disability in mythology through the reading of selections from Ovid. To examine the Book of Job from the Old Testament of The Bible for its literary style, including its debate over tragic fate and human suffering, and to locate its enduring influence over subsequent humanist writings. To juxtapose the Old Testament to ideas of compassion and surrender to God's will as outlined in the selection from the New Testament. To study the history of ideas pertaining to the human-social-divine interface in theorisations on form, narrative, social organization, and aesthetics in the writings of Plato, Aristotle, and Horace; and to study gendered explorations of human relations in classical literature in multiple genres, and to examine a woman writer's standpoint on love, war and the primacy of the gendered self.

Indian Writing in English

To introduce students to Indian English Literature and its major movements and figures through the selected literary texts across genres. To enable the students to place these texts within the discourse of post-coloniality and understand Indian literary productions in English in relation to the hegemonic processes of colonialism, neo-colonialism, nationalism and

globalization. To allow the students to situate this corpus within its various historical and ideological contexts and approach the study of Indian writing in English from the perspectives of multiple Indian subjectivities.

British Poetry and Drama: 14th to 17th Centuries

To introduce students to the tradition of English Literature from the Medieval till the Renaissance. To explore the key writers and texts within their historical and intellectual contexts. To offer a perspective on the history of ideas including that of disability and its varied meanings within this period.

American Literature

To acquaint students with the wide and varied literatures of America: literature written by writers of European, particularly English, descent reflecting the complex nature of the society that emerged after the whites settled in America in the 17th century; include Utopian narrative transcendentalism and the pre- and post- Civil War literature of the 19th century introduce students to the African American experience both ante-bellum and post-bellum reflected in the diversity of literary texts, from narratives of slavery, political speeches delivered by Martin Luther King Jr. and Frederick Douglass, as well as the works of contemporary black woman writers familiarize students with native American literature which voices the angst of a people who were almost entirely wiped out by forced European settlements; and include modern and contemporary American literature of the 20th century.

Popular Literature

To enable students to trace the rise of print culture in England, and the emergence of genre fiction and bestsellers. To familiarize students with debates about culture, and the delineation of high and low culture; and to help them engage with debates about the canonical and non-canonical, and hence investigate the category of literary and non-literary fiction.

British Poetry and Drama: 17th and 18th Centuries

To help students explore poetry, drama and prose texts in a range of political, philosophical and cultural material from the end of the Renaissance through the English Civil War and Restoration in the seventeenth century. To examine the turmoil about succession and questions on monarchy as they lead up to the civil war, both in drama like Shakespeare and Behn as well as in the poetry of Milton. To show a new interweaving of the sacred and the secular subjects of poetry17th C.

British Literature: 18th Century

To examine Congreve's The Way of the World as a Comedy of Manners. To raise questions about satire as a mode, as well as look at questions of genre, through Swift's satiric narrative within the mode of fictional travel writing. To show, through a critical examination of Johnson and Gray's poems a continued association with classical poetry, the continuities and contrasts from the age of satire to age of sensibility.

British Romantic Literature

To introduce students to the Romantic period in English literature, a period of lasting importance, since it serves as a critical link between the Enlightenment and Modernist literature. To offer a selection of canonical poems and prose that constitute the core texts of the Romantic period. To introduce marginal voices that were historically excluded from the canon of British Romantic writers; and provide an introduction to important French and German philosophers who influence the British Romantic writers.

British Literature: 19th Century

To introduce students to the Victorian Age in English literature through a selection of novels and poems that exemplify some of the central formal and thematic concerns of the period. To focus on three novels, a major genre of the nineteenth century, so as to show both the formal development of the genre as well as its diverse transactions with the major socio-historic developments of the period; and introduce the students, through the readings in Unit 5, to the main intellectual currents of the period.

Women's Writing

To enable students to recognise the importance of gender specificity in literature. To equip students to read and critically analyse autobiographical and confessional mode of writing. To examine women's relationship to work and production. To examine and appreciate the role played by socio-cultural-economic contexts indefining woman

British Literature: The Early 20th Century

To trace the history of modernism in the socio-cultural and intellectual contexts of late nineteenth century and early twentieth century Europe. To enable students to link and distinguish between modernity and modernism. To explain the links between developments in science and experiments in literature. To trace the history of the self and subjectivity in literature in the light of colonial consciousness. To explain and analyze the idea of from in modernist literary texts from across major genres

Modern European Drama

To understand the role of theatre and drama in the introduction and shaping of modernity. To understand and engage with concepts like realism, naturalism, symbolism,expressionism, the Avant Garde, the epic theatre, the theatre of the absurd, etc. To understand how meaning is created in theatre and be able to write about innovations introduced into theatrical practice in the late nineteenth and the twentieth century

Postcolonial Literatures

To understand the social-historical-political-economic contexts of colonialism and postcolonialism in India and other countries affected by colonial rule. To understand the scope of postcolonial literatures in India and elsewhere, primarily as a response to the long shadow of colonialism, not just of colonial occupation. To see through a corpus of

representative postcolonial texts from different colonial locations: the effects of colonial rule on the language, culture, economy and habitat of specific groups of people affected by it.

Discipline Specific Elective Courses

Modern Indian Writing in English Translation

To appreciate the diversity of modern Indian literatures and the similarities between them. To understand and creatively engage with the notion of nation and nationalism. To appreciate the impact of literary movements on various Indian literatures. To critically engage with significant social issues like caste and gender. To understand the historical trajectories of Indian literatures

Literature of the Indian Diaspora

To understand the concept of 'diaspora' in its historical and cultural contexts. To identify different aspects of Indian diasporic consciousness and the literary features ofdiasporic texts. To develop a clear understanding of the formation of Indian diasporic movements within India and outside. To develop a critical understanding of the writings of the Indian diaspora within the discourse of postcoloniality, postmodernity, hybridity, globalization and transnationalism. To develop the analytical ability to read diasporic texts and analyze key diasporic issues such as displacement, nostalgia, alienation, belonging, identity, gender, racism and assimilation

Partition Literature

To enable students to explain historical and socio-cultural factors responsible for the Partition of Indian Sub-continent. Students will be able to critically understand manifestations of the experience of the partition and interpret texts and experience and relate it to their contexts and experiences.

Autobiography

To demonstrate a familiarity with kinds of writing which seek to represent and make sense of the experiences of the individual. To understand the relationship between self and history, truth, claims and fiction in private and public spheres. To explain the working of memory, politics of memory and its role in constructing identity. To explain and analyze how life writing provides alternatives to existing ways of writing history. To examine the status of life writing as a literary form and the history of its reception. To appreciate the emergence of life writing non-western context.

Skill-Enhancement Courses (SEC)

Creative Writing

To recognize creativity in writing and discern the difference between academic/non creative and creative writing. To develop a thorough knowledge of different aspects of language such as figures of speech, language codes and language registers so that they can both, identify as well as use these; in other words, they must learn that creative writing is as much a craft as an

art. To develop a comprehensive understanding of some specific genres such as fiction, poetry, drama and newspaper writing

Technical writing
To enable students develop and research composition, argument, and writing skills that will enable them to improve their written abilities for higher studies and academic endeavours. To understand to recognize and draft different types of writing – e.g. classroom notes,summaries, reports, exploratory and descriptive paragraphs, substantiating etc

Generic Elective Courses

Academic Writing and Composition
This course would help undergraduate students develop and research composition, argument, and writing skills that will enable them to improve their written abilities for higher studies and academic endeavours.

Language, Literature and Culture

This course would introduce the students to the basic concepts of language, its characteristics, its structure and how it functions. The course further aims to familiarise the students with how language is influenced by the socio-political-economic-cultural realities of society. It also acquaints students with the relation between language and literature.

Readings on Indian Diversities and Literary Movements

To equip students with an overview of the development of literatures in India and its wide linguistic diversity. Students will study authors and movements from different regions and time periods.

Contemporary India: Women and Empowerment

To help students from non-English literature backgrounds to develop a robust understanding of how discourses of gender underlie and shape our very lives, experiences, emotions and choices. The course exposes students to a broad range of literary and textual materials from various historical periods and contexts, so that they are able to examine the socially-constructed nature of gendering. Through the analysis of literary texts humanities and social sciences scholarship students will develop a nuanced understanding of how to perceive, read, understand, interpret and intervene ethically in debates on the subject.

Ability Enhancement Compulsory Courses English / Hindi/ MIL Communication

Course Title: Environmental Sciences

4. B.A. (Hons.) Geography

Geomorphology
After completion of this course, students will be able to understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects

the development of landforms ,distinguish between the mechanisms that control these processes , assess the roles of structure, stage and time in shaping the landforms, interpret geomorphological maps and apply the knowledge in geographical research.

Cartographic Techniques (Practical)

This is a practical, hands-on course; students will be able to explain how maps work, conceptually and technically and will be able to understand science and art of cartography . Recognize the benefits and limitations of some common map projections and their use. Understand and perform interpretation of topographical maps and weather maps.

Human Geography

Detailed exposure of contemporary relevance of cultural landscape. In-depth knowledge of space and society of cultural regions. Understanding the settlement pattern and population resource relationship.

Thematic Cartography (Practical)

This is a practical, hands-on course; when completed students will be able to: Explain how maps work, conceptually and technically and will be able to understand science and art of cartography. Recognize the benefits and limitations of Diagrammatic Data Presentation. Understand and perform interpretation of thematic maps.

Climatology

Detailed exposure of climatology and oceanic relief features.In-depth knowledge of upper atmospheric conditions and cyclonic features. Understanding the characteristics of climatic regions.

Statistical Methods in Geography (Practical)

The following will be the outcomes of this course, student shall be able: To differentiate between qualitative and quantitative information. To know the nature of various data, different sources and methods of data collection.

Geography of India

Detailed exposure to the human and physical features of India. In-depth knowledge of different resource base of India. Understanding socio-cultural base of India.

Economic Geography

After learning, students should be able to Distinguish to different types of economic activities and their utilities. Appreciate the factors responsible for the location and distribution of activities. Examine the significance and relevance of theories in relation to the location of different economic activities.

Environmental Geography

Detailed exposure of human – environment relationship. In-depth knowledge of environmental issues in tropical, temperate and polar ecosystems. Understanding the environmental programmes and policies at local as well as global level.

Field Work and Research Methodology
Detailed exposure of new geographical landscape as study area. In-depth knowledge of different field techniques. Understanding the field ethics and different tools of field study.

Regional Planning and Development
After studying, students will be able to: Conceptualize the Regional Planning and its theories. Get the overview of Sustainable Regional Development. Have sound knowledge to Sustainable Development Policies and Programmes.

Remote Sensing and GIS (Practical)
This is a practical, hands-on course; when you have completed it, you will be able to: Explain principles of remote sensing, different satellite systems and sensors; Perform image pre-processing, enhancement and classification and interpretation of satellite images; Apply Image preprocessing for land use land cover and urban studies;

Evolution of Geographical Thought
In depth understanding about the evolution of geographical thought. Detailed knowledge about the paradigms and debates in the geographical studies. Understanding of recent traditions in geography

Disaster Management based Project Work (Practical
In depth understanding about the various disasters in the country . It will provide thorough understanding about the human responses to the disasters.It will give an in-depth knowledge about the disasterscapes through fieldworks .

Discipline specific Elective Papers (DSE):

DSE1 Demography and Population Studies
This paper would bring an understanding of Population Geography along with relevance of Demographic data. The students would get an understanding of distribution and trends of population growth in the developed and less developed countries, along with population theories. The students would get an understanding of the dynamics of population. An understanding of the implications of population composition in different regions of the world. An appreciation of the contemporary issues in the field of population studies.

Hydrology and Soil Studies
After studying this course, students will be able to: Understand the basic components of hydrological cycle and learn best practices of integrated watershed management, Explain various components of water balance and management of river basins, Identify different types of soil, distribution and management of soil resources.

Urbanization and Urban System

After studying, students will be able to: Understand the fundamentals and patterns of urbanization process. Learn the functional classification of cities and central place theories. Know contemporary problems of Delhi, Mumbai, Kolkata and Chennai.

Agriculture and Food Security

After studying, students will be able to Conceptualize the agriculture and its determinants. Get the overview of Indian and World agriculture regions and systems. Have sound knowledge of agriculture revolutions and food security.

Skill-Enhancement Courses (SEC)

SEC1. Geographical Information System (Practical)

This is a practical, hands-on course; when completed students will be able to: Develop basic understanding and hands-on on GIS software and GPS ; Understand GIS Data Structures and GIS Data Analysis ; Apply GIS for natural resource management, urban and land use land cover study.

SEC 2. Advanced Spatial Statistical Techniques

In depth understanding about the use of quantitative data in the geographical studies .Detailed knowledge of statistical techniques to analyse the quantitative data. Understanding of statistical software package to enhance the students with quantitative analysis.

5. B.A. (Hons.) Hindi

Core Courses

CC हिन्दी भाषा एवं लिपि का इतिहास

हिंदी भाषा की उच्च शैक्षिक स्तर की भूमिका के महत्वपूर्ण पक्ष को जाना जा सकेगा |

कंप्यूटर को हिंदी भाषा से जोड़ने पर हिंदी का व्यावहारिक ज्ञान भी प्राप्त होगा |

CC हिन्दी कविता (आदिकालीन एवं भक्तिकालीन काव्य)

हिंदी साहित्य के आदिकालीन , भक्तिकालीन साहित्य से अवगत करना |
आदिकाल और भक्तिकाल के प्रमुख कवियों की कविता को समझने का अवसर |

GE हिन्दी सिनेमा और उसका अध्ययन

हिंदी सिनेमा , समाज और संस्कृति की समझ विकसित होगी |
सिनेमा निर्माण , प्रसार की समझ विकसित होगी |

AECC हिन्दी भाषा और सम्प्रेषण

प्रभावी सम्प्रेषण का अर्थ समझने के साथ साथ विद्यार्थी रोजगार के विभिन्न क्षेत्रों हेतु लेखन , वचन पठन में भी सक्षम हो सकेंगे |

(सेमेस्टर II)

CC हिन्दी साहित्य का इतिहास (आदिकाल एवं मध्यकाल)

हिंदी साहित्य के इतिहास का ज्ञान
इतिहास ग्रंथों का विश्लेषण

CC हिन्दी कविता (रीतिकाल)

हिंदी के उत्तर मध्यकालीन साहित्य का विशिष्ट परिचय प्राप्त होगा |
ब्रज भाषा के साहित्य का रसास्वादन और आलोचनात्मक ज्ञान प्राप्त होगा |

GE रचनात्मक लेखन

रचनात्मकता का विकास होगा |
विभिन्न क्षेत्रों जैसे पत्रकारिता विज्ञापन , मीडिया , सिनेमा , कला में रोजगार प्राप्ति में सहायता मिलेगी |

CC हिन्दी साहित्य का इतिहास (आधुनिक काल)

साहित्य , समाज , संस्कृति की समझ के लिए साहित्येतिहास अध्ययन जरूरी है |

इतिहास ग्रंथों का विश्लेषण

(सेमेस्टर III)

CC हिन्दी कहानी

प्रमुख कहानीकार और उनकी कहानी के माध्यम से कहानी की उपयोगिता और विश्लेषण की क्षमता विकसित होगी |

समाज और संस्कृति की पहचान विकसित होगी |
साहित्य विवेक के निर्माण के लिए साहित्येतिहास का अध्ययन जरूरी है |

CC हिन्दी कविता (आधुनिक काल छायावाद तक)

कविता के वाचन , लेखन विश्लेषण और विकसित होगी
| आधुनिक कविता की समझ विकसित होगी |

GE भाषा और समाज

भाषा और समुदाय को बदलते परिवेश में जानना |
भाषा और संस्कृति के मूल बिंदुओं की जानकारी प्राप्त करना |
सम्प्रेषण की सामाजिक समझ विकसित होगी |
भाषा के समाज शास्त्र का अध्ययन |

SEC विज्ञापन और हिन्दी भाषा

विभिन्न माध्यमों के विज्ञापनों के अध्ययन का अवसर मिलेगा |
इन क्षेत्रों रोजगार प्राप्त करने की योग्यता बनेगी |

(सेमेस्टर IV)

CC हिंदी उपन्यास

हिंदी उपन्यास के उद्भव और विकास का ज्ञान |
प्रमुख लेखकों के उपन्यासों का परिचय |

CC भारतीय काव्यशास्त्र

संस्कृत काव्यशास्त्र का ज्ञान प्राप्त होगा |

CC हिन्दी कविता (छायावाद के बाद)

छात्र कविता सीखने के साथ साथ वैचारिक मूल्यों को भी जानेंगे |
कविता के दोनों पक्षों भाव सौंदर्य और कला सौंदर्य को जाना जा सकेगा |

SEC भाषा और समाज

भाषा और समुदाय को बदलते परिवेश में जानना |
भाषा और संस्कृति के मूल बिंदुओं की जानकारी प्राप्त करना |

GE हिंदी भाषा का वैश्विक परिदृश्य

हिंदी की अंतर् राष्ट्रीय स्थिति का परिचय मिलेगा |
विकास के नए क्षेत्रों को चुनौतियाँ और उपलब्धियां पता चलेंगी |

(सेमेस्टर V)

CC पाश्चात्य काव्यशास्त्र

पश्चिमी काव्यशास्त्रीय चिंतनधारा की समझ विकसित होगी |

CC हिन्दी नाटक और एकांकी

स्त्री सशक्तिकरण के भाव को बल मिलेगा |
साहित्य , कला , प्रकृति और पर्यावरण के प्रति संवेदन शीलता विकसित होगी |

DSE हिंदी भाषा का व्यावहारिक व्याकरण

विद्यार्थी भाषा नियमों से परिचित होंगे |
भाषा के मानक रूप को स्थायित्व मिलेगा |

DSE भारतीय एवं पाश्चात्य रंगमंच सिद्धान्त

रंगमंच की विभिन्न पद्धतियों का परिचय मिलेगा |
नाटक रंगमंच के सबंध की जानकारी मिलेगी |

(सेमेस्टर VI)

CC हिन्दी आलोचना

रचना के विश्लेषण की क्षमता विकसित होगी |
रचना के गुण दोष का विवेशन करने की योग्यता बनेगी |

CC हिन्दी निबन्ध और अन्य गद्य विधाएं

विश्लेषण और रचना प्रक्रिया की समझ
प्रमुख हस्ताक्षरों का परिचय

DSE लोकनाट्य

लोक संगीत में रूचि उतपन्न होगी |
लोक भावना और भारत बोध के बीच संवाद होगा |

DSE अवधारणात्मक साहित्यिक पद

भारतीय एवं पश्चिमी आलोचना सिद्धांतों की जानकारी प्राप्त होगी |
अवधारणामूलक शब्दों का ज्ञान प्राप्त होगा |

6. B.A. (Hons.) History

Core Courses

History of India – I

Discuss the landscape and environmental variations in Indian subcontinent and their impact on the making of India's history. Describe main features of prehistoric and proto-historic cultures. List the sources and evidence for reconstructing the history of Ancient India. Analyse the way earlier historians interpreted the history of India and while doing so they can write the alternative ways of looking at the past. List the main tools made by prehistoric and proto- historic humans in India along with their find spots. Interpret the prehistoric art and mortuary practices. Discuss the beginning and the significance of food production. Analyse the factors responsible for the origins and decline of Harappan Civilization. Discuss various aspects of society, economy, polity and religious practices that are reflected in the Early Vedic and Later Vedic texts. Describe the main features of the megalithic cultures of the Central India, Deccan and South India.

Social Formations and Cultural Patterns of the Ancient World –I

Trace long term changes in the relationship of humans to their landscapes, to resources and to social groups. Discuss that human history is the consequence of choices made in ecological and biological contexts, and that these choices are not only forced by external forces like

environmental change but are also enabled by changes in technology and systems of cultural cognition. Delineate the significance of early food production and the beginning of social complexity. Analyse the process of state formation and urbanism in the early Bronze Age Civilizations. Correlate the ancient past and its connected histories, the ways in which it is reconstructed, and begin to understand the fundamentals of historical methods and approaches.

History of India – II

Discuss various kinds of sources that the historians utilize to write the history of early historical and early medieval India. Analyse the processes and the stages of development of various types of state systems like monarchy, republican and centralized states as well as the formation of large empires. Discuss the ways in which historians have questioned the characterization of the Mauryan state. Delineate the changes in the fields of agriculture, technology, trade, urbanization and society and the major points of changes during the entire period. Describe the factors responsible for the rise of a good number of heterodox religious systems and adjustments and readjustments by various belief systems. Trace the processes of urbanization and de-urbanization & monetization and monetary crisis in early India. Analyse critically the changes in the varna/caste systems and changing nature of gender relations and property rights. Write and undertake projects related to literature, science, art and architecture.

Social Formations and Cultural Patterns of the Ancient and Medieval World – II

Identify the main historical developments in Ancient Greece and Rome. Gain an understanding of the restructuring of state and society from tribe-based polities to those based on territorial identity and citizenship. Trace the emergence and institutionalisation of social hierarchies and marginalisation of dissent. Explain the trends in the medieval economy. Analyse the rise of Islam and the move towards state formation in West Asia. Understand the role of religion and other cultural practices in community organisation

History of India – III (c. 750-1200 CE)

Critically assess the major debates among scholars about various changes that took place with the onset of early medieval period in India. Explain, in an interconnected manner, the processes of state formation, agrarian expansion, proliferation of caste and urban as well as commercial processes. Discuss the major currents of development in the cultural sphere, namely bhakti movement, Puranic Hinduism, Tantricism, architecture and art as well as the emergence of a number 'regional' languages.

Rise of the Modern West – I

Outline important changes that took place in Europe from the medieval period. Acquire an integrated approach to the study of economic, social, political and cultural developments in Europe. Explain the processes by which major transitions unfolded in Europe's economy, state forms, social structure and cultural life. Examine elements of early modernity in these spheres. Critically analyse linkages between Europe's state system and trade and empire.

History of India – IV (c. 1200-1500)

Discuss different kinds of sources available for writing histories of various aspects of life during the thirteenth to the fifteenth centuries. Critically evaluate the multiple perspectives from which historians have studied the politics, cultural developments and economic trends in India during the period of study. Appreciate the ways in which technological changes, commercial developments and challenges to patriarchy by certain women shaped the times.

Rise of the Modern West – II

Explain major economic, social, political and intellectual developments in Europe during the 17th and 18th centuries. Contextualize elements of modernity in these realms. Discuss the features of Europe's economy and origins of the Industrial Revolution. Analyse the relationship between trade, empire, and slavery and industrial capitalism. Examine the divergence debate.

History of India – V (c. 1500-1600)

Critically evaluate major sources available in Persian and vernacular languages for the period under study Compare, discuss and examine the varied scholarly perspectives on the issues of the establishment, consolidation and nature of the Mughal state. Explain the changes and continuities in agrarian relations, land revenue regimes, Bhakti and Sufi traditions Discuss how different means such as visual culture was used to articulate authority by the rulers. Discern the nuances of the process of state formation in the areas beyond the direct control of the Mughal state.

History of India – VI (c. 1750-1857)

Outline key developments of the 18th century in the Indian subcontinent. Explain the establishment of Company rule and important features of the early colonial regime. Explain the peculiarities of evolving colonial institutions and their impact. Elucidate the impact of colonial rule on the economy. Discuss the social churning on questions of tradition, reform, etc. during first century of British colonial rule. Assess the issues of landed elite, and those of struggling peasants, tribals and artisans during the Company Raj.

History of Modern Europe – I

Identify what is meant by the French Revolution. Trace short-term and long-term repercussions of revolutionary regimes and Empire-building by France. Explain features of revolutionary actions and reactionary politics of threatened monarchical regimes. Delineate diverse patterns of industrialization in Europe and assess the social impact of capitalist industrialization. Analyse patterns of resistance to industrial capital and the emerging political assertions by new social classes.

History of India – VII (c.1600-1750)

Critically evaluate the gamut of contemporaneous literature available in Persian and non-Persian languages for the period under study. Describe the major social, economic, political and cultural developments of the times. Explain the intellectual ferment of the seventeenth

and eighteenth centuries and its relation to state policies. Discern the larger motives behind the Imperial patronage of art and architecture. Appreciate and express the continued expansion and dynamism of agriculture, crafts and maritime trade in India.

History of India – VIII (c.1857-1950)

Identify how different regional, religious, linguistic and gender identities developed in the late 19th and early 20th centuries. Outline the social and economic facets of colonial India and their influence on the national movement. Explain the various trends of anti-colonial struggles in colonial India. Analyse the complex developments leading to communal violence and Partition. Discuss the negotiations for independence, the key debates on the Constitution and need for socio-economic restructuring soon after independence.

History of Modern Europe – II

Trace varieties of nationalists and the processes by which new nation-states were carved out. Discuss the peculiarities of the disintegration of large empires and remaking of Europe's map. Deliberate on the meaning of imperialism and the manifestations of imperialist rivalry and expansion in the 19th and early 20th century. Analyse the conflict between radical and conservative forces, and the gradual consolidation of ultra-nationalist and authoritarian regimes in Europe. Contextualise major currents in the intellectual sphere and arts.

Discipline Specific Elective Courses

History of the USA: Independence to Civil War

Explain the evolving and changing contours of USA and its position in world politics. Examine the limits of American democracy in its formative stages. Analyse the character of early capitalism in USA and resultant inequities. Describe the economics of slavery in USA along with details of slave life and culture. Explain the main issues related with the Civil War in USA and its various interpretations.

History of Modern China (c. 1840s-1950s)

Develop an in-depth understanding of China's engagement with the challenges posed by imperialism, and the trajectories of transition from feudalism to a bourgeois/ capitalist modernity. To locate these historical transitions in light of other contemporaneous trajectories into a global modernity, especially that of Japan. Analyse significant historiographical shifts in Chinese history, especially with reference to the discourses of nationalism, imperialism, and communism. Investigate the political, economic, social and cultural disruptions caused by the breakdown of the centuries old Chinese institutions and ideas, and the recasting of tradition to meet modernist challenges. Comprehend the genesis and unique trajectories of the Chinese Communist Revolution. Locate the rise of China and Japan in the spheres of Asian and world politics respectively.

History of the USA: Reconstruction to New Age Politics

Explain the reasons for the implementation of 'Reconstruction' and the causes for its limited success. Analyse the growth of capitalism in USA especially in terms of big business,

Monopolosim, etc. Examine the features of Labour Union movements. Discern the history of Populist and Progressive movements along with introduction of New Deal in response to the Great Depression. Describe the nature of Women's Liberation movement and also explain the 'Pastoralization' of Housework. Illustrate the significance of Civil Rights Movements and Martin Luther King Jr.

History of Modern Japan (c. 1868-1950s)

Explain Japan's attempts to create new institutional structures and recast traditions to encounter challenges of the west. Analyse historiographical shifts in Japanese history in the context of global politics. Examine the divergent pathways to modernity followed by Japan. Examine distinct perspectives on imperialism and nationalism in East Asia, and understand how historiographical approaches are shaped by their contexts. Conceptualise how these distinct histories can be rooted in common cultural traditions. Locate and contextualise the history of Japan in world politics. Critically discuss contemporary international studies with much greater clarity based on the knowledge of history and culture of Japan.

Skill-Enhancement Courses (SEC)

Understanding Heritage

Explain the complex character of heritage. Analyse the historical processes which result into the making of heritage. Describe the significance of cultural diversity in the creation of heritage. Illustrate how heritage can be a medium to generate revenue. Discern the nuances of heritage and will appreciate its importance.

Indian Art and Architecture

Explain how Indian art was perceived and received in the west under colonial rule and its changing perspectives. This will set the template for examining its various manifestations. Through specific examples the student will be able to identify the historical context, socioeconomic processes that went in the formation of art and architectural forms. Identify the stylistic features of different genres of art. Discuss the iconography of art forms. Differentiate between high/courtly art, popular art/folk, and tribal art. Point out the continuity in patterns and regional variations. Elaborate patronage patterns, artist-patron relations and representation of gender.

Generic Elective - (GE)

Delhi Through the Ages: The Making of its Early Modern History

Analyse different kinds of sources -- archaeological, architectural and a variety of textual materials. Use these materials and correlate their sometimes-discordant information. Analyse processes of urbanization and state formation. Describe the difficulties in appropriating narratives of the state with the history of particular localities.

Issues in the Contemporary World: 1945-2000

To learn about development and Globalization, International relations like Post-War treaties and United Nations Organisation, Decolonisation (special focus on Algeria and Indonesia) and Cold War and superpower rivalries (special focus on impact on Vietnam and

Afghanistan). To learn about States and economies of United Kingdom, The Soviet Union and South Africa and Sudan. To learn about New social movements like the Chipko Movement and struggles for the Amazon, Race, class and gender movements in the USA, Struggles for democracy and rights in Myanmar and Student movements.

The Making of Contemporary India

To learn foundation of independent India. Envisioning a new economic order in terms of Agriculture and industry; Five Year Plans, Education, science and technology and Uneven development. To learn about Democracy at work and crisis after like Railway Strike, J.P. Movement and Emergency. To learn about The Public Sphere, Print media, Institutions of art and culture and Visual Media: cinema and television.

Inequality and Differences

To learn about Caste: varna and jati, Class, status and power, Gender and the household, Forms of bondage: slavery and servitude, Social distancing and exclusion; untouchability, Tribes and forest dwellers, Race and colonial knowledge & Equality and the Indian constitution

Ability Enhancement Compulsory Courses

Course Title: English / Hindi/ MIL Communication

Course Title: Environmental Sciences

7. B.A. (Hons.) Political Science

Paper I- Understanding Political Theory
After the course, the learner would understand various traditions and approaches of political theory and appreciate how they get reflected in organizing social living. Understand multiple frames by which the idea of political community is debated, understand the significance of theorizing and of applying theory into practice.

Paper II- Constitutional Government and Democracy in India
At the end of the course, students will be familiarized with the debates around the origin, and evolution of the Indian constitution, become aware of the manner in which government functions through its various organs, understand the division of power between various organs of the government at different levels.

Paper III - Political Theory-Concepts and Debates
After completing the course, the learner will be able to understand the dimensions of shared living (sociare) through these political values and concepts, appreciate how these values and concepts enrich the discourses of political life, sharpening their analytical skills in the process.

Paper IV- Political Process in India

At the end of the course, students shall gain insights into the interconnections between social and economic relations and the political process in India.Understand the challenges arising due to caste, class, gender and religious diversities and also analyse the changing nature of the Indian state in the light of these diversities. make sense of the specificities of the political processes in India in the light of changes of the state practices, electoral system, representational forms and electoral behaviour.

Paper V - Introduction to Comparative Government and Politics

This paper would enable student to understand the legacy of the discipline. Studying different political systems from different continents across the world will introduce students to a range of political regimes, culture and their political economy. Students will learn to delineate ways to understand how state relates to the economy and how culture shapes the political discourse in a particular context. It would enhance the ability of students to use analytical frame of gender, race, ethnicity and their intersectionality in comparative perspective. Students will develop reflective thinking and ability to ask relevant questions pertinent to the discipline and will also develop aptitude for research.

Paper VI - Perspectives on Public Administration

The student will be able to understand an overview of the discipline and how it is different from private administration. The student will be introduced to the evolution of the discipline, its changing contours through a study of the different theories, ranging from the classical, neo-classical and contemporary theories. The students will be better equipped to analyse processes of leadership and conflict management that have become increasingly significant in contemporary administration. The student learns about major contemporary approaches in public administration.The student is specially made sensitive to the feminist perspective in Public administration.

Paper VII- Perspectives on International Relations and World History

The students will have a comprehensive understanding of both historical processes and contemporary practices in International Relations. Major theoretical perspectives will broaden the critical insight and inculcate among students the significance and rigor of the study of international relations. The paper will go beyond eurocentrism in international relations and reflect on the global South perspectives. It will evolve analytical skills to further explore both theoretical and actual key milestones in international relations.

Paper VIII - Political Processes and Institutions in Comparative Perspective

The paper will equip students with an in-depth understanding of different political systems and regime types. Students would be able to contrast unitary and federal, democratic and authoritarian systems. It will help students to develop analytical skills to reflect institutional structures and their functioning such as party systems, electoral systems. It will provide insight into the process of evolution of nation state in the context of West and post-colonial societies. Students will develop insights into the process of democratization in post-colonial, postauthoritarian and post-communist societies.

Paper IX - Public Policy and Administration in India

The student is introduced to theoretical perspectives on public policy, a major subdiscipline of public administration. This is a paper devoted specially to the Indian context, so the student will become familiar with details of public policy adopted in India.Students will recognize the significance of local governance – both rural and urban. The students will become familiar with a range of budgetary procedures and practices, as part of the budget cycle in India. The student is exposed to mechanisms of grievance redressal and a range of specific social welfare policies.

Paper X - Global Politics

The students will have conceptual clarity on meaning, nature and significance of globalization. The students will learn about the contemporary debates on the discourse of globalization. The students will also learn about the rise of financial networks and major actors of global economy and their impact on state and sovereignty.The paper will enhance students' understanding of contemporary global issues like proliferation of nuclear weapons, ecology, international terrorism and human security.The paper will develop analytical skills of the students to reflect on the phenomenon of global governance.

Paper XI - Classical Political Philosophy

By the end of the course students would be able to understand how to read and decode the classics and use them to solve contemporary socio-political problems. Connect with historically written texts and can interpret it in familiar way (the way Philosophers think). They can clearly present their own arguments and thoughts about contemporary issues and develop ideas to solve them through logical validation.

Paper XII - Indian Political Thought - I

Having successfully completed this course, student will be able to demonstrate knowledge and understanding of basic concepts of ancient and medieval Indian political thought that are prevalent traditions of thought in India and develop a comparative understanding of Indian and western political thought. This course will also help students to identify and describe the key characteristics of Indian political thought and develop a strong understanding of selected historiographical debates.

Paper XII - Indian Political Thought - II

The course is aimed to equip students with critical understanding about modern Indian thought. The thematic exploration of ideas is meant to locate the topical debates on important subjects on a historical trajectory and reflect over the diverse possibilities exhibited in the writings of the respective thinkers. It is expected that at the end of the course the students will be able to think about issues and debates in contemporary India from multiple vantage points including its historical significance in the Indian tradition. It would also help them develop toleration and respect for diverse opinion and at the same time, to admire and appreciate the plurality within the modern Indian intellectual tradition.

Paper XIII - Modern Political Philosophy

By the end of the course students would be able to:Understand the idea of modernity and establish a connection between societal changes posed through modernity and its prescribed political suggestions. Identify various tendencies in political philosophical discourse and manage to answer various fundamental questions through problem-solving aptitude.

Discipline specific Elective Papers (DSE):

DSE1 - Citizenship in a Globalizing World

After completing this course students will be able to develop a broad historical, normative and empirical understanding of the idea of citizenship. Understand different trajectories of the development/evolution of the concept of citizenship. Understand/assess some of the major ethical challenges that citizenship faces in the wake of globalization and the rapidly proliferating idea about the need of accommodating diversity in multicultural political settings.

DSE2 - Human Rights in a Comparative Perspective

The course will equip students with an understanding of debates on human rights through a comparative study of human rights concerns in different countries. While keeping India as a common case study in all thematic analyses, it will familiarise students with the historical evolution of human rights and the theoretical frameworks and core themes that inform the debates on human rights. The course will enhance the students' understanding of state response to issues and human rights questions pertaining to structural violence, such as torture, terrorism, insecurity of minority communities, caste, race, gender-based violence and rights of adivasis from the human rights perspective.

DSE3 - Development Process and Social Movements in Contemporary India

On successful completion of the course, students would be able to:
Show knowledge of development policies and planning in India since independence. Understand the development strategies and their impact on industrial and agricultural sphere. Understand the emergence of social movements in response to the development policies adopted by successive governments. Demonstrate awareness of the different trajectories of specific social movements in India,their demands and successes.

DSE4 - Public Policy in India

The student is introduced to the range of ideologies that influence the policy-making process.The student learns how to relate public policies to politics. The student learns how to relate public policies to the political economy.The student is able to have a grasp of the role of social movements and interest groups in the making of public policy.

Generic Elective - (GE)

GE1 - Nationalism in India

On successful completion of the course, students would be able to Gain an understanding of the different theoretical perspectives on the emergence and development of nationalism in

India .Demonstrate knowledge of the historical trajectory of the development of the nationalist movement in India, with specific focus on its different phases, understand the contribution of various social movements in the anti-colonial struggle, demonstrate awareness of the history of partition and the moment of independence that followed.

GE2 - Contemporary Political Economy

The students will learn about diverse approaches to international political economy. The study of role of international organization in transforming the world economy will equip the students to understand the process of evolution of capitalism. Insights into issues and contentions of development and perspectives on globalization will augment students' ability to assess its impact on culture, environment, militarysecurity dimensions and traditional knowledge systems.The paper will enable students to comprehend contemporary dilemmas in the sociopolitical, gender and ethnic domains.

GE3 - Women, Power and Politics

After completing this course the students will be able to: Understand the concept of patriarchy, feminism, family, community and state. Understand the history of women's movement and why these movements emerged, and hence would be able to connect theory and practice.

GE4 - Gandhi and the Contemporary World

This course will help students to understand Gandhian philosophy in a critical and analytical manner. It will also help in describing the impact of Gandhian thought on Indian and global politics. It will help in identifying and explaining selected approaches and methods that historians have used to study the history of anti-colonial Indian politics.

8. B.A. (Hons.) Sanskrit

<u>Core Courses</u>

Classical Sanskrit Literature (Poetry). (12131101)

This course will help the students develop a fair idea of the works of great Sanskrit poets. They will be able to appreciate the styles and thoughts of individual poets focusing on the poetical, artistic, cultural and historical aspects of their works. This course will enhance competence in chaste classical Sanskrit and give them skills in translation and interpretation of poetic works

C-2:Critical Survey of Sanskrit Literature (12131102)

This course will help the students develop a fair idea of the works of great Sanskrit seers. They will be able to improve their knowledge about philosophy, socio-religiouslife, polity as depicted in the prescribed areas of study. This course will also introduce them to three important śāstras.

GE-4 :Basic Principles of Indian Medicine System (Ayurveda) (12135904)

Graduates who read this course should be able to know the ancient tradition of Indian Medicine system, which has focused not only to the physical health but a healthy lifestyle. After reading this paper students will know the history of Āyurveda through original sources of ancient medicine system enshrined in Sanskrit texts like Charaka Saṁhitā, Śuśruta Saṁhitā, Aṣtānṅga H□daya etc. and they will also get the basic knowledge of eight departments of Āyurveda.

Second section of this paper is related to ancient physiology. In this section students will get acquainted with the basic concept of Triguṇa, Pa□camahābhūtas , Tridoṣas, Saptadhātus, Trayodosāgni, Trimalas, SvasthaVṛtta etc. which will help students to develop Āyurvedic understanding of lifestyle and concepts of preventive medicine. Āyurveda prescribes different food habits in different seasons. After reading this section students will be able to understand seasonal regimen & social conduct and its effect on health. It will develop their understanding of Health and Disease as explained in Āyurveda, and the way of diagnosing the illness.

Third section of this paper is related to the Dietetics, Nutrition and Treatments in Āyurveda. Students will get to know the Āyurvedic point of view on nutrition and metabolism, Classification of Āhāra (compatible foods) according to Āyurveda and Viruddhāhāra (incompatible diet) & role of diet. After reading this section students will get the basic knowledge of Āyurvedic treatments, their method and classification of treatments, like Pa□cakarma, Therapeutic vomiting (Vamana), Purgation Therapy (Virechana), Enema (Basti), Nasal Administration – Nāsya, Blood Letting (Raktamokṣaṇa) etc.

Last section of the paper is related to medicinal plants. Students will get equipped with the knowledge of some extremely important plants which are available in their surroundings like Tulsī, Haridrā, Gh□takumārī, Brāhmī, Āmalā, Aśwagandhā, Neema Plant etc. and will be able to use them in necessity

C-3: Classical Sanskrit Literature (Prose) (12131201)

The course will enable students to familiarize themselves with some leading classical prose works and the individual literary styles of their authors. After the completion of this course the learner will be exposed to the socio-cultural conditions of the Indian society as reflected in the prescribed texts. They will acquire skills in advanced Sanskrit communication.

C-4 Self-Management in the Gītā (12131202)

This course will help students to learn to read the Gītā as a multipolar text which is open to several alternative interpretations. This course will equip them with the practical skills to negotiate conflicts and emotional disturbances and define and pursue their goals with clarity and dedication. The course will instill leadership qualities in learners and also help them to grow as balanced and successful human beings who can face the challenges of life successfully.

GE-10Individual, Family and Community in Indian Social Thought (12135910)

Students will learn about important ethical and philosophical issues concerning realtions between the individual and society. They will learn about the metaphysical background in

which ethical solutions are offered. It will also expose them to controversial social issues and allow them to develop the sensitivity required to handle social tensions. This course will also help learners to develop a positive approach towards nature.

Semester 3: C-5 Classical Sanskrit Literature (Drama) (12131301)

After completion of this course the students will be aware about the beauty and richness of classical Sanskrit dramatic tradition. This course will enhance the ability for critical thinking on issues of culture, polity, morality, religion etc as reflected in the prescribed texts The course will make the students aware of the formal structures of Sanskrit drama in the tradition of Bharata's natya Shastra.

C-6: Poetics and Literary Criticism (12131302)

This course will make students acquire skills to assess the merits or demerits of works on poetry, prose and drama. They will be able recognize the various genres of poetry, appreciate the objectives of poetry and also analyze the structure of a work in terms of the essential ingredients of poetry as propounded. Students will be inspired and encouraged to compose.

C-7 Indian Social Institutions and Polity (12131303)

After the completion of this course students will be able to connect the theoretical model propounded by the prescribed texts in the forms of saptanga theory, shadguna theories and mandala theories with contemporary governance issues . The learners will be able to see Dharma as dynamic institution. This will free them from the traces of fundamentalism and they should become more open minded and liberal. Learning and developing a critical approach about the institution of caste and women's issues will make the participants sensitive to discriminating practices.

GE-2 Indian Culture and Social Issues (12135902)

The first unit of this section aims at the basic understanding of culture and civilization at large dimensions, on the basis of which they will be able to evaluate Indian culture in modern terminologies. The second unit deals with evolution of Indian culture through different ages from ancient times to the modern age with the symbiosis of alien elements e.g. Islamic and other foreign traditions.

The third unit aims at highlighting the undercurrent of Sanskrit-led culture in vernacular as well as urban shades of cultural life. By studying this course a student will be able to perceive India' various cultural identities as enriched by Sanskrit language and literature. In this section the student would be acquainted with the fundamental principles of indigenous law and statutes from original Sanskrit sources e.g. Mahabharata, Manusmriti, Yajnvalkya Smriti etc. The student will also be able to understand the status and rights of women in ancient Indian society.

They will be aware the elasticity and adaptability of Hindu code of conduct as its essential quality, with the change and demand of time. This section would inculcate among the students the capability of debating and ways of arousing valid questions within and to the tradition and find out the efficient answer to cope up with the modern problems.

C-8: Indian Epigraphy, Paleography and Chronology (12135908)

This course will equip students with the necessary tools for the study of Indian inscriptions. They will learn ancient scripts and use their knowledge in studying more inscriptions later. Students will be able to read, collate and interpret inscriptions to reconstruct history. Thus, it will be useful for students who are interested in pursuing advance study in archaeology.

C-9: Modern Sanskrit Literature (12131402)

This course will enable the students to appreciate the Mahākāvya and Charitakāvya, Gadyakāvya , Rūpaka, GītiKāvya and Other genres and General Survey of Modern Sanskrit Literature. It will create an awareness of the modern historicity of the modern Sanskrit literature.

C-10: Sanskrit World Literature (12131403)

Scholars who pursue this course will learn about the cultural contacts between India onthe one hand and Europe, West Asia and South East Asia on the other during different phases of history. They will also see how colonialism distorted India's achievements in knowledge production. They will become aware of Indo European linguistic and cultural affinities, spread of Indian fables, the Upanishads, the Gita and Kalidasa's works in the west. They will be able to appreciate the close relation between Upanishadic thought and Sufism. They will study how Sanskrit literature has impacted India's cultural ties with South East Asian countries.

GE-11: Nationalism and Indian Literature (12135911)

After completing this course, students will realize about the importance of Nation in their upbringing. They will have admiration for their Nation and will like to know more and more about the National heritage. Socio-Religious Nationalist thoughts of our seers, freedom fighters, and modern thinkers will give them wider vision to understand Nationalism. The study of important and famous poems of Sanskrit, Hindi, and Urdu poets will create new interest and social harmony in students.

C-11: Vedic Literature (12131501)

By reading these texts, students will have an impression of the depth of Vedic knowledge and will be able to realize that ideas of Vedic seers are based on philosophical, moral, and scientific principles. By understanding them, students will be able to know and achieve some higher attributes from Vedic heritage about our culture, morals, and thoughts. Thus they may develop curiosity to know more about other Vedic texts and concepts as well.

After completing this course students will surely be able to communicate about some important Vedic verses with their meaning and teaching, and thus fundamentals of religious life of India will be revealed to them in its true form.

Students will understand the strength of Unity, power of mind, and will realize the importance of earth in their life. From the study of Upaniṣad they will know about philosophical and Psychological insights of our ancestors and can develop this learning further for the benefit of themselves in particular and society in general.

C-12: Sanskrit Grammar: Laghusiddhāntkaumudī (12131502)

After completion of this course students will understand the basic structural nuances of Panini's grammar. They will become familiar with fundamental samdhi and compounding patterns. They will also understand some most important primary and secondary suffixes of Sanskrit. The practice of the application of the rules learnt from the reading of the texts will further enhance their knowledge of the structural patterns of Sanskrit language.

Discipline specific Elective Papers (DSE):

DSE-2 Art of Balanced Living (12137902)

Graduates who read this course will acquire the necessary tools for a balanced life. They will know the true essence of listening (acquisition of information) manana (reflection) and nididhyasana (unflinching commitment). In this segment students can learn how to improve concentration. They will be able to identify the causes for indecisiveness and confusion and will learn how emotional stability can lead to clearer thinking. This section will help students to understand the importance of Ashtang yoga and Kriyayoga for the purification of mind. Team work and social cohesion require inter personal skills. Here students will know how to improve their behaviour through jnana, dhyan, karma and bhakti yoga. Students will also understand how active engagement with action is most conducive to healthy and successful living.

DSE-7 Fundamentals of Āyurveda (12137908)

Graduates who read this course should be able to know the ancient tradition of Indian Medicine system, which has focused not only to the physical health but a healthy lifestyle. After reading this paper students will know the history of Āyurveda through original sources of ancient medicine system enshrined in Sanskrit texts like Charaka Saṁhitā, Śuśruta Saṁhitā, Aṣṭāṅṅga H□daya etc. and they will also get the basic knowledge of eight departments of Āyurveda.

Second section of this paper is related to ancient physiology. In this section students will get acquainted with the basic concept of Triguṇa, Pa□camahābhūtas , Tridoṣas, Saptadhātus, Trayodosāgni, Trimalas, SvasthaVṛtta etc. which will help students to develop Āyurvedic understanding of lifestyle and concepts of preventive medicine. Āyurveda prescribes different food habits in different seasons. After reading this section students will be able to understand seasonal regimen & social conduct and its effect on health. It will develop their understanding of Health and Disease as explained in Āyurveda, and the way of diagnosing the illness.

Taittirīyopaniṣad - Bh□guvalli will be taught in the third section of this paper. Our Ṛṣis were not only concerned about the physical health of individuals but also about the holistic health i.e. including mental, social and spiritual well being. By reading this portion of Upaniṣad student would develop a more balanced approach towards life.

C-13: Indian Ontology and Epistemology (12131601)

Students will become familiar with primary and one of the most important and influential school of Indian Philosophy i.e. Nyaya-Vaisesika through its basic text the Tarkasangraha. They will also be introduced to essential problems in philosophy -Causation, Ontology and

Epistemology. This will enable them to engage with other texts in Indian philosophy with some ease.

C-14 Sanskrit Composition and Communication (12131602)
This course will help the learners develop a critical, linguistic and scientific approach towards Sanskrit language. The practice of essay writing will make the students form ideas and express them in Sanskrit. This practice will also familiarise them with various shastric theories.

DSE-3 Theatre and Dramaturgy in Sanskrit (12137903)
After going through this course students will be able to know about several theoretical aspects of theatrical performance and production. They will become aware of the many types of theatres, their design and construction and stage setting for various kinds of dramas in ancient India. Students will also become familiar with the main principle of theatre performance and appreciation.

DSE-5 Sanskrit Linguistics (12137905)
Students will develop a scientific approach to the study of languages; they will become aeare of the linguistic structure of Sanskrit and see its close relation with the Avestan and Prakrits.

9. B.A. (Hons.) Business Economics

Core Courses

Micro Economics and Applications-I (BBE C1)
To analyse the market behaviour by understanding the basic concepts of micro economics. To provide students with an understanding of the standard theoretical analysis of consumer and producer behaviour. To know the applications of theory of production and cost structure
To study various forms of market structure and how they work to allocate resources and the optimal decision making for efficient outcome. To relate the concept with the corporate world example economies of scale.

Accounting for Managers (BBE C2)
By the end of this course, the students shall Comprehend company annual reports and understand the flow of information contained therein, Develop analytical skills associated with the interpretation of accounting reports, Become capable of systematically applying cost & management accounting concepts in real life situations, Develop judgmental skills associated with the use of accounting information in decision making

Micro Economics and Applications-II (BBE C 3)
To analyse a firms profit maximising strategies under the various oligopoly models. Explaining the role of game theory in understanding the behaviour of oligopolies and its relevance in the present scenario. To understand efficient allocation of inputs through General equilibrium analysis. To analyse the conditions of economic welfare and analyse the

factors that determine welfare. Identify the causes of market failure to provide efficient outcome.

Mathematics for Business Economics (BBE C 4)

Students after completing this course will be able to:Build its mathematical base which is necessary for other courses. Use its mathematical knowledge in business decision making. Make and refute arguments by her mathematical understanding.

Macro Economics and Applications-I (BBE C 5)

Student will be able: To understand basic concept of circular flow of income in open and closed economies and different approaches to measurement of National Income. To be able to differentiate between various national income aggregates, stocks and flows, nominal and real macroeconomic variables. To identify and derive money market and goods market equilibrium conditions and understand the interaction between the two. To apply closed economy IS-LM model for effectiveness of Fiscal and Monetary policies in the short run.To derive aggregate demand and aggregate supply schedules and use if to differentiate between effects of policy in short run and medium run. To analyze closed economy policy mix and its applicability to developing economies.To identify medium run impact of inflation and the nature of the inflationunemployment trade -off. To understand root causes of the great depression & it's after effects. To introduce students to latest developments in the field of macroeconomics using real business cycle model.

Statistics for Business Economics (BBE C 6)

Student will be able to Master the Fundamentals of Probability Theory. Learn the concepts and tools of Sampling and Estimation. Develop skills in statistical computing, statistical reasoning and inferential Methods. Comprehend and analyze real data like real indices and provide students with both descriptive and analytical methods for dealing with the variability in observed data. Make intelligent judgments and informed decisions in the presence of uncertainty and variation. Clarifying and quantifying natural phenomena.

Corporate Finance (BBE C 7)

Students will able to learn the role and objectives of financial management in business corporations. To focus on developing skills to analyse corporate behaviour during procurement and development of resources. To understand the concepts, vital tools and techniques applicable for financial decision making by a business firm. To analyse and compute the working capital requirement, cash management and dividend models.

Macro Economics and Applications-II (BBE C 8)

Student will be able to understand basics of consumption function and different hypotheses regarding aggregate consumption behavior. To be able to identify important determinants and differentiate between different models of investment. To understand concepts relating to Balance of Payments and exchange rate determination under alternate exchange rate regime in an open economy. To apply open economy macroeconomic IS-LM model and find out effectiveness of Monetary and Fiscal policies in the short run. To analyze open economy

policy mix and its applicability to developing economies. To derive aggregate demand and aggregate supply for an open economy and differentiate the policy effect in short run and medium run. To identify and understand factors determining long run growth and inter-country variations in growth experience using Solow growth model.To introduce students to specific issues in monetary and fiscal policy such as Inflation targeting and Sustainability of Public Debt.

Basic Econometrics (BBE C 9)

Students will be able to:Explain Key econometric concepts. Formulate simple econometric models, Interpret the regression results obtained from software packages. Identify the errors in regression models and rectify the same. Analyze the suitability of the data for solving the problem at hand

Marketing Management (BBE C 10)

Students will be able to explain how organisations effectively use the marketing mix often called the four P's of marketing to market to their target customers. Apply the knowledge, concepts and tools such as Michael Porters model, BCG matrix, Ansoff matrix and SWOT Analysis to understand the challenges and issues of marketing in a competitive environment. Define important terms like brand, brand identity, brand equity and brand repositioning and how to devise a successful branding strategy. Predict the costs and benefits associated with different pricing strategies and marketing channels for the marketers. Classify the common methods used for integrated marketing communication like advertising, sales promotion, events and experiences, public relations and publicity, direct marketing, interactive marketing, word of mouth and public selling. Correctly represent and outline measures taken by the companies to encourage ethical behaviour and rightly demonstrate their social responsibility.

Quantitative Techniques for Management (BBE C 11)

Student will be able to:Identify and develop operational research models and understand how to translate a real-world problem, given in words, into a mathematical formulation. Understand the mathematical tools that are needed to solve optimization problems like linear programming, transportation and assignment problems. Make use of Network analysis to plan, schedule, and control project activities. Formulate and solve network problems using graph optimisation algorithms. Propose the best strategy using decision making methods under uncertainty and game theory. Use relevant software for solving the techniques learnt in theory for optimization.

Organisational Behaviour (BBE C 12)

Student will be able to understand psychology theories and research at individual, group and organizational levels. Analyze how these theories and empirical evidence can help to understand contemporary organizational issues. Understand organizational behaviour and management practices by examining psychological principles. Imbibe the critical evaluation of organizational practices and their impact on work behaviors, attitudes and performance. Apply theories to practical problems in organizations in a critical manner.

International Economics (BBE C 13)

Student will be able to understand basic concept and origin of International economics through the prism of classical and new classical trade theories. To understand different terms of trade and their applicability. To differentiate between Modern and Classical Trade theories. To derive offer curve of a nation using general equilibrium approach .To analyze how demand and supply changes affect countries Term of Trade. To understand how international trade impact factor prices. To understand the different trade instruments. To analyze the effect of tariff and non- tariff barriers using the partial equilibrium approach. To grasp theory of custom unions and its different model.To know different components of Balance of payments and theories of balance of payments. To gain knowledge about WTO and its roles. To know about recent developments in trade talks under WTOs ministerial conferences.

Legal Aspects of Business (BBE C 14)

Students will be able to Understand business legislation and need for amendment of old laws. Understand the laws applicable to business and apply their knowledge of laws in recent/ different business cases. Appreciate different branches of law applicable in specific conditions. Identify the need and application of laws in commercial situations.

Skill Enhancement Course (SEC)

Personality Development & Interpersonal Skills (BBE SEC 2)

Student will be able to Conduct detailed self- introspection centering around strengths, weaknesses, relationships, goals, motives and dependence. Recognise and appreciate that warmth, genuineness and unconditional positive regard are the basis of good relationships. Recognize and appreciate the seven habits and imbibe them gradually into daily life through regular practice. Prioritise work, use planners, recognize and appreciate the importance of time management. Understand the building blocks of effective interpersonal skills. Learn to accept emotions, recognise and appreciate the importance of emotional intelligence.

Research Methods and Statistical Packages (BBE SEC 3)

Students will be able to Assess the roles of the researcher and the informant in the research process and be in a position to apply qualitative and quantitative research methodology. Apply the probability rules and basic concepts relating to discrete and continuous random variables studied in core theoretical subjects in making effective business and economic decisions. Provide understanding of appropriate statistical techniques for summarizing and displaying business and economic data. List a variety of formal inference procedures like correlation, regression, t-test and analysis of variance test which helps in statistical reasoning and performing exploratory analysis of data. Identify statistical tools needed to solve various business problems. Perform the basic qualitative and quantitative data analysis in a clear concise and understandable manner with an in-depth, faster and accurate univariate, bivariate and multivariate data analysis.

Discipline specific Elective Papers (DSE):

Security Analysis and Portfolio Management (BBE DSE 1A)

After completing the course successfully,student should be able to: List given types of financial instruments and explain how they work in detail. Contrast key characteristics of given financial instruments. Briefly recall important trends in the markets, trading and financial instruments. Name key facts related to the return and risk of bond and equity markets. Understand key facts of the mutual fund industry. Explain the fundamental drivers of diversification as an investment strategy for investors. Discuss measures of portfolio risk-adjusted performance in detail and critically analyse the key challenges in employing them. Competently identify established risk management techniques used.

Derivatives and Currency Markets (BBE DSE 1B)

Course Learning Outcomes Learning Outcomes Students will be able

To understand the functioning of derivatives and foreign exchange markets.To gain the knowledge of International financial system. To know how derivatives function in financial market. To imbibe the knowledge about different trading and hedging strategies and working of models which explain the pricing of derivatives. To understand the principles of trading in foreign exchange markets, different instruments traded , risks involved and hedging of currency risks.

Indian Financial System (BBE DSE 1C)

After studying this paper the student will be able to:

Describe the Indian Financial System and various financial sector reforms. Understand how the new securities are issued to Investors. Define the secondary equity market which further evaluates the significance, structure, participants, equity market indices and raising funds through international markets. Elucidate the market in which money is created. Discuss the significance of interbank markets in money creation.

Consumer Behaviour and Advertising (BBE DSE 5A)

To recognize the theories of personality and appreciate their working in advertisements. To learn how human biases influence consumer perception of brand advertisement and to appreciate how attitudes influence purchase. To understand how Innovative products receive acceptability in the market. To gain insight into the working of advertising agencies. To analyze and interpret the advertisement objectives, appeals and formats. To understand the use of creative briefs for creating effective advertisements meeting pre-identified advertising goals.

Marketing Analytics (BBE DSE 5B)

Student will be able to: Explain the power of Marketing Analytics, Big Data and Search Engine Optimization. Identifying valuable business opportunities for driving marketing decisions and improving return on investment. Identify and explore the marketing opportunities, company examples, and organizational implications of marketing analytics. Use marketing analytics as a tool to drive superior growth. Apply the concept and insights into well-designed products and offers that delight the customers by recognizing the digital marketing landscape. Perform effective analysis of customers by identifying their true worth

for an organization. Deliver well designed focused marketing campaigns that improves the firm revenues and profitability in a sustainable manner. Understand the essential metrics that quantifies the vast majority of marketing activities and recognize the relevance of building an online marketing strategy around SEO.Predict the future of Analytics and understand the importance of business intelligence.

Generic Elective - (GE)

Digital Marketing (BBE GE 2)

Students will be able to identify and explore the marketing opportunities, company examples, and organizational implications of marketing. To understand the integration of traditional marketing with Digital Marketing. To explore current practice, theory and applied skills in Digital Marketing for individuals. To use digital marketing as a tool to drive superior growth. To leverage the digital strategies to gain competitive advantage for business and career. To harness the power of Digital Marketing as a core driver of the marketing strategy for any organisation. To understand the technical know-how and insight to build & maintain an effective digital strategy. To Examine various tactics for enhancing a website's position and ranking with search engines. To understand the framework and digital tools needed to meet the challenges of our economy today and tomorrow.

Statistical Techniques (BBE GE 3)

Students should be able to Learn tools and concepts of data analysis and interpretation. Master the fundamentals of probability theory. Develop skills in statistical computing, statistical reasoning and inferential methods. Comprehend and analyse real data like real indices.

Fundaments of Finance for Business (BBE GE 5)

After studying this paper the student should be able to Describe the meaning, scope and sources of Finance. Understand the types of financial markets and role of regulators in Indian financial system. Define the depository and non-depository financial institutions in India. Describe the mutual fund industry with its scope, operation, types of funds offered with evaluation of fund performance. Discuss the contemporary financial services in India.

International Business (BBE GE 6)

Student will be able to understand the concept and examine the major drivers of international business. To examine the different facets of the economic, political, legal and cultural environment of an international business. To review the factors responsible for the emergence of India as a major outsourcing destination. To understand various theories of international trade and its relevance in present.

10.B.Com (Programme)

Paper BC 1.2: FINANCIAL ACCOUNTING

After completing the course, the student shall be able to: build an understanding of theoretical framework of accounting and be able to prepare financial statements. explain and determine

depreciation and inventory value develop understanding of accounting for hire purchase transactions and lease transactions understand branch and departmental accounting develop the skill of preparation of trading and profit and loss account and balance sheet using computerized accounting or prepare accounts for dissolution of a partnership fir.

Paper BC 1.3: BUSINESS ORGANISATION AND MANAGEMENT

After completing the course, the student shall be able to: understand dynamics of business organisations and management practices with respect to stakeholders. understand varied perspectives related to business environment and entrepreneurship, analyze how organisations adapt to an uncertain environment and decipher decision making techniques managers use to influence and control the internal environment, analyze the relationship amongst functions of management i.e. planning, organizing, directing and controlling. appreciate the change in working pattern of modern organisations.

Paper BC 2.2: BUSINESS LAWS

After completing the course, the student shall be able to: understand basic aspects of contracts for making the agreements, contracts and subsequently enter valid business propositions. handle the execution of special contracts used in different types of business. learn legitimate rights and obligations under The Sale of Goods Act. acquire skills to initiate entrepreneurial ventures as LLP.understand the fundamentals of Internet based activities under The Information and Technology Act.

Paper BC 2.3: BUSINESS MATHEMATICS AND STATISTICS

After completing the course, the student shall be able to:
acquire proficiency in using different mathematical tools (matrices, calculus and mathematics of finance) in solving real life business and economic problems. develop an understanding of the various averages and measures of dispersion to describe statistical data, understand the relationship between two variables through correlation and regression, understand the construction and application of index numbers to real life situations, understand the trends and tendencies over a period of time through time series analysis.

Paper BC 3.1: COMPANY LAW

After completing the course, the student shall be able to: understand the rules and the broader procedural aspects involved in different types of companies covering the Companies Act 2013. Comprehend and appropriately use the basic legal documents essential for operations and management of company. Distinguish between varied company processes, meetings and decisions. Know the framework of dividend distribution and role of auditors in a company. Understand and evaluate working of depositories and their functions for working in stock market.

Paper BC 3.2: INCOME TAX LAW & PRACTICE

After completing the course, the student shall be able to: understand the basic concepts in the law of income tax and determine the residential status of different persons. Identify the five heads in which income is categorised and to compute income under the heads ‘Salaries’ and

‘Income from House Property’. Compute income under the head ‘ Profits and gains of business or profession’, ‘Capital gains’ and ‘Income from other sources’. Understand clubbing provisions, aggregate income after set-off and carry forward of losses, and deductions allowed under the Income Tax Act. Compute tax liability of individuals and firms and understand the provisions of filing return of income.

Paper BC 3.4 (a): COMPUTER APPLICATIONS IN BUSINESS

After completing the course, the student shall be able to: handle document creation for communication. Acquire skills to create and make good presentations, make various computations in the area of accounting and finance and present business data using appropriate charts. Process and analyze the business data and generalize the work sheets for better understanding of the business environment and decision making, understand and apply the various database concepts and tools in the related business areas.

Paper BC 4.2: CORPORATE ACCOUNTING

After completing the course, the student shall be able to: develop an understanding of accounting for share capital and debentures. prepare financial statements of a company. develop understanding of cash flow statements. understand the accounting for amalgamation of companies. prepare consolidated balance sheet for Holding company

Paper BC 4.3: COST ACCOUNTING

After completing the course, the student shall be able to: understand conceptual framework of Cost Accounting. understand in detail the accounting and control of material and labour cost. understand classification, allocation, apportionment and absorption of overheads in cost determination. calculate the cost of products, jobs, contracts, processes and services. Have basic understanding of cost accounting book keeping systems and reconciliation of cost and financial account profits.

Paper: BC 4.4 (a): E-COMMERCE

After completing the course, the student shall be able to: understand the basics of E-commerce, current and emerging business models, familiarize with basic business operations such as sales, marketing, HR etc. on the web, enhance the students' skills for designing and developing website. identify the emerging modes of e-payment. understand the importance of security, privacy, ethical and legal issues of ecommerce.

Paper BC 5.1 (b): PRINCIPLES OF MARKETING

After completing the course, the student shall be able to: develop understanding of basic concepts of marketing, marketing philosophies and environmental conditions effecting marketing decisions of a firm, understand the dynamics of consumer behaviour and process of market selection through STP stages. learn about marketing decisions related to product produced by a firm, learn about marketing decisions involving product pricing and its distribution, learn marketing decisions involving product promotion.

Paper BC 5.2 (a): FUNDAMENTALS OF FINANCIAL MANAGEMENT

After completing the course, the student shall be able to: explain the nature, scope and objective of financial management, along with Time Value of Money, Risk & Return. analyze Capital Budgeting Process and Techniques including NPV, IRR and Profitability Index. examine various Capital structure theories and estimating cost of capital. critically examine basic Theories and policies of Dividend. Estimate working capital along with an overview of cash receivables and inventory management.

Paper BC 5.3 (a): ENTREPRENEURSHIP DEVELOPMEN

After completing the course, the student shall be able to: understand the concept of entrepreneurship in the context of Indian economic scenario, link the individual's capability and strength as a guiding factor towards entrepreneurial orientation and their commitment to act as an agent of social change through entrepreneurial participation. understand entrepreneurial process for initiating new venture creation, understand social support system for garnering strength towards entrepreneurial preferences. understand various dimensions of managing a business enterprise once it is formed.

Paper BC 6.1 (c): MANAGEMENT ACCOUNTING

After completing the course, the student shall be able to: understand thoroughly the conceptual framework of Management Accounting; different forms of accounting—Financial, Cost and Managerial; types of costs for decision making and cost control; cost control and cost reduction. Understand the concept of marginal cost and marginal costing; preparation of income statements using absorption and variable costing; learning of cost-volume-profit analysis and break-even analysis using mathematical and graphical approaches; and their application in businesses. understand the concept of relevant cost and make decisions related to different business situations using marginal costing and differential costing techniques.understand preparation of various types of budgets and budgetary control system as a tool of managerial planning and control; Ability to understand standard costing system as a tool of managerial control; calculation of variances in respect of each element of cost and sales; control ratios. have basic understanding of techniques of performance measurement such as Responsibility Accounting, Divisional Performance Measurement and Transfer Pricing.

Paper BC 6.2 (a): INTERNATIONAL BUSINESS

After completing the course, the student shall be able to:

understand the process of globalization, its impact on the evolution and growth of international business and to appreciate the changing dynamics of the diverse international business environment. Analyze the theoretical dimensions of international trade and intervention measures adopted; to appreciate the significance of different forms of regional economic integration and to understand the concept of Balance of payment account and its components. Understand the significance of different forms of regional economic integration and to appreciate the role played by various international economic organisations such as the WTO, UNCTAD, IMF and World Bank. Familiarize students with the international financial environment, and get them acquainted with the basic features of the foreign exchange market – its characteristics and determinants. Critically examine the concept and form of foreign

direct investment, and to create awareness about emerging issues in international business such as outsourcing and ecological issues.

Paper BC 6.3 (a): ADVERTISING, PERSONAL SELLING AND SALESMANSHIP

After completing the course, the student shall be able to understand the communication objectives behind advertising and promotions. Understand the various message and media elements in the advertising decisions. Analyse the effectiveness of advertising. Comprehend the importance and role of personal selling. Understand the process of personal selling.

11. B.Com (Hons.)

BCH 1.2- Financial Accounting

The student shall be able to: understand the theoretical framework of accounting and to prepare financial statements , explain and determine depreciation and value of inventory, learn accounting for hire purchase transactions, leases, branches and departments, understand the concepts of partnership firm and prepare accounts for dissolution of a partnership firm, develop the skill of preparation of trading and profit and loss account and balance sheet using computerized accounting.

BCH 1.3- Business Laws

The student shall be able to: understand basic aspects of contracts for making the agreements, contracts and subsequently enter valid business propositions, be able to recognize and differentiate the special contracts and identify their appropriate usage at varied business scenarios, equip the students about the legitimate rights and obligations under The Sale of Goods Act, enable with skills to initiate entrepreneurial ventures as LLP, understand the fundamentals of Internet based activities under The Information and Technology Act.

BCH 1.4(b)-Business Organization and Management

After completing the course, the student shall be able to learn business activities to compete in competitive world, understand entrepreneurship from local to international perspective; evaluate the application of functional areas of business activity, analyze decision making and communication , evaluate the impact of legal, social, and economic environment on business.

BCH 2.2 - Corporate Accounting

After completing the course, the student shall be able to: develop an understanding of accounting for share capital and debentures, prepare financial statements of a company, develop an understanding of cash flow statements, understand the accounting for amalgamation and liquidation of companies, prepare consolidated balance sheet for Holding Co.

BCH 2.3- Corporate Laws

After completing the course, the student shall be able to, understand the regulatory aspects and the broader procedural aspects involved in different types of companies covering the Companies Act 2013 and Rules there under, follow the basic legal documents and their usage essential for operations and management of company. enable the students to synthesis

company processes, meetings and decisions. equip the students with framework of dividend distribution and role of auditors in a company. Comprehend and evaluate working of depositories and their functions in stock markets.

BCH 2.4(a)- Entrepreneurship

After completing the course, the student shall be able to: understand entrepreneurship as volition in context of India. Gather knowledge and ideas on the existing support system for entrepreneurial orientation. Understand enterprise formation process for gaining ideas as to creation of an enterprise for pursuing a career. Understand requirements of post-enterprise creation for effective operation of the business. Gain knowledge on available growth strategies for implementing effective suitable strategy for expansion and growth.

BCH 3.1- Human Resource Management

After completing the course, the student shall be able to understand basic nature and importance of human resource management. Analyze the current theory and practice of recruitment and selection. Realize the importance of performance management system in enhancing employee performance. Recommend actions based on results of the compensation analysis and design compensation schemes that are cost effective, that increase productivity of the workforce, and comply with the legal framework. Understand role of modern HRM in meeting challenges of changing business environment.

BCH 3.2- Income- Tax Law and Practice

After completing the course, the student shall be able understand the basic concepts in the law of income tax and determine the residential status of different persons. Identify the five heads in which income is categorised and compute income under the heads ‘Salaries’ and ‘Income from House Property’. Compute income under the head ‘ Profits and gains of business or profession’, ‘Capital gains’ and ‘Income from other sources’. Understand clubbing provisions, aggregate income after set-off and carry forward of losses, and deductions allowed under the Income Tax Act; and further to compute taxable income and tax liability of individuals and firms. Develop the ability to file online returns of income.

BCH 3.3- Management Principles and Applications

After completing the course, the student shall be able tounderstand the evolution of management and apprehend its effect on future managers. Analyze how organizations adapt to an uncertain environment and decipher decision making techniques managers use to influence and control the internal environment. Comprehend the changes happening in organization structure over time. Analyze the relationship amongst functions of management i.e. planning, organizing, directing and controlling. Appreciate the changing dynamics of management practice.

BCH 3.4(c) - Fundamentals of Marketing

After completing the course, the student shall be able to: learn the basic concepts and principles of marketing and to develop their conceptual skill to be able to manage marketing operations of a business firm. Understand the complexities involved in various targeting and

positioning decisions. Take effective decisions for launching new products and to understand the implications of different pricing strategies. Develop the skills to design the promotion-mix strategies. Familiarize about the current trends in marketing to take proactive measures while taking marketing decisions .

BCH 3.5(a)- E-Commerce

After completing the course, the student shall be able to understand the basics of E-commerce, current and emerging business models. familiarize with basic business operations such as sales, marketing, HR etc. on the web. Enhance the students' skills for designing and developing website. Identify the emerging modes of e-payment.Understand the importance of security, privacy, ethical and legal issues of e-commerce.

BCHS 3.5(c)- Digital Marketing

After completing the course, the student shall be able to: Identify and assess the impact of digital technology in transforming the business environment and also the customer journey. Understand how marketers think, conceptualize; test continuously to optimise their product search on digital platforms. Illustrate how the effectiveness of a digital marketing campaign can be measured , Demonstrate their skills in digital marketing tools such as SEO, Social media, and Blogging for engaging the digital generation. Appreciate the need for regulatory framework for digital marketing in India.

BCH 4.1- Cost Accounting

After completing the course, the student shall be able to: understand thoroughly the conceptual framework of Cost Accounting; identification of differences between different financial and cost accounting; cost concepts and elements of cost; preparation of cost sheet. Understand the accounting and control of material and labor cost, develop ability to understand classification, allocation, apportionment and absorption of overheads in cost determination; under and over absorption of overheads; treatment of various item of overheads , develop ability to calculate the cost of products, jobs, contracts, processes and services after understanding the basic concepts and processes involved in them. understand cost accounting book keeping systems and reconciliation of cost and financial account profits.

BCH 4.2-Business Mathematics

After completing the course, the student shall be able to: Comprehend the concept of systematic processing and interpreting the information in quantitative terms to arrive at an optimum solution to business problems. Develop proficiency in using different mathematical tools (matrices, calculus, linear programming, and mathematics of finance) in solving daily life problems. Acquire competence to use computer for mathematical computations, especially with Big data. Obtain critical thinking and problem-solving aptitude. Evaluate the role played by mathematics in the world of business and economy.

BCH 4.3- Computer applications in Business

After completing the course, the student shall be able to understand the various concepts and terminologies used in computer networks and internet and be aware of the recent developments in the fast changing digital business world, handle document creation for communication. Acquire skills to create and make good presentations, Make various computations in the area of accounting and finance and represent the business data using suitable charts. S/He should be able to manipulate and analyze the business data for better understanding of the business environment and decision making, understand and apply the various database concepts and tools in the related business areas with the help of suggested popular software.

BCH 4.4(a)-Insurance and Risk Management

After completing the course, the student shall be able to understand the Concept of Risk, it's types, sources and measurements. Learn the Concepts and Principles of Insurance and its operations. Develop insights into various types of Insurance,examine the Legal aspects of Insurance contract and Actuaries,familiarize with the Regulatory Framework of Insurance .

BCH 4.5(c)-Leadership and Team Development

Gain theoretical and practical knowledge to evaluate leadership skills, styles and strategies in contemporary world so as to become a successful leader and effective employee, understand the group dynamics and group decision making so as to develop acumen to utilize the leadership and team building concepts, tools and techniques to handle the complex organisational problems at different levels ;recognize the dynamics of group decision making,understand the working of various teams in organisations. Evaluate the role of women as leader and using various social media platforms as effective means of communication in contemporary world as a leader.

BCH 5.1- Principles of Marketing

After completing the course, the student shall be able to develop understanding of basic concepts of marketing, marketing philosophies and environmental conditions effecting marketing decisions of a firm, understand the dynamics of consumer behaviour and process of market selection through STP stages; understand and analyze the process of value creation through marketing decisions involving product development; understand and analyze the process of value creation through marketing decisions involving product pricing and its distribution, understand and analyze the process of value creation through marketing decisions involving product promotion and also to equip them with the knowledge of various developments in marketing area that may govern marketing decisions of a firm.

BCH 5.2- Financial Management

After completing the course, the student shall be able to explain the nature and scope of financial management as well as time value of money and risk return trade off analyze capital budgeting process and capital budgeting techniques , estimate various capital structure theories and factors affecting capital structure decisions in a firm, critically examine various theories of dividend and factors affecting dividend policy, evaluate working capital requirement

BCH 5.3(a)- Management Accounting

After completing the course, the student shall be able to understand thoroughly the conceptual framework of Management Accounting; identification of differences between different forms of accounting - Financial, Cost and Managerial; distinction between cost control and cost reduction, understand the concept of marginal cost and marginal costing; preparation of income statements using absorption and variable costing; learning of cost-volume-profit analysis and break-even analysis using mathematical and graphical approaches; and the application in businesses.Understand the concept of relevant and irrelevant costs and make decisions related to different business situations using marginal costing and differential costing techniques; understand budgetary control system as a tool of managerial planning and control; ability to prepare various types of budget. Ability to understand standard costing system as a tool of managerial control; calculation of variances in respect of each element of cost and sales; control ratios. Understand management accounting issues of Responsibility accounting, Divisional performance measurement and Transfer pricing.

BCH 5.4(c)- Advertising and Personal Selling

After completing the course, the student shall be able to: understand the communication objectives behind advertising and promotions; understand the various advertising and media elements in the advertising decisions; identify the ethical and legal issues of advertising; comprehend the importance and role of personal selling; understand the process of personal selling.

BCH 5.4(d)- Business Statistics

After completing the course, the student shall be able to acquire a fair degree of proficiency in comprehending statistical data, processing and analysing it using descriptive statistical tools. Gather knowledge about various probability concepts and distributions and their business applications. Understand the relationship between two variables using concepts of correlation and regression and its use in identifying and predicting the variables. Develop an understanding of the index numbers and their utility in daily life and stock. Become aware of the patterns revealed by the time series data and to use it to make predictions for the future.

BCH 6.1- Auditing and Corporate Governance

After completing the course, the student shall be able to differentiate between different aspects of auditing especially for internal check, internal control and for overall corporate governance. Understand the concept of corporate governance in organisations and its essence for management. Provide and assimilate information leading to failure of organisation and corporate scams. Comprehend the governance framework for an organisation provided by different regulatory bodies in India and Abroad. Recognise the essence of ethics in business.

BCH 6.2- Goods and Service Tax (GST) and Customs Law

After completing the course, the student shall be able to connect with the genesis of goods and services tax (GST), decipher the constitutional amendment carried out to install GST in

India and comprehend the composition and working of GST council; Understand the meaning of supply under GST law, differentiate between intra-state and inter-state supply, comprehend rules related to the place of supply and compute the value of supply, comprehend the utilization of input tax credit, and the reverse charge mechanism of paying GST and to know the procedure for claiming refund under GST law. Understand the provisions for registration under GST along with special provisions such as those related to anti-profiteering; avoidance of dual control; e-way bills and penalties. Know the basic concepts of Customs Act and to compute the assessable value for charging customs duty.

BCH 6.3(a)- Fundamentals of Investment

After completing the course, the student shall be able to: Explain investment environment and concept of return & risk, understand bond valuation & role of credit rating agencies, examine equity approaches, analyze two securities portfolio using Harry Markowitz model, Calculating portfolio risk and return, explaining CAPM and evaluating Mutual Funds and Financial derivatives. Evaluate investors protection framework

BCH 6.4(d)- International Business

After completing the course, the student shall be able to understand the process of globalization, its impact on the evolution and growth of international business and to appreciate the changing dynamics of the diverse international business environment. Analyze the theoretical dimensions of international trade and intervention measures adopted; to appreciate the significance of different forms of regional economic integration and to understand the concept of Balance of payment account and its components. Understand the significance of different forms of regional economic integration and to appreciate the role played by various international economic organisations such as the WTO, UNCTAD, IMF and World Bank. Familiarize students with the international financial environment, and get them acquainted with the basic features of the foreign exchange market – its characteristics and determinants. Critically examine the concept and form of foreign direct investment, and to create awareness about emerging issues in international business such as outsourcing and ecological issues.

12. B.Sc. (P) Life Science

CHEMISTRY COURSES OFFERED

Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons

Solve the conceptual questions using the knowledge gained by studying the quantum mechanical model of the atom, draw the plausible structures and geometries of molecules using radius ratio rules, VSEPR theory and MO diagrams (homo- & hetero-nuclear diatomic molecules). To understand and explain the differential behavior of organic compounds based on fundamental concepts learnt and formulate the mechanism of organic reactions.Course Title: Chemical Energetics, Equilibria and Functional Group Organic Chemistry-I

Learning Outcomes: To understand the laws of thermodynamics, thermochemistry and equilibria, concept of pH and its effect on the various physical and chemical properties of the compounds. To understand the fundamentals of functional group chemistry through the study of methods of preparation, properties and chemical reactions with underlying

mechanism and use concepts learnt to understand stereochemistry of a reaction and predict the reaction outcome.

Solutions, Phase Equilibrium, Conductance, Electrochemistry and Functional Group Organic Chemistry-II

Explain the concepts of different types of binary solutions-miscible, partially miscible and immiscible along with their applications, the thermodynamic aspects of equilibria between phases. To understand different types of galvanic cells, their Nernst equations, measurement of emf, calculations of thermodynamic properties and other parameters from the emf measurements also to understand and demonstrate how the structure of biomolecules determines their chemical properties, reactivity and biological uses.

Chemistry of s- and p-Block Elements, States of Matter and Chemical Kinetics

To understand the chemistry and applications of s- and p-block elements. Derive ideal gas law from kinetic theory of gases and explain why the real gases deviate from ideal behaviour. Explain the properties of liquids especially surface tension and viscosity. Explain symmetry elements, crystal structure specially NaCl, KCl and CsCl. To define rate of reactions and the factors that affect the rates of reaction and learn about various theories of reaction rates and how these account for experimental observations

Discipline Specific Elective Courses

Chemistry of d-Block Elements, Quantum Chemistry and Spectroscopy

To understand chemistry of d and f block elements, Latimer diagrams, properties of coordination compounds and VBT and CFT for bonding in coordination compounds. To understand basic principles of quantum mechanics: operators, eigen values, averages, probability distributions. To understand and use basic concepts of microwave, IR and UV-VIS spectroscopy for interpretation of spectra and explain Lambert-Beer's law, quantum efficiency and photochemical processes.

Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy

To understand the chemistry and applications of 3d and to get a general idea of toxicity of metal ions through the study of Hg2+ and Cd2+ in the physiological system. To understand the fundamentals of functional group chemistry, polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism and gain insight into the basic fundamental principles of IR and UV-Vis spectroscopic techniques.

Skill Enhancement Courses

Basic Analytical Chemistry

To handle analytical data and determine composition and pH of soil, which can be useful in agriculture. To do quantitative analysis of metal ions in water and separate mixtures using separation techniques. To estimate macro nutrients using Flame photometry.

Analytical Clinical Biochemistry

To understand and establish how the structure of biomolecules determines their reactivity and biological uses. To understand the basic principles of drug-receptor interaction and structure activity relation (SAR) and gain an insight into concept of heredity through biological processes like replication, transcription and translation.

Chemistry of Cosmetics and Perfumes

To learn basic of cosmetics, various cosmetic formulation, ingredients and their roles in cosmetic products, use of safe, economic and body-friendly cosmetics. To prepare new innovative formulations.

IT Skills for Chemists

To become familiar with the use of computers. Use software for tabulating data, plotting graphs and charts, carry out statistical analysis of the data and solve chemistry problems and simulate graphs To prepare documents that will incorporate chemical structure, chemical equations, mathematical expressions from chemistry.

BOTANY COURSES OFFERED

Biodiversity (Microbes, Fungi, Algae, and Archegoniatae) (LSCC2)

Upon completion of this course, the students will be able to: Understand the world of fungi, and pathogens of plants, Appreciate the characteristics of the fungi, Understand the ecological and economic significance of lichen, Understand the application of mycology in various fields of economic and ecological significance, U, nderstand the economic and pathological importance of fungi, bacteria and viruses Identify common plant diseases and their control measures

Plant Ecology and Taxonomy (LSCC3)

After successful completion of the course the student shall have adequate knowledge about the basic principles of environment and taxonomy.

Plant Anatomy and Embryology (LSCL4)

Knowledge regarding anatomy equipped the students to identify different types of tissues and make them able to correlate their physiology in a better away. This will also help them to understand how different plant tissue evolve and modify their structure and functions with respect to their environment. Knowledge regarding embryology make them understand how reproduction play significant role in defining population structure, natural diversity and sustainability of ecosystem in a better way.

Skill Enhancement course I: Biofertilizers (LSSE1)

The student would have a deep understanding of ecofriendly fertilizers. They will be able to understand the growth and multiplication conditions of useful microbes such as Rhizobium, cyanobacteria, mycorrhizae, Azotobactor etc, their role in mineral cycling and nutrition to plants. The can also think of the methods of decomposition of biodegradable waste and convert into the compost.

Core course: Plant Physiology and Metabolism (LSCC1)

The students are able to correlate morphology, anatomy, cell structure and biochemistry with plant functioning. The link between theory and practical syllabus is established, and the employability of youth would be enhanced. The youth can also begin small-scale enterprises.

Skill Enhancement course II: Medicinal Botany (LSSE2)

An appreciation of the contribution of medicinal plants to traditional and modern medicine and the importance of holistic mode of treatment of the Indian traditional systems of medicine. To develop an understanding of the constraints in promotion and marketing of medicinal plants. Transforming the knowledge into skills for promotion of traditional medicines. Developing entrepreneurship skills to establish value addition products, botanical extracts and isolation of bioactive compounds.

Discipline Specific Elective-I: Cell and Molecular Biology (LSDS2)

This course will be able to demonstrate foundational knowledge in understanding of: The relationship between the properties of macromolecules, their cellular activities and biological responses Understanding of Cell metabolism, chemical composition, physiochemical and functional organization of organelle Contemporary approaches in modern cell and molecular biology.Understanding of nucleic acid, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process.Processing and modification of RNA and translation process, function and regulation of expression.Applichation in biotechnology

Skill Enhancement course

Ethnobotany (LSSE3)

Students would have an understanding of the treasure, value and usefulness of the natural products and their efficient use by the local communities as food and medicine and their conservation practices.

Discipline Specific Elective-II:

Analytical Techniques in Plant Sciences (LSDS3)

Understanding of principles and use various methods, tools and techniques used in plant sciences such as light microscopy, confocal transmission and electron microscopy, centrifugation, spectrophotometry, chromatography, x-ray diffraction technique and chromatography techniques.

Skill Enhancement course IV

Intellectual Property Right (LSSE6)

Students would have deep understanding of patents copyrights, their importance. They can think about the importance of traditional knowledge, bio-prospecting, biopiracy. They would gain the knowledge of farmers rights and the importance on indigenous plant varieties, concept of novelty and biotechnological inventions.

ZOOLOGY COURSES OFFERED

Core I: Animal Diversity

Upon completion of the course, students will be able to: Learn Morpho-taxonomy and structural organization of non-chordate and chordate groups. Acquire knowledge of diversity of non-chordate and chordate groups. Learn evolutionary relationships and phylogeny of non-chordates and chordates through functional and structural similarities. Understand the economic importance of non-chordates and chordates and their significance in the ecosystem. Promote shared learning through practical classes, class room presentations and projects.

Core II: Comparative Anatomy and Developmental Biology of Vertebrates

Upon completion of this course, students should be able to know about the levels of organization among different groups of vertebrates,Understand that different organs and organ systems integrate with each other to impart proper regulation of a particular function. Understand how the various organs evolved during the course of evolution through succession. Know the evolution of different concepts in developmental biology. Be able to understand the process of gamete formation from stem cell population to mature ,Be able to comprehend the sequence of steps leading to the formation of gametes and development of embryo, Be able to understand the process of gamete formation from stem cell population to mature ova and sperm. Learn the mechanisms underpinning cellular diversity and specificity in animals.

Core III: Physiology and Biochemistry

Upon completion of the course, students would be able to have an increased knowledge of human physiology and be able to appreciate its functions. Understand the functions of major physiological systems in body. Recognise and identify principal tissue structures. Have understanding of the metabolic pathways of carbohydrates, proteins and fats; and appreciate how the cells harness energy. Understand the importance of enzymes, mechanism of working and kinetics. Relate how biochemical systems interact to yield integrated physiological responses. Understand the principles and approach to experimental design. Perform, analyse and interpret basic experiments and observations in physiology and biochemistry.

Core IV: Genetics and Evolutionary Biology

Students would be able to understand the fundamentals of Mendelian inheritance and its exceptions. They would be able to appreciate various other gene interactions like co-dominance, incomplete dominance, lethal alleles and pleiotropy. Further, students would be able to describe the concepts of linkage and crossing over and their usage in constructing gene maps. Help students understand the basic principles of pedigree analysis and will be able to construct and analyse pedigree related problems for inherited traits. Students would gain knowledge on chromosomal and genetic mutation. Students would be able to describe the chromosomal sex-determination mechanisms and dosage compensation. Students would be able to understand the major events in history of life and major theories of evolution.

Students would be able to appreciate the contribution of fossil studies in evolution and the phylogeny of horse. Students would be able to calculate the gene and allele frequency using Hardy-Weinberg law and analyse population genetics problems. Students would understand

the fundamental concepts of natural selection, speciation, mass extinction and macro-evolution.

DSE 3: Animal Biotechnology

Upon completion of the course, students will be able to use or demonstrate the basic techniques of biotechnology; like DNA isolation, PCR, transformation, restriction, digestion etc. Devise a strategy to manipulate genetic structure of an organism for the improvement in any trait or its well-being based on the techniques. Understand the ethical and social issues raised regarding GMOs. Apply the knowledge for designing a proposal for research project.

DSE 4: Immunology

Upon completion of the course, students will be able to Study haematopoiesis to know the concepts of stem cells and their differentiation into progenitor stem cells and adult lineages. Learn the concepts of innate and acquired immunity. Understand adaptive immune responses and sequential phases-antigen recognition by lymphocytes, their proliferation, differentiation into effector and memory cells and elimination of pathogens. Learn about major histocompatibility complex and their role in transplantation immunity and autoimmunity .Gain knowledge about the Complement system and how they interact and activate a catalytic cascade to remove immunogens. Study the role of various cytokines involved in cell to cell communication in the removal of pathogens. Understand the advent of hypersensitivities due to inappropriate innate and adaptive immune responses. Know the basic immunological aspects to comprehend the newer strategies in vaccine design, and efforts to treat autoimmunity, hypersensitivity and immunodeficiency.

SEC 1: Apiculture

Upon completion of the course, students should be able to: Learn about the various species of honey bees in India, their social organization and importance.Be aware about the opportunities and employment in apiculture – in public, private and government sector. Gain thorough knowledge about the techniques involved in bee keeping and honey production. Know about various products obtained from beekeeping sector and their importance. Develop entrepreneurial skills necessary for self-employment in beekeeping sector. Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

SEC 2: Aquarium Fish Keeping

Upon completion of the course, students should be able to: Acquire knowledge about different kinds of fishes, their compatibility in aquarium. Become aware of Aquarium as commercial, decorative and of scientific studies. Develop personal skills on maintenance of aquarium. Know about the basic needs to set up an aquarium, *i.e.*, dechlorinated water, reflector, filters, scavenger, aquatic plants etc. and the ways to make it cost-effective.

SEC 3: Medical Diagnostics

After completing this course, the students should be able to: Gain knowledge about various infectious, non-infectious and lifestyle diseases, tumors and their diagnosis. Understand the

use of histology and biochemistry of clinical diagnostics and learn about the molecular diagnostic tools and their relation to precision medicine. Develop their skills in various types of tests and staining procedure involved in haematology, clinical biochemistry and will know the basics of instrument handling. Learn scientific approaches/techniques used in the clinical laboratories to investigate various diseases and will be skilled to work in research laboratories. Gain knowledge about common imaging technologies and their utility in the clinic to diagnose a specific disease.

SEC 5: Sericulture

Upon completion of the course, students should be able to: Learn about the history of sericulture and silk route. Recognize various species of silk moths in India, and Exotic and indigenous races. Be aware about the opportunities and employment in sericulture industry – in public, private and government sector. Gain thorough knowledge about the techniques involved in silkworm rearing and silk reeling.Develop entrepreneurial skills necessary for self-employment in mulberry and seed production and be apprised about practicing sericulture as a profit-making enterprise. Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

13. B.Sc. Physical Science (with Computer)

PHYSICS COURSES OFFERED

CC-1A: Mechanics (42221101)

Upon completion of this course, students are expected to understand the following concepts: Understand the role of vectors and coordinate systems in Physics, solve Ordinary Differential Equations, laws of motion and their application to various dynamical situations. Learn the concept of Inertial reference frames their transformations. Also, the concept of conservation of energy, momentum, angular momentum and apply them to basic problems. Understand the phenomena of elastic and in-elastic collisions, phenomenon of simple harmonic motion, understand angular momentum of a system of particle, understand concept of Geosynchronous orbits .Understand special theory of relativity - special relativistic effects and their effects on the mass and energy of a moving object. In the laboratory course, after acquiring knowledge of how to handle measuring instruments (like screw gauge, Vernier calipers, travelling microscope) student shall embark on verifying various principles and associated measurable parameters.

CC-2A: Electricity, Magnetism & EMT (42221201)

At the end of this course, students will be able to have basic knowledge of Vector Calculus, Demonstrate Gauss law, Coulomb’s law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges. Apply Gauss’s law of electrostatics to solve a variety of problems. Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential. Calculate the magnetic forces that act on moving charges and the magnetic fields due to currents (Biot-Savart and Ampere laws) ,Have brief idea of magnetic materials, understand the concepts of induction, solve problems using Faraday’s and Lenz’s laws, In the Lab course, students will

be able to measure resistance (high and low), Voltage, Current, self and mutual inductance, capacitor, strength of magnetic field and its variation, study different circuits RC, LCR etc.

CC-3A: Thermal Physics and Statistical Mechanics (42224303)

At the end of this course, students will Learn the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. They are also expected to learn Maxwell's thermodynamic relations.Know the fundamentals of the kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion. Learn about the black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances. Learn the quantum statistical distributions, viz., the Bose-Einstein statistics and the Fermi-Dirac statistics. In the laboratory course, the students are expected to: Measure of Planck's constant using black body radiation, determine Stefan's Constant, coefficient of thermal conductivity of a bad conductor and a good conductor, determine the temperature coefficient of resistance, study variation of thermo emf across two junctions of a thermocouple with temperature etc.

CC-4A: Waves and Optics (42224412)

On successfully completing the requirements of this course, the students will have the skill and knowledge to Understand Simple harmonic oscillation and superposition principle. Understand the importance of classical wave equation in transverse and longitudinal waves and solving a range of physical systems on its basis.Understand Concept of normal modes in transverse and longitudinal waves: their frequencies and configurations. Understand Interference as superposition of waves from coherent sources derived from same parent source. Demonstrate understanding of Interference experiments: Young's Double Slit, Fresnel's biprism, Llyod's Mirror, Newton's Rings. Demonstrate basic concepts of Diffraction: Superposition of wavelets diffracted from apertures. Understand Fraunhoffer Diffraction from a slit. Concept of Polarization In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt first-hand. The motion of coupled oscillators, study of Lissajous figures and behaviour of ransverse, longitudinal waves can be learnt in this laboratory course.

DSE-1A: Elements of Modern Physics (42227529)

This course will prepare the students to appreciate and comprehend the following aspects: Understand historical basis of quantum mechanics. Explain how quantum mechanical concepts answer some of unanswered questions of Classical mechanics such as photoelectric effect, Compton scattering etc. Explain inadequacy of Rutherford model, discrete atomic spectra from hydrogen like atoms and its explanation on quantum mechanical basis. Demonstrate ability to apply wave-particle duality and uncertainty principle to solve physics problems. Explain two slit interference experiment with photons, atoms and particles establishing non-deterministic nature of QM. Set up Schrodinger equation for behavior of a

particle in a field of force for simple potential and find wave solutions establishing wave-like nature of particles. Demonstrate ability to solve 1-D quantum problems including the quantum particle in a box, a well and the transmission and reflection of waves. Explain nuclear structure, binding energy, nuclear models and impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Understand radioactivity, radioactive decays, apply radioactive laws to solve related physics problems and Pauli's prediction of neutrino, and the subsequent discovery.

DSE: 2A: Solid State Physics (42227637)

On successful completion of the module students should be able to Elucidate the concept of lattice, crystals and symmetry operations. Understand the elementary lattice dynamics and its influence on the properties of materials. Describe the main features of the physics of electrons in solids: origin of energy bands, and their influence electronic behaviour. Explain the origin of dia-, para-, and ferro-magnetic properties of solids. Explain the origin of the dielectric properties exhibited by solids and the concept of polarizability. Learn the properties of superconductivity in solid. In the laboratory students will carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop.They will also employ to four probe methods to measure electrical conductivity and the hall set up to determine the hall coefficient of a semiconductor.

MATHS COURSES OFFERED

Calculus and Matrices

This course will enable the students to : Define and use fundamental concepts of calculus including limits, continuity and differentiability. Solve systems of linear equations and find eigenvalues and corresponding eigenvectors for a square matrix, and check for its diagonalizability. Perform operations with various forms of complex numbers to solve equations.

Calculus and Geometry

This course will enable the students to: Sketch curves in a plane using its mathematical properties in the different coordinate systems of reference. Compute area of surfaces of revolution and the volume of solids by integrating overcross-sectional areas. Be well-versed with conics and quadric surfaces so that they should able to relate the shape of real – life objects with the curves / conics.

Algebra

The course will enable the students to : Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups etc. Explain the significance of the notion of cosets, normal subgroups, and factor groups. Understand the fundamental concepts of rings, fields and integral domains. Know about vector spaces over a field, and linear transformations.

Skill Enhancement Course

SEC-1: Computer Algebra Systems

This course will enable the students to : Use CAS as a calculator and for plotting functions. Understand the role of CAS, finding roots of polynomials and solving general equations. Employ CAS for computing limits, derivatives, and computing definite and indefinite integrals. Use CAS to understand matrix operations and to find eigen values of matrices.

Real Analysis

This course will enable the students to: Be familiar with the concept of sequences, series and recognize convergent, divergent, bounded, Cauchy and monotone sequences. Test the convergence and divergence of series using ratio test, root test and Leibnitz test. Understand the concepts of pointwise and uniform convergence. Understand Riemann integrability of continuous and monotone functions.

Skill Enhancement Paper

SEC-2: Mathematical Typesetting System : LaTeX

This course will enable the students to: Learn to create and typeset a LaTeX document. Type set a mathematical document using LaTex. Learn about pictures and graphics in LaTex. Create beamer presentations.

SEC-3: Transportation and network Flow Problems

This course will enable the students to : Formulate and solve transportation problems. Learn to solve assignment problems using Hungarian method. Solve travelling salesman problem. Learn about network models and various network flow problems. Learn about project planning techniques namely, CPM and PERT.

Discipline Specific Elective (DSE)

DSE-1(i) : Differential Equations (with Practicals)

The student will be able to : Solve the exact, linear and Bernoulli equations and find orthogonal trajectories. Apply the method of variation of parameters to solve linear differential equations. Formulate and solve various types of first and second order partial differential equations.

DSE-1(ii) : Mechanics and Discrete Mathematics

The student will be able to : Learn about friction, centre of gravity, work and potential energy in statics. Know about various topics in dynamics such as simple harmonic motion, simple pendulum and projectile motion. Know about various types of graphs such as complete and bipartite graphs. Understand graphs, their types and its applications in study of shortest path algorithms.

Skill Enhancement Paper

SEC-4 : Statistical Software : R

This course will enable the students to : Be familiar with R syntax and use R as a calculator. Understand the concepts of objects, vectors and data types. Know about summary commands and summary table in R. Visualize distribution of data in R and learn about normality test. Plot various graphs and charts using R.

Discipline Specific Elective (DSE) Course-2

DSE-2 (i) : Numerical Methods (with Practicals)

After completion of this course, students will be able to : Find the consequences of finite precision and the inherent limits of numerical methods. Appropriate numerical methods to solve algebraic and transcendental equations. Solve first order initial value problems of ODE's numerically using Euler methods.

DSE-2(ii) : Probability Theory and Statistics

This course will enable the students to learn : Basic probability axioms and familiar with discrete and continuous random variables. To measure the scale of association between two variables, and to establish a formulation helping to predict one variable interms of the other, i.e., correlation and linear regression. Central limit theorem, which helps to understand the remarkable fact that : the empirical frequencies of so many natural populations exhibit a bell-shaped curve.

COMPUTER SCIENCE COURSES OFFERED

Core Course

Problem Solving using Computers (BSCS01)

Describe the components of a computer and the notion of an algorithm. Apply suitable programming constructs and data structures to solve a problem. Develop, document, and debug modular python programs. Use classes and objects in application programs. Use files for I/O operations.

Database Management Systems (BSCS02)

Use database management system to manage data, create entity relationship diagrams for modeling real-life situations and design the Database schema. Use the concept of functional dependencies to remove data anomalies and arrive a Normalized database design. Write queries using relational algebra and SQL.

Core Course

Operating Systems (BSCS03)

Understand the rationale behind the current design and implementation decisions in modern Operating Systems by considering the historic evolution.Identify modules of the operating systems and learn about important functions performed by Operating system as resource manager. Use the OS in a more efficient manner

SEC 1: Data Analysis using Python Programming (BSCS07A)

Develop a python script for data analysis and execute it. Install, load and deploy the required packages. Clean and prepare the data for accurate analysis. Analyze the data stored in files in different formats. Experiment with data visualization methods.

Computer System Architecture (BSCS04)

Design combinational circuits using basic building blocks. Simplify these circuits using Boolean Algebra and Karnaugh maps. Differentiate between combinational circuits and sequential circuits. Represent data in binary form, convert numeric data between different number systems and perform arithmetic operations in binary. Determine various stages of instruction cycle, various instruction formats and instruction set. Describe interrupts and their handling. Explain how CPU communicates with memory and I/O devices.

SEC 2: Introduction to R Programming (BSCS07B)

Develop an R script for data analysis and execute it. Install, load and deploy the required packages. Analyze the data stored in files in different formats.Identify suitable data visualization and exploration methods to answer a business question. Interpret the results of analysis.

DSE 1:Data Structures (BSCS05A)

Demonstrate a thorough understanding of the behavior of basic data structures. Implement data structures efficiently in programming language C++. Demonstrate an understanding of recursion by applying recursive techniques to solve problems.

DSE 2:Digital Image Processing (BSCS05B)

Describe general terminology of Digital Image Processing and the roles of image processing systems in a variety of applications.Describe the basic issues and the scope (or principal applications) of image processing. Explain representation and manipulation of digital images, image acquisition, reading, writing, enhancement, displaying and segmentation and image Fourier transform. Examine various types of images, intensity transformations and spatial filtering.

SEC-3 Programming in C++ (BSCS08A)

Solve simple programming problems using iteration and selection, and basic constructs: Structures, arrays and functions. Create classes and their objects and use access specifies for data hiding depicting advantage of Abstraction. Construct classes for code reusability depicting advantage of Inheritance. Implement Function Overloading depicting advantage of Polymorphism. Create file, read/write from/to files.

Programming in Java (BSCS08B)

Develop and execute Java programs using iteration and selection. Create classes and their objects. Implement OOPS concepts to solve problems using JAVA

DSE 1 Computer Networks (BSCS06A)

Understand the basics of data communication. Differentiate between various types of computer networks and their topologies. Understand the difference between the OSI and TCP/IP protocol suit. Explain merits and demerits of different types of communication media. Distinguish between different types of network devices and their functions.

Generic Elective (GE)

Programming using Python (CSGE101)

Describe the components of a computer and notion of an algorithm. Apply suitable programming constructs and built-in data structures to solve a problem. Develop, document, and debug modular python programs. Use classes and objects in application programs and visualize data.

Database Management System (CSGE201)

Describe the features of database management systems. Differentiate between database systems and file systems. Model an application's data requirements using conceptual modelling tools like ER diagrams and design database schemas based on the conceptual model. Write queries in relational algebra / SQL. Normalize a given database schema.

Computer Networks (CSGE301)

State the use of computer networks and different network topologies. Distinguish between LAN, MAN, WAN, and between Intranet, Extranet and Internet. Compare OSI and TCP/IP architectures .Enumerate different transmission media and describe the use of each of them. Design web pages using HTML.

Information Security and Cyber Laws (CSGE401)

Learn, structure, mechanics and evolution of various crime threats .Learn to protect information systems from external attacks by developing skills in enterprise security, wireless security and computer forensics. Analyze the risks involved while sharing their information in cyber space and numerous related solutions like sending protected and digitally signed documents .Insights of ethical hacking and usage of password cracking tools.Get an overview of different ciphers used for encryption and decryption.

14. B.Sc. Physical Science (with Chemistry)

CHEMISTRY COURSES OFFERED

Core Course

Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons

Solve the conceptual questions using the knowledge gained by studying the quantum mechanical model of the atom, draw the plausible structures and geometries of molecules using radius ratio rules, VSEPR theory and MO diagrams (homo- & hetero-nuclear diatomic molecules). To understand and explain the differential behavior of organic compounds based on fundamental concepts learnt and formulate the mechanism of organic reactions.

Course Title: Chemical Energetics, Equilibria and Functional Group Organic Chemistry-I

Learning Outcomes: To understand the laws of thermodynamics, thermochemistry and equilibria, concept of pH and its effect on the various physical and chemical properties of the compounds. To understand the fundamentals of functional group chemistry through the study of methods of preparation, properties and chemical reactions with underlying

mechanism and use concepts learnt to understand stereochemistry of a reaction and predict the reaction outcome.

Solutions, Phase Equilibrium, Conductance, Electrochemistry and Functional Group Organic Chemistry-II

Explain the concepts of different types of binary solutions-miscible, partially miscible and immiscible along with their applications, the thermodynamic aspects of equilibria between phases. To understand different types of galvanic cells, their Nernst equations, measurement of emf, calculations of thermodynamic properties and other parameters from the emf measurements also to understand and demonstrate how the structure of biomolecules determines their chemical properties, reactivity and biological uses.

Chemistry of s- and p-Block Elements, States of Matter and Chemical Kinetics

To understand the chemistry and applications of s- and p-block elements. Derive ideal gas law from kinetic theory of gases and explain why the real gases deviate from ideal behaviour. Explain the properties of liquids especially surface tension and viscosity. Explain symmetry elements, crystal structure specially NaCl, KCl and CsCl. To define rate of reactions and the factors that affect the rates of reaction and learn about various theories of reaction rates and how these account for experimental observations

Discipline Specific Elective Courses

Chemistry of d-Block Elements, Quantum Chemistry and Spectroscopy

To understand chemistry of d and f block elements, Latimer diagrams, properties of coordination compounds and VBT and CFT for bonding in coordination compounds. To understand basic principles of quantum mechanics: operators, eigen values, averages, probability distributions. To understand and use basic concepts of microwave, IR and UV-VIS spectroscopy for interpretation of spectra and explain Lambert-Beer's law, quantum efficiency and photochemical processes.

Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy

To understand the chemistry and applications of 3d and to get a general idea of toxicity of metal ions through the study of Hg2+ and Cd2+ in the physiological system. To understand the fundamentals of functional group chemistry, polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism and gain insight into the basic fundamental principles of IR and UV-Vis spectroscopic techniques.

Skill Enhancement Courses

Basic Analytical Chemistry

To handle analytical data and determine composition and pH of soil, which can be useful in agriculture. To do quantitative analysis of metal ions in water and separate mixtures using separation techniques. To estimate macro nutrients using Flame photometry.

Analytical Clinical Biochemistry

To understand and establish how the structure of biomolecules determines their reactivity and biological uses. To understand the basic principles of drug-receptor interaction and structure activity relation (SAR) and gain an insight into concept of heredity through biological processes like replication, transcription and translation.

Chemistry of Cosmetics and Perfumes

To learn basic of cosmetics, various cosmetic formulation, ingredients and their roles in cosmetic products, use of safe, economic and body-friendly cosmetics. To prepare new innovative formulations.

IT Skills for Chemists

To become familiar with the use of computers. Use software for tabulating data, plotting graphs and charts, carry out statistical analysis of the data and solve chemistry problems and simulate graphs To prepare documents that will incorporate chemical structure, chemical equations, mathematical expressions from chemistry.

PHYSICS COURSES OFFERED

CC-1A: Mechanics (42221101)

Upon completion of this course, students are expected to understand the following concepts:
Understand the role of vectors and coordinate systems in Physics, solve Ordinary Differential Equations, laws of motion and their application to various dynamical situations. Learn the concept of Inertial reference frames their transformations. Also, the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.Understand the phenomena of elastic and in-elastic collisions, phenomenon of simple harmonic motion, understand angular momentum of a system of particle, understand concept of Geosynchronous orbits .Understand special theory of relativity - special relativistic effects and their effects on the mass and energy of a moving object.
In the laboratory course, after acquiring knowledge of how to handle measuring instruments (like screw gauge, Vernier calipers, travelling microscope) student shall embark on verifying various principles and associated measurable parameters.

CC-2A: Electricity, Magnetism & EMT (42221201)

At the end of this course, students will be able to Have basic knowledge of Vector Calculus, Demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges. Apply Gauss's law of electrostatics to solve a variety of problems. Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential. Calculate the magnetic forces that act on moving charges and the magnetic fields due to currents (Biot-Savart and Ampere laws) ,Have brief idea of magnetic materials, understand the concepts of induction, solve problems using Faraday's and Lenz's laws, In the Lab course, students will be able to measure resistance (high and low), Voltage, Current, self and mutual inductance, capacitor, strength of magnetic field and its variation, study different circuits RC, LCR etc.

CC-3A: Thermal Physics and Statistical Mechanics (42224303)

At the end of this course, students will Learn the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. They are also expected to learn Maxwell's thermodynamic relations.Know the fundamentals of the kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion. Learn about the black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances. Learn the quantum statistical distributions, viz., the Bose-Einstein statistics and the Fermi-Dirac statistics. In the laboratory course, the students are expected to: Measure of Planck's constant using black body radiation, determine Stefan's Constant, coefficient of thermal conductivity of a bad conductor and a good conductor, determine the temperature coefficient of resistance, study variation of thermo emf across two junctions of a thermocouple with temperature etc.

CC-4A: Waves and Optics (42224412)

On successfully completing the requirements of this course, the students will have the skill and knowledge to Understand Simple harmonic oscillation and superposition principle. Understand the importance of classical wave equation in transverse and longitudinal waves and solving a range of physical systems on its basis.Understand Concept of normal modes in transverse and longitudinal waves: their frequencies and configurations. Understand Interference as superposition of waves from coherent sources derived from same parent source. Demonstrate understanding of Interference experiments: Young's Double Slit, Fresnel's biprism, Llyod's Mirror, Newton's Rings. Demonstrate basic concepts of Diffraction: Superposition of wavelets diffracted from apertures. Understand Fraunhoffer Diffraction from a slit. Concept of Polarization In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt first-hand. The motion of coupled oscillators, study of Lissajous figures and behaviour of ransverse, longitudinal waves can be learnt in this laboratory course.

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This course will prepare the students to appreciate and comprehend the following aspects:
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nuclear structure, binding energy, nuclear models and impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Understand radioactivity, radioactive decays, apply radioactive laws to solve related physics problems and Pauli's prediction of neutrino, and the subsequent discovery.

DSE: 2A: Solid State Physics (42227637)

On successful completion of the module students should be able to Elucidate the concept of lattice, crystals and symmetry operations. Understand the elementary lattice dynamics and its influence on the properties of materials. Describe the main features of the physics of electrons in solids: origin of energy bands, and their influence electronic behaviour. Explain the origin of dia-, para-, and ferro-magnetic properties of solids. Explain the origin of the dielectric properties exhibited by solids and the concept of polarizability. Learn the properties of superconductivity in solid. In the laboratory students will carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop.They will also employ to four probe methods to measure electrical conductivity and the hall set up to determine the hall coefficient of a semiconductor.

MATHS COURSES OFFERED

Calculus and Matrices

This course will enable the students to : Define and use fundamental concepts of calculus including limits, continuity and differentiability. Solve systems of linear equations and find eigenvalues and corresponding eigenvectors for a square matrix, and check for its diagonalizability. Perform operations with various forms of complex numbers to solve equations.

Calculus and Geometry

This course will enable the students to: Sketch curves in a plane using its mathematical properties in the different coordinate systems of reference. Compute area of surfaces of revolution and the volume of solids by integrating overcross-sectional areas. Be well-versed with conics and quadric surfaces so that they should able to relate the shape of real – life objects with the curves / conics.

Algebra

The course will enable the students to :

Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups etc. Explain the significance of the notion of cosets, normal subgroups, and factor groups. Understand the fundamental concepts of rings, fields and integral domains. Know about vector spaces over a field, and linear transformations.

Skill Enhancement Course

SEC-1: Computer Algebra Systems

This course will enable the students to : Use CAS as a calculator and for plotting functions. Understand the role of CAS, finding roots of polynomials and solving general equations.

Employ CAS for computing limits, derivatives, and computing definite and indefinite integrals. Use CAS to understand matrix operations and to find eigen values of matrices.

Real Analysis

This course will enable the students to: Be familiar with the concept of sequences, series and recognize convergent, divergent, bounded, Cauchy and monotone sequences. Test the convergence and divergence of series using ratio test, root test and Leibnitz test. Understand the concepts of pointwise and uniform convergence. Understand Riemann integrability of continuous and monotone functions.

Skill Enhancement Paper

SEC-2: Mathematical Typesetting System : LaTeX

This course will enable the students to: Learn to create and typeset a LaTeX document. Type set a mathematical document using LaTex. Learn about pictures and graphics in LaTex. Create beamer presentations.

SEC-3: Transportation and network Flow Problems

This course will enable the students to : Formulate and solve transportation problems. Learn to solve assignment problems using Hungarian method. Solve travelling salesman problem. Learn about network models and various network flow problems. Learn about project planning techniques namely, CPM and PERT.

Discipline Specific Elective (DSE)

DSE-1(i) : Differential Equations (with Practicals)

The student will be able to : Solve the exact, linear and Bernoulli equations and find orthogonal trajectories. Apply the method of variation of parameters to solve linear differential equations. Formulate and solve various types of first and second order partial differential equations.

DSE-1(ii) : Mechanics and Discrete Mathematics

The student will be able to : Learn about friction, centre of gravity, work and potential energy in statics. Know about various topics in dynamics such as simple harmonic motion, simple pendulum and projectile motion. Know about various types of graphs such as complete and bipartite graphs. Understand graphs, their types and its applications in study of shortest path algorithms.

Skill Enhancement Paper

SEC-4 : Statistical Software : R

This course will enable the students to : Be familiar with R syntax and use R as a calculator. Understand the concepts of objects, vectors and data types. Know about summary commands and summary table in R. Visualize distribution of data in R and learn about normality test. Plot various graphs and charts using R.

Discipline Specific Elective (DSE) Course-2

DSE-2 (i) : Numerical Methods (with Practicals)

After completion of this course, students will be able to : Find the consequences of finite precision and the inherent limits of numerical methods. Appropriate numerical methods to solve algebraic and transcendental equations. Solve first order initial value problems of ODE's numerically using Euler methods.

DSE-2(ii) : Probability Theory and Statistics

This course will enable the students to learn : Basic probability axioms and familiar with discrete and continuous random variables. To measure the scale of association between two variables, and to establish a formulation helping to predict one variable interms of the other, i.e., correlation and linear regression. Central limit theorem, which helps to understand the remarkable fact that : the empirical frequencies of so many natural populations exhibit a bell-shaped curve.

15. B.Sc. (Hons.) Biochemistry

Molecules of Life (BCH C-1)

On successful completion of the course students will be:

Acquainted with chemical and molecular foundations of life and appreciate the role of water in biological systems. Able to comprehend the structure, function and acid base properties of amino acids. Introduced to the structure, properties and roles of carbohydrates, lipids and nucleic acids.Aware of the importance of vitamins in biological systems. Able to independently identify and quantitate various biomolecules in the laboratory.

Cell Biology (BCH C-2)

Students will:Learn about cell theory and basic cell structure, be introduced to cell fractionation and cell visualization techniques ,Gain knowledge about the structure and function of various cell organelles in a eukaryotic cell Acquire knowledge about the composition of cytoskeleton and extracellular matrix, Acquire insight into cell division and cell death mechanisms .

Proteins (BCH C-3)

After completion of the course, a student will ,Understand the diverse functions of proteins in a cell Understand the hierarchy of protein architecture – primary, secondary, tertiary & quaternary structure, with the ability to distinguish features of globular & fibrous proteins, be able to comprehend the fundamental mechanisms of protein folding and stability and their relation to conformational diseases , Be able to describe and discuss the separation and purification techniques used in protein chemistry,Learn to access and use the databases related to protein sequence and structure , Understand specialized proteins like membrane proteins, defense proteins and motor proteins,Gain comprehension of structure-function relationship of proteins and their significance in physiology, diseases and applications in industry and medicine.

Enzymes (BCH C-4)

Students will learn the nature and importance of enzymes in living systems. Students will gain insight into the thermodynamic and molecular basis of catalysis by enzymes and the underlying basis of their specificity, Students will understand the mechanisms of enzyme action, kinetics of enzyme catalyzed reactions and clinical importance of enzyme inhibitors , Students will also learn to appreciate how enzymes are regulated and the physiological importance of enzyme regulation in the cell. The course will introduce students to the applications of enzymes in research and medicine as well as in industry, which will bolster their foray into industrial and biomedical research.

Metabolism of Carbohydrates and Lipids (BCH C-5)

The learners will be able to: Understand the concepts of metabolism, characteristics of metabolic pathways and strategies used to study these pathways. Gain a detailed knowledge of various catabolic and anabolic pathways .Understand the regulation of various pathways Gain knowledge about the diseases caused by defects in metabolism with emphasis on the metabolic control .

Membrane Biology and Bioenergetics (BCH C-6)

On successful completion of the course, students will: Understand the general composition and structure of biomembranes. Understand the basic properties of membranes such as membrane fluidity. Have knowledge about the various types of membrane transport mechanisms. Understand the basic tenets of Bioenergetics. Understand the concept of chemi-osmotic theory and the mechanism of Oxidative phosphorylation and ATP synthesis. Understand the basic mechanisms of photophosphorylation in plants and microbes.

Hormone : Biochemistry and Function (BCH C-7)

On successful completion of the course, a student will: Understand and appreciate the different cognate and non-cognate modes of communication between cells in a multi-cellular organism.Understand the role of endocrine system in maintaining ionic and glucose homeostasis .Be able to describe molecular, biochemical and physiological effects of all hormones and factors on cells and tissues. Understand the integrative communications that regulate, growth, appetite, metabolism and reproduction. Be prepared for interpreting clinical parameters in a real life situation .

Human Physiology (BCH C-8)

On successful completion of this core paper, students should be able to: Understand the basic organization and homeostatic control of the human body from the cell itself to organ systems and the functioning of the whole body. Comprehend and appreciate the importance of the fluid components of the body in regulating and connecting the various organ systems; particularly the heart and vascular system.Appreciate and understand the biochemical, molecular and cellular events that orchestrate the coordinate working of the organ systems that regulate life processes. Get a holistic understanding of the different organ systems with respect to their basic functioning, which involves both integrative learning and the regulatory roles of the Nervous and Endocrine system. Develop in students an inquisitive learning approach to seek answers regarding the complex workings of brain. Understand the factors

that cause an imbalance to the Homeostatic control in the body and how these lead to disorders and diseases. Perform and analyze various physiological tests that examine the function of various systems of the human body.

Gene Organization, Replication and Repair (BCH C-9)

Students will acquire basic information about the structure of DNA and various forms of DNA, about organization of genome in various life forms, supercoiling of DNA and its significance .Students will learn about the molecular basis of processes like DNA replication, recombination and transposition and understand the significance of these processes. Students will learn about the various ways in which the DNA can be damaged leading to mutations and lesions and different ways to repair DNA damage

Metabolism of Amino Acids and Nucleotides (BCH C-10)

At the end of the course the students will be able to: Extend their school level concepts of nitrogen cycle to understand the mechanism by which nitrogen is fixed by microbes and how it's incorporation in diet is critical to human nutrition as well as comprehend the mechanism by which ammonia is incorporated in biomolecules. Systematically learn the breakdown and synthesis of amino acids and nucleotides in humans and recognize its relevance with respect to nutrition and human diseases.Gain knowledge of how amino acids are converted into a variety of precursors .Acknowledge the role of inhibitors of nucleotide metabolism which are potentially being used as chemotherapeutic drugs .Comprehend how the amino acid and nucleotide metabolism are integrated with carbohydrate and lipid metabolism

Concepts in Genetics (BCH C-11)

On successful completion of the course, the students will be: Understanding the principles of Mendelian genetics, extensions and applications. Learning and appreciating the various factors that confer genotypic and phenotypic variability. Using the concepts of bacterial and viral genetics to understand resistance patterns and to create linkage and genetic maps. Able to use statistical tools to analyze biological data. Able to apply the principles of transmission and inheritance in real life situations.

Gene Expression and Regulation (BCH C-12)

After completion of the course students will: acquire basic knowledge about the processes of transcription and translation in prokaryotes and eukaryotes ,learn about the features of the genetic code and various experimental approaches used to crack the code ,develop understanding of the molecular basis of RNA processing and RNA splicing ,learn about the various ways in which these biological processes are regulated and the significance of regulation in maintaining life forms

Genetic Engineering and Biotechnology (BCH C-13)

The students will be able to understand: The process for isolation and engineering of DNA using restriction and modification enzymes.Use of cloning and expression vectors. The methods for creation of genomic and cDNA libraries, their applications and use.

Understanding the methods for protein production and their application in industrial production systems.

Immunology (BCH C-14)

Upon completion of this course, a student will be able to: Trace the history and developments in immunology. Have an overview of the immune system including cells, organs and receptors. Describe the basic mechanism, differences and functional interplay of innate and adaptive immunity. Understand Antigens & its Recognition, antigen processing and presentation.Understand the structure & functions of different classes of Immunoglobulins, and understand the genetic basis of antibody diversity. Define the cellular and molecular pathways of humoral and cell-mediated immune responses. Describe the mechanisms involved in different types of hypersensitivity .Explain the principles of tolerance and autoimmunity . Understand Immunotherapies and basic concept of Vaccines
Summarize role of immunity in protection against pathogens

Discipline specific Elective Course (DSE)

Nutritional Biochemistry (BCH DSE-1)

At the end of the course, the students are expected to: Critically analyze and evaluate concepts in nutritional biochemistry that are important for an understanding of human nutrition. Appreciate the biochemical underpinning of human nutrition in maintaining health. Demonstrate understanding of the biochemical basis of essentiality of macro and micronutrients and their nutritional deficiencies. Be aware of techniques used in the assessment of nutritional status and nutritional disorders. Understand drug nutrient interactions.

Advanced Cell Biology (BCH DSE-2)

The learning outcomes will be as follows: Students will develop understanding of the principle and application of some of the classical and advanced cell biology techniques. Students will be able to describe the role of organelles in the secretion of mature proteins and key role of the cytoskeleton in the living cell. Students will be able to understand the factors regulating mitosis, meiosis, apoptosis and necrosis. They will also be able to comprehend the role and therapeutic value of stem cells. Students will be able to understand the genetic basis of development of cancer, the molecular diagnosis and molecular drugs which are used for chemotherapy.

Microbiology (BCH DSE-3)

On successful completion of this paper, students should be able to: Identify different microbes. Perform routine microbiological practices including sterilization, media preparation, maintenance of microbial culture, staining etc.Carry out research using microbes. Test microbial culture for antibiotic resistance.

Molecular Basis of Infectious Disease (BCH DSE-4)

Students will understand various classes of pathogens and their mode of action and transmission. Students will be exposed to molecular basis of treatment, diagnosis and

vaccine design strategies for all the diseases listed. Students will gain insight into host immune responses that ensue subsequent to infection. Students will learn the details of diseases such as tuberculosis, AIDS and malaria which are highly prevalent in Indian subcontinent.

Tools and Techniques in Biochemistry (BCH SEC-1)

The course is designed for undergraduate students to learn the basic concepts of various techniques used in Biochemistry. The course will enable students to: Learn about the principle and applications of buffer preparation and reagents. Acquire knowledge about the principles and applications of spectrophotometric and chromatography techniques used in a biochemistry lab. Obtain hands-on-experience and laboratory skills expected of any biochemist working in a research lab.

Protein Purification Techniques (BCH SEC-1)

The course is designed for undergraduate students to learn the basic concepts of various techniques used in Biochemistry. The course will enable students to: Acquire knowledge about the principles and applications of various chromatography techniques used in a biochemistry lab. Obtain hands-on-experience and laboratory skills expected of any biochemist working in a research lab.

16. B.Sc. (Hons.) Botany

Core course

Microbiology and Phycology (BHCC1)

Students would have understanding of the classification, characteristic features, cell structure and growth and reproduction in viruses, bacteria, and various groups of marine and fresh water algae and their ecological and economic importance.

Biomolecules and Cell Biology (BHCC2)

This course will be able to demonstrate foundational knowledge in understanding of: The relationship between the properties of macromolecules, their cellular activities and biological responses. Understanding of Cell metabolism, chemical composition, physiochemical and functional organization of organelle. Contemporary approaches in modern cell and molecular biology.

Generic Elective I

Biodiversity (Microbes, Fungi, Algae, and Archegoniatae)

Combination of Theoretical and Practical components will provide comprehensive information and insight into the fascinating world of Microbes and Plants. Hands on Training will help students learn use of microscope, mounting, section-cutting and staining techniques for the study of plant materials. Making Drawings in Practical Records will enhance understanding morphological and structural details and related functional aspects in diverse plant groups. Use of Illustrations, Photographs, Charts, Permanent Slides, Museum and Herbarium. Specimens along with ICT Methods will provide

an interesting insight into the beautiful world of microbes and plants. Scope of Biodiversity includes Medicinal field, Industry, Agriculture, Research and Study, Job Opportunities and Environmental Conservation. This paper is both informative and interesting and will enable students to learn about Biodiversity not only as a plant or nature lover, but also for higher academic pursuits, particularly in the field of Biological Sciences, Environment and Biodiversity Conservation.

Mycology and Phytopathology

Upon completion of this course, the students will be able to:Understand the world of fungi, lichens and pathogens of plants. Appreciate the characteristics of the fungi and lichens. Understand the ecological and economic significance of lichen. Understand the application of mycology in various fields of economic and ecological Significance. Understand the economic and pathological importance of fungi, bacteria and viruses. Identify common plant diseases and their control measures

Archegoniatae

The students will be made aware of the group of plants that have given rise to land habit and the flowering plants. Through field study they will be able to see these plants grow in nature and become familiar with the biodiversity. to my knowledge students should create their small digital reports where they can capture the zoomed in and zoomed out pictures as well as videos in case they are able to find some rare structure or phenomenon related to these plants.

Generic Elective

Plant Ecology and Taxonomy

After successful completion of the course the student shall have adequate knowledge about the basic principles of environment and taxonomy.

Anatomy of Angiosperms

Knowledge of various cells and tissues, meristem, epidermal and vascular tissue system in plants. Various aspects of growth, development of the tissues and differentiation of various plant organs. Knowledge of basic structure and organization of plant parts in angiosperms. Correlation of structure with morphology and functions.

Core course

Economic Botany

After studying Economic Botany, students would have first hand information of plants used as food, the various kinds of nutrients available in the plants. The dietary requirements of proteins, fats, amino-acids, vitamins etc that can be met by plants. The students will learn to perform the micro-chemical tests to demonstrate various components. The students will learn about the use of fibre plants, beverages, fruits and vegetables that are integral to day to day life of plants. Students will learn to explore the regional diversity in food crops and other plants and their ethno-botanical importance as well.

Genetics

To generate interest among the students in Genetics and make them aware about the importance and opportunities in higher education and research, the first unit should be Introductory dealing with how this area has revolutionized all aspects of our life from its growth from Mendel to Genetic Engineering. Modes of inheritance of traits/ phenotypes and Phenotype-genotype corelation are the basic learning.

Skill Enhancement course

Ethnobotany

Students would have an understanding of the treasure, value and usefulness of the the natural products and their efficient use by the local communities as food and medicine and their conservation practices

Generic Elective III

Plant Physiology and Metabolism (BHGE5)

The students are able to correlate morphology, anatomy, cell structure and biochemistry with plant functioning. The link between theory and practical syllabus is established, and the employability of youth would be enhanced. The youth can also begin small-scale enterprises.

Molecular Biology (BHCC8)

Understanding of nucleic acid, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process.Processing and modification of RNA and translation process, function and regulation of expression. Application in biotechnology.

Ecology (BHCC9)

It acquaint the students with complex interrelationship between organisms and environment; make them understand methods to studying vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography. This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity conservation.

Plant Systematics (BHCC10)

Understanding of systematics its importance in bioresource utilization and biodiversity management. Nomenclature pattern, Phylogeny, Classification systems of the plants.

Skill Enhancement course

Biofertilizers (BHSE3)

The student would have a deep understanding of ecofriendly fertilizers. They will be able to understand the growth and multiplication conditions of useful microbes such as Rhizobium, cyanobacteria, mycorrhizae, Azotobactor etc, their role in mineral cycling and nutrition to plants. The can also think of the methods of decomposition of biodegradable waste and convert into the compost.

Generic Elective IV: Economic Botany and Biotechnology (BHGE7)
Understanding of morphology, and processing and economic value of plant sources of cereals, legumes, spices, oil rubber, timber and medicines.

Reproductive Biology of Angiosperms (BHCC11)
Student would have an understanding of Induction of flowering and molecular and genetic aspects of flower development. Pollen development, dispersal and pollination, Ovule development and fertilization, Endosperm development and its importance. alternation pathways of reproduction. Student would be able to apply this knowledge for conservation of pollinators and fruit development.

Core course: Plant Physiology (BHCC12)
The students are able to correlate morphology, anatomy, cell structure and biochemistry with plant functioning. The link between theory and practical syllabus is established, and the employability of youth would be enhanced. The youth can also begin small-scale enterprises.

Discipline Specific Elective-I
Analytical Techniques in Plant Sciences (BHDS1)
Understanding of principles and use of light, confocal transmission and electron microscopy, centrifugation, spectrophotometry, chromatography, x-ray diffraction technique and chromatography techniques

Discipline Specific Elective-II
Biostatistics (BHDS2)
Understanding of interpreting the scientific data that is generated during scientific experiments.It is the responsibility of biostatisticians and other experts to consider the variables in subjects tounderstand them, and to make sense of different sources of variation. In essence, the goal of biostatistics is to disentangle the data received and make valid inferences that can be used to solve problems in public health. Biostatistics uses the application of statistical methods to conduct research in the areas of biology, public health, and medicine. Many times, experts in biostatistics collaborate with other scientists and researchers.

Plant Metabolism (BHCC13)
Concept and significance of metabolic redundancy in plants. Students will also be able to learn the similarity and differences in metabolic pathways in animals and plants. To have understanding of water and nutrient uptake and movement in plants, role of mineral elements, translocation of sugars, Role of various plant growth regulators, phytochrome cytochromes and phototropins, and flowering stimulus.

Core course: Plant Biotechnology (BHCC14)
The successful students will be able to: Learn the basic concepts, principles and processes in plant biotechnology. Have the ability of explanation of concepts, principles and usage of the acquired knowledge in biotechnological, pharmaceutical, medical, ecological and agricultural

applications. Use basic biotechnological techniques to explore molecular biology of plants. Explain how biotechnology is used to for plant improvement and discuss the biosafety concern and ethical issue of that use.

Discipline Specific Elective-IV

Industrial and Environmental Microbiology (BHDS3)

Upon successful completion of the course, students are expected to be able to Understand how microbiology is applied in manufacturing of industrial products. Know about design of bioreactors, factors affecting growth and production .Understand the rationale in medium formulation & design for microbial fermentation, sterilization of medium and air. Comprehend the different types of fermentation processes. Comprehend the techniques and the underlying principles in upstream and down- stream processing. Learn the occurrence, abundance and distribution of microorganism in the environment and their role in the environment and also learn different methods for their detection. Understand various biogeochemical cycles – Carbon and Nitrogen, and microbes involved. Understand the basic principles of environment microbiology and application of the same in solving environmental problems – waste water treatment and bioremediation. Comprehend the various methods to determine the quality of water

Discipline Specific Elective-IV: Bioinformatics (BHDS4)

With a working knowledge of the practical and theoretical concepts of bioinformatics, you will be well qualified to progress onto advanced graduate study. The portfolio of skills developed on the programme is also suited to academic research or work within the bioinformatics industry as well as range of commercial settings.

17. B.Sc. (Hons.) Chemistry

CHEMISTRY - C I: INORGANIC CHEMISTRY - I

Atomic Structure & Chemical Bonding

By the end of the course, the students will be able to: Solve the conceptual questions using the knowledge gained by studying the quantum mechanical model of the atom, quantum numbers, electronic configuration, radial and angular distribution curves, shapes of s, p, and d orbitals, and periodicity in atomic radii, ionic radii, ionization energy and electron affinity of elements. Draw the plausible structures and geometries of molecules using Radius Ratio Rules, VSEPR theory and MO diagrams (homo- & hetero-nuclear diatomic molecules). Understand the concept of lattice energy using Born-Landé and Kapustinskii expression. Rationalize the conductivity of metals, semiconductors and insulators based on the Band theory. Understand the importance and application of chemical bonds, inter-molecular and intramolecular weak chemical forces and their effect on melting points, boiling points, solubility and energetics of dissolution.

CHEMISTRY - C II: PHYSICAL CHEMISTRY - I

States of Matter & Ionic Equilibrium

By the end of the course, students will be able to: Derive mathematical expressions for different properties of gas, liquid and solids and understand their physical significance. Explain the crystal structure and calculate related properties of cubic systems. Explain the concept of ionization of electrolytes with emphasis on weak acid and base and hydrolysis of salt. Apply the concepts of gas equations, pH and electrolytes while studying other chemistry courses and everyday life.

CHEMISTRY –GE-1

Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons

By the end of the course, the students will be able to: Solve the conceptual questions using the knowledge gained by studying the quantum mechanical model of the atom, quantum numbers, electronic configuration, radial and angular distribution curves, shapes of s, p, and d orbitals, and periodicity in atomic radii, ionic radii, ionization energy and electron affinity of elements. Draw the plausible structures and geometries of molecules using radius ratio rules, VSEPR theory and MO diagrams (homo- & hetero-nuclear diatomic molecules). Understand and explain the differential behavior of organic compounds based on fundamental concepts learnt. Formulate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved. Learn and identify many organic reaction mechanisms including free radical substitution, electrophilic addition and electrophilic aromatic substitution.

CHEMISTRY – CIII: ORGANIC CHEMISTRY - I

Basics and Hydrocarbons

On completion of the course, the student will be able to: Understand and explain the different nature and behaviour of organic compounds based on fundamental concepts learnt. Formulate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved. Learn and identify many organic reaction mechanisms including Free Radical Substitution, Electrophilic Addition and Electrophilic Aromatic Substitution. Understand the fundamental concepts of stereochemistry.

CHEMISTRY - C IV: PHYSICAL CHEMISTRY - II

Chemical Thermodynamics and its Applications

By the end of the course, students will be able to: Understand the three laws of thermodynamics, concept of State and Path functions, extensive and intensive properties. Derive the expressions of ΔU, ΔH, ΔS, ΔG, ΔA for ideal gases under different conditions. Explain the concept of partial molar properties. Explain the thermodynamic basis of colligative properties and applications in surroundings

CHEMISTRY –GE-2

Chemical Energetics, Equilibria and Functional Group Organic Chemistry-I

Learning Outcomes: By the end of this course, students will be able to: Understand the laws of thermodynamics, thermochemistry and equilibria. Understand concept of pH and its effect on the various physical and chemical properties of the compounds. Use the concepts learnt to predict feasibility of chemical reactions and to study the behaviour of reactions in

equilibrium. Understand the fundamentals of functional group chemistry through the study of methods of preparation, properties and chemical reactions with underlying mechanism. Use concepts learnt to understand stereochemistry of a reaction and predict the reaction outcome . Design newer synthetic routes for various organic compounds.

CHEMISTRY - CV: INORGANIC CHEMISTRY - II

s- and p-Block Elements

By the end of the course, the students will be able to: Learn the fundamental principles of metallurgy and understand the importance of recovery of byproducts during extraction. Understand the basic and practical applications in various fields of metals and alloy behavior and their manufacturing processes. Apply the thermodynamic concepts like that of Gibbs energy and entropy to the principles of extraction of metals. Understand the periodicity in atomic and ionic radii, electronegativity, ionization energy, electron affinity of elements of the periodic table. Understand oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides. Understand vital role of sodium, potassium, calcium and magnesium ions in biological systems and the use of caesium in devising photoelectric cells.

CHEMISTRY - CVI: ORGANIC CHEMISTRY - II

Halogenated Hydrocarbons and Oxygen Containing Functional Groups

On completion of the course, the student will be able to: Understand preparation, properties and reactions of haloalkanes, haloarenes and oxygen containing functional groups. Use the synthetic chemistry learnt in this course to do functional group transformations. To propose plausible mechanisms for any relevant reaction.

CHEMISTRY - CVII: PHYSICAL CHEMISTRY–III

Phase Equilibria and Electrochemical Cells

By the end of the course, students will be able to: Understand phase equilibrium, criteria, CST, Gibbs-Duhem-Margules equation. Learn the working of electrochemical cells, galvanic cell, corrosion and happenings in surroundings related to electrochemistry.

CHEMISTRY –GE-3

Solutions, Phase Equilibrium, Conductance, Electrochemistry and Functional Group Organic Chemistry-II

Learning Outcomes: By the end of the course, the students will be able to: Explain the concepts of different types of binary solutions-miscible, partially miscible and immiscible along with their applications.Explain the thermodynamic aspects of equilibria between phases and draw phase diagrams of simple one component and two component systems.Explain the factors that affect conductance, migration of ions and application of conductance measurement. Understand different types of galvanic cells, their Nernst equations, measurement of emf, calculations of thermodynamic properties and other parameters from the emf measurements. Understand and demonstrate how the structure of biomolecules determines their chemical properties, reactivity and biological uses.

Design newer synthetic routes for various organic compounds.

CHEMISTRY –SEC-2

Basic Analytical Chemistry

By the end of this course, students will be able to: Handle analytical data , Determine composition and pH of soil, which can be useful in agriculture. Do quantitative analysis of metal ions in water.Separate mixtures using separation techniques. Estimate macro nutrients using Flame photometry

CHEMISTRY – CVIII: INORGANIC CHEMISTRY - III

Coordination Chemistry

By the end of the course, the students will be able to: Understand the terms, ligand, denticity of ligands, chelate, coordination number and use standard rules to name coordination compounds. Discuss the various types of isomerism possible in such compounds and understand the types of isomerism possible in a metal complex. Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes. Explain the meaning of the terms $\Delta o.$, Δt, pairing energy, CFSE, high spin and low spin and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy. Explain magnetic properties and colour of complexes on basis of Crystal Field Theory. Understand the important properties of transition metals like variable oxidation states, colour, magnetic and catalytic properties and use Latimer diagrams to predict and identify species which are reducing, oxidizing and tend to disproportionate and calculate skip step potentials. Understand reaction mechanisms of coordination compounds and differentiate between kinetic and thermodynamic stability.

CHEMISTRY - CIX: ORGANIC CHEMISTRY – III

Nitrogen containing functional groups, Polynuclear Hydrocarbons, Heterocyclic **Chemistry, Alkaloids and Terpenes.**

On completion of this course, the students will be able to: Gain theoretical understanding of chemistry of compounds having nitrogen containing functional groups, heterocyclics, polynuclear hydrocarbons, alkaloids and terpenes which includes various methods for synthesis through application of the synthetic organic chemistry concepts learnt so far. Become familiar with their particular properties, chemical reactions, criterion of aromaticity with reference to polynuclear hydrocarbons and heterocyclic compounds, trends in basicity of amines and heterocyclic compounds and their behaviour at different pH. Learn practical approach to structural elucidation of organic compounds with specific examples of terpenes and alkaloids. Predict the carbon skeleton of amines and heterocyclic compounds via use of Hoffmann's exhaustive methylation and Emde's modification methods. Understand the applications of these compounds including their medicinal applications through their reaction chemistry

CHEMISTRY - CX: PHYSICAL CHEMISTRY–IV

Conductance & Chemical Kinetics

By end of this course, students will be able to: Explain the chemistry of conductance and its variation with dilution, migration of ions in solutions. Learn the applications of conductance

measurements. Have understanding of rate law and rate of reaction, theories of reaction rates and catalysts; both chemical and enzymatic. Have knowledge of the laws of absorption of light energy by molecules and the subsequent photochemical reactions.

CHEMISTRY –GE-4

Chemistry of s- and p-Block Elements, States of Matter and Chemical Kinetics

By the end of the course, the students will be able to: Understand the chemistry and applications of s- and p-block elements. Derive ideal gas law from kinetic theory of gases and explain why the real gases deviate from ideal behaviour. Explain Maxwell-Boltzmann distribution, critical constants and viscosity of gases. Explain the properties of liquids especially surface tension and viscosity. Explain symmetry elements, crystal structure specially NaCl, KCl and CsCl . Define rate of reactions and the factors that affect the rates of reaction.

Understand the concept of rate laws e.g., order, molecularity, half-life and their determination. Learn about various theories of reaction rates and how these account for experimental observations.

CHEMISTRY –SEC-7

Analytical Clinical Biochemistry

By the end of the course, the students will be able to: Understand and establish how the structure of biomolecules determines their reactivity and biological uses. Understand the basic principles of drug-receptor interaction and structure activity relation (SAR). Gain an insight into concept of heredity through biological processes like replication, transcription and translation. Demonstrate an understanding of the biochemistry of diseases. Understand the application of chemistry in biological systems.

CHEMISTRY - CXI: ORGANIC CHEMISTRY - IV

Biomolecules

On completion of this course, the students will be able to: Understand and demonstrate how structure of biomolecules determines their reactivity and biological functions. Gain insight into concepts of heredity through the study of genetic code, replication, transcription and translation. Demonstrate understanding of metabolic pathways, their inter-relationship, regulation and energy production from biochemical processes.

CHEMISTRY - CXII: PHYSICAL CHEMISTRY–V

Quantum Chemistry & Spectroscopy

By the end of this course, students will be able to:Learn about limitations of classical mechanics and solution in terms of quantum mechanics for atomic/molecular systems. Develop an understanding of quantum mechanical operators, quantization, probability distribution, uncertainty principle and application of quantization to spectroscopy. Interpret various types of spectra and know about their application in structure elucidation

CHEMISTRY –DSE-2

Inorganic Materials of Industrial Importance

By the end of the course, the students will be able to: Learn the composition and applications of the different kinds of glass.Understand glazing of ceramics and the factors affecting their porosity.Give the composition of cement and discuss the mechanism of setting of cement. Explain the suitability of fertilizers for different kinds of crops and soil. Explain the process of formulation of paints and the basic principle behind the protection offered by the surface coatings. Explain the principle, working and applications of different batteries.List and explain the properties of engineering materials for mechanical construction used in day-to-day life. Explain the synthesis and properties of nano-dimensional materials, various semiconductor and superconductor oxides.

CHEMISTRY –DSE-3

Applications of Computers in Chemistry

By the end of the course, the students will be able to: Have knowledge of most commonly used commands and library functions used in QBASIC programming. Develop algorithm to solve problems and write corresponding programs in BASIC for performing calculations involved in laboratory experiments and research work. Use various spreadsheet software to perform theoretical calculations and plot graphs

CHEMISTRY - CXIII: INORGANIC CHEMISTRY - IV

Organometallic Chemistry & Bio-inorganic Chemistry

By the end of the course, the students will be able to: Understand and explain the basic principles of qualitative inorganic analysis. Apply 18-electron rule to rationalize the stability of metal carbonyls and related species. Understand the nature of Zeise's salt and compare its synergic effect with that of carbonyls. Identify important structural features of the metal alkyls tetrameric methyl lithium and dimeric trialkyl aluminium and explain the concept of multicentre bonding in these compounds. Diagrammatically explain the working of the sodium-potassium pump in organisms and the factors affecting it and understand and describe the active sites and action cycles of the metalloenzymes carbonic anhydrase and carboxypeptidase. Explain the sources and consequences of excess and deficiency of trace metals and learn about the toxicity of certain metal ions, the reasons for toxicity and antidotes.Explain the use of chelating agents in medicine and, specifically, the role of cisplatin in cancer therapy and explain the applications of iron in biological systems with particular reference to haemoglobin, myoglobin, ferritin and transferrin. Get a general idea of catalysis and describe in detail the mechanism of Wilkinson's catalyst, Zeigler- Natta catalyst and synthetic gasoline manufacture by Fischer-Tropsch process.

CHEMISTRY - CXIV: ORGANIC CHEMISTRY - V

Spectroscopy and Applied Organic Chemistry

On completion of this course, the students will be able to: Gain insight into the basic principles of UV, IR and NMR spectroscopic techniques. Use spectroscopic techniques to determine structure and stereochemistry of known and unknown compounds. Develop a sound understanding of the structure of Pharmaceutical Compounds. They will also understand the importance of different classes of drugs and their applications for treatment of various diseases. Learn about the chemistry of natural and synthetic polymers including

fabrics and rubbers. Understand the chemistry of biodegradable and conducting polymers and appreciate the need of biodegradable polymers with emphasis on basic principles. Learn about the theory of colour and constitution as well as the chemistry of dyeing. Know applications of various types of dyes including those in foods and textiles.

CHEMISTRY –DSE-5

Molecular Modelling and Drug Design

By the end of this course, students will be able to: Understand theoretical background of computational techniques and selective application to various molecular systems. Learn Energy minimization methods through use of different force fields. Learn ESP Plots by suitable soft wares, electron rich and electron deficient sites. Compare computational and experimental results and explain deviations. Carry out Molecular dynamics (MD) and Monte Carlo (MC) simulations on several molecules and polymers. Learn QSAR properties and their role in molecular modelling, cheminformatics and drug discovery. Perform Optimization of geometry parameters of a molecule (such as shape, bond length and bond angle) through use of software like Chem Sketch and Argus Lab in interesting hands-on exercises.

CHEMISTRY –DSE-9

Industrial Chemicals and Environment

By the end of this course students will be able to understand: The different toxic gases and their toxicity hazards. Safe design systems for large scale production of industrial gases. Manufacturing processes, handling and storage of inorganic chemicals. Hazardous effects of the inorganic chemicals on human beings and vegetation. The requirement of ultra-pure metals for the semiconducting technologies. Composition of air, various air pollutants, effects and control measures of air pollutants. Different sources of water, water quality parameters, impacts of water pollution, water treatment. Different industrial effluents and their treatment methods. Different sources of energy. Generation of nuclear waste and its disposal. Use of biocatalyst in chemical industries.

18. B.Sc. (Hons.) Mathematics

Core Course 1: BMATH101: Calculus (including practicals)

This course will enable the students to: Learn first and second derivative tests for relative extrema and apply the knowledge in problems in business, economics and life sciences. Sketch curves in a plane using its mathematical properties in the different coordinate systems of reference. Compute area of surfaces of revolution and the volume of solids by integrating over cross-sectional areas. Understand the calculus of vector functions and its use to develop the basic principles of planetary motion.

BMATH102: Algebra

This course will enable the students to: Employ De Moivre's theorem in a number of applications to solve numerical problems. Learn about equivalent classes and cardinality of a set. Use modular arithmetic and basic properties of congruences.Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix. Find eigenvalues and corresponding eigenvectors for a square matrix.

BMATH203: Real Analysis

This course will enable the students to: Understand many properties of the real line $\mathbb{R}$, including completeness and Archimedean properties.Learn to define sequences in terms of functions from $\mathbb{N}$ to a subset of $\mathbb{R}$. Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.

Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.

BMATH204: Differential Equations

The course will enable the students to: Learn basics of differential equations and mathematical modeling.Formulate differential equations for various mathematical models.Solve first order non-linear differential equations and linear differential equations of higher order using various techniques. Apply these techniques to solve and analyze various mathematical models.

BMATH305: Theory of Real Functions

This course will enable the students to: Have a rigorous understanding of the concept of limit of a function. Learn about continuity and uniform continuity of functions defined on intervals. Understand geometrical properties of continuous functions on closed and bounded intervals.Learn extensively about the concept of differentiability using limits, leading to a better understanding for applications. Know about applications of mean value theorems and Taylor's theorem.

BMATH306: Group Theory-I

The course will enable the students to: Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, etc. Link the fundamental concepts of groups and symmetrical figures. Analyze the subgroups of cyclic groups and classify subgroups of cyclic groups. Explain the significance of the notion of cosets, normal subgroups and factor groups. Learn about Lagrange's theorem and Fermat's Little theorem. Know about group homomorphisms and group isomorphisms.

BMATH307: Multivariate Calculus

This course will enable the students to: Learn the conceptual variations when advancing in calculus from one variable to multivariable discussion. Understand the maximization and minimization of multivariable functions subject to the given constraints on variables. Learn about inter-relationship amongst the line integral, double and triple integral formulations. Familiarize with Green's, Stokes' and Gauss divergence theorems.

Skill Enhancement Paper

SEC-1: LaTeX and HTML

After studying this course the student will be able to: Create and typeset a LaTeX document. Typeset a mathematical document using LaTex. Learn about pictures and graphics in LaTex. Create beamer presentations. Create web page using HTML

BMATH408: Partial Differential Equations.

The course will enable the students to: Formulate, classify and transform first order PDEs into canonical form. Learn about method of characteristics and separation of variables to solve first order PDE's. Classify and solve second order linear PDEs. Learn about Cauchy problem for second order PDE and homogeneous and nonhomogeneous wave equations. Apply the method of separation of variables for solving many well-known second order PDEs.

BMATH409: Riemann Integration & Series of Functions

The course will enable the students to: Learn about some of the classes and properties of Riemann integrable functions, and the applications of the Fundamental theorems of integration. Know about improper integrals including, beta and gamma functions. Learn about Cauchy criterion for uniform convergence and Weierstrass M-test for uniform convergence. Know about the constraints for the inter-changeability of differentiability and integrability with infinite sum. Approximate transcendental functions in terms of power series as well as, differentiation and integration of power series.

BMATH410: Ring Theory & Linear Algebra-I

The course will enable the students to: Learn about the fundamental concept of rings, integral domains and fields. Know about ring homomorphisms and isomorphisms theorems of rings. Learn about the concept of linear independence of vectors over a field, and the dimension of a vector space. Basic concepts of linear transformations, dimension theorem, matrix representation of a linear transformation, and the change of coordinate matrix.

SEC-2: Computer Algebra Systems and Related Software

This course will enable the students to: Use of computer algebra systems (Mathematica/MATLAB/Maxima/Maple etc.) as a calculator, for plotting functions and animations. Use of CAS for various applications of matrices such as solving system of equations and finding eigenvalues and eigenvectors.Understand the use of the statistical software R as calculator and learn to read and get data into R.Learn the use of R in summary calculation, pictorial representation of data and exploring relationship between data.Analyze, test, and interpret technical arguments on the basis of geometry

BMATH511: Metric Spaces

The course will enable the students to: Learn various natural and abstract formulations of distance on the sets of usual or unusual entities. Become aware one such formulations leading to metric spaces.Analyse how a theory advances from a particular frame to a general

frame.Appreciate the mathematical understanding of various geometrical concepts, viz. balls or connected sets etc. in an abstract setting. Know about Banach fixed point theorem, whose far-reaching consequences have resulted into an independent branch of study in analysis, known as fixed point theory. Learn about the two important topological properties, namely connectedness and compactness of metric spaces.

BMATH512: Group Theory-II

The course shall enable students to: Learn about automorphisms for constructing new groups from the given group.Learn about the fact that external direct product applies to data security and electric circuits. Understand fundamental theorem of finite abelian groups.Be familiar with group actions and conjugacy in $S_{n.}$ Understand Sylow theorems and their applications in checking nonsimplicity.

Discipline Specific Elective (DSE) Course -1 (including practicals)

Any one of the following (two offered by the college):

DSE-1 (i): Numerical Analysis

The course will enable the students to: Learn some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision. Know about methods to solve system of linear equations, such as Gauss−Jacobi, Gauss−Seidel and SOR methods. Interpolation techniques to compute the values for a tabulated function at points not in the table. Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.

DSE-1 (ii): Mathematical Modeling and Graph Theory

The course will enable the students to: Know about power series solution of a differential equation and learn about Legendre's and Bessel's equations.Use of Laplace transform and inverse transform for solving initial value problems. Learn about various models such as Monte Carlo simulation models, queuing models, and linear programming models. Understand the basics of graph theory and learn about social networks, Eulerian and Hamiltonian graphs, diagram tracing puzzles and knight's tour problem.

DSE-1 (iii): C++ Programming for Mathematics

After completion of this paper, student will be able to: Understand and apply the programming concepts of C++ which is important to mathematical investigation and problem solving. Learn about structured data-types in C++ and learn about applications in factorization of an integer and understanding Cartesian geometry and Pythagorean triples. Use of containers and templates in various applications in algebra. Use mathematical libraries for computational objectives. Represent the outputs of programs visually in terms of well formatted text and plots.

DSE-2 (i): Probability Theory and Statistics

This course will enable the students to: Learn about probability density and moment generating functions. Know about various univariate distributions such as Bernoulli,

Binomial, Poisson, gamma and exponential distributions.Learn about distributions to study the joint behavior of two random variables. Measure the scale of association between two variables, and to establish a formulation helping to predict one variable in terms of the other, i.e., correlation and linear regression. Understand central limit theorem, which helps to understand the remarkable fact that: the empirical frequencies of so many natural populations, exhibit a bell-shaped curve, i.e., a normal distribution.

DSE-2 (ii): Discrete Mathematics

After the course, the student will be able to: Understand the notion of ordered sets and maps between ordered sets. Learn about lattices, modular and distributive lattices, sublattices and homomorphisms between lattices. Become familiar with Boolean algebra, Boolean homomorphism, Karnaugh diagrams, switching circuits and their applications.Learn about basics of graph theory, including Eulerian graphs, Hamiltonian graphs.Learn about the applications of graph theory in the study of shortest path algorithms.

DSE-2 (iii): Cryptography and Network Security

After the course, the student will be able to: Understand the fundamentals of cryptography and computer security attacks. Learn about various ciphers and data encryption standard.Review basic concepts of number theory and finite fields.Learn about advanced encryption standard. Understand the fundamentals of RSA and elliptic curve cryptography. Encrypt and decrypt messages using block ciphers, sign and verify messages using well known signature generation and verification algorithms.

BMATH613: Complex Analysis

The completion of the course will enable the students to: Learn the significance of differentiability of complex functions leading to the understanding of Cauchy−Riemann equations.Learn some elementary functions and valuate the contour integrals. Understand the role of Cauchy−Goursat theorem and the Cauchy integral formula. Expand some simple functions as their Taylor and Laurent series, classify the nature of singularities, find residues and apply Cauchy Residue theorem to evaluate integrals.

BMATH614: Ring Theory and Linear Algebra-II

On completion of this course, the student will be able to: Appreciate the significance of unique factorization in rings and integral domains. Compute the characteristic polynomial, eigenvalues, eigenvectors, and eigenspaces, as well as the geometric and the algebraic multiplicities of an eigenvalue and apply the basic diagonalization result.Compute inner products and determine orthogonality on vector spaces, including Gram−Schmidt orthogonalization to obtain orthonormal basis.Find the adjoint, normal, unitary and orthogonal operators.

DSE-3 (i): Mathematical Finance

On completion of this course, the student will be able to: Know the basics of financial markets and derivatives including options and futures.Learn about pricing and hedging of

options, as well as interest rate swaps.Learn about no-arbitrage pricing concept and types of options.Learn stochastic analysis (Ito formula, Ito integration) and the Black−Scholes model. Understand the concepts of trading strategies and valuation of currency swaps.

DSE-3 (ii): Introduction to Information Theory and Coding

This course will enable the students to: Learn about the basic concepts of information theory.Know about basic relationship among different entropies and interpretation of Shannon's fundamental inequalities.Learn about the detection and correction of errors while transmission.Representation of a linear code by matrices. Learn about encoding and decoding of linear codes.

DSE-3 (iii): Biomathematics

Apropos conclusion of the course will empower the student to:Learn the development, analysis and interpretation of bio mathematical models such as population growth, cell division, and predator-prey models. Learn about the mathematics behind heartbeat model and nerve impulse transmission model. Appreciate the theory of bifurcation and chaos. Learn to apply the basic concepts of probability to molecular evolution and genetics

DSE-4 (i): Number Theory

This course will enable the students to: Learn about some fascinating discoveries related to the properties of prime numbers, and some of the open problems in number theory, viz., Goldbach conjecture etc. Know about number theoretic functions and modular arithmetic. Solve linear, quadratic and system of linear congruence equations. Learn about public key crypto systems, in particular, RSA.

DSE-4 (ii): Linear Programming and Applications

This course will enable the students to: Learn about the graphical solution of linear programming problem with two variables.Learn about the relation between basic feasible solutions and extreme points. Understand the theory of the simplex method used to solve linear programming problems.Learn about two-phase and big-M methods to deal with problems involving artificial variables. Learn about the relationships between the primal and dual problems. Solve transportation and assignment problems. Apply linear programming method to solve two-person zero-sum game problems.

DSE-4 (iii): Mechanics

The course will enable the students to: Know about the concepts in statics such as moments, couples, equilibrium in both two and three dimensions.Understand the theory behind friction and center of gravity. Calculate moments of inertia of areas and rigid bodies.Know about conservation of mechanical energy and work-energy equations. Learn about translational and rotational motion of rigid bodies.

19. B.Sc. (Hons.) Physics

Core Course

Mathematical Physics-I (32221101)

After completing this course, student will be able to Draw and interpret graphs of various functions. Solve first and second order differential equations and apply these to physics problems. Understand the concept of gradient of scalar field and divergence and curl of vector fields. Perform line, surface and volume integration and apply Green's, Stokes' and Gauss's Theorems to compute these integrals. Apply curvilinear coordinates to problems with spherical and cylindrical symmetries.Understand elementary probability theory and the properties of discrete and continuous distribution functions. In the laboratory course, the students will be able to design, code and test simple programs in C++ in the process of solving various problems.

Mechanics (32221102)

Upon completion of this course, students are expected to Understand laws of motion and their application to various dynamical situations. Learn the concept of inertial reference frames and Galilean transformations. Also, the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.Understand translational and rotational dynamics of a system of particles. Apply Kepler's laws to describe the motion of planets and satellite in circular orbit. Understand concept of Geosynchronous orbits. Explain the phenomenon of simple harmonic motion. Understand special theory of relativity - special relativistic effects and their effects on the mass and energy of a moving object. In the laboratory course, the student shall perform experiments related to mechanics: compound pendulum, rotational dynamics (Flywheel), elastic properties (Young Modulus and Modulus of Rigidity), fluid dynamics, estimation of random errors in the observations etc.

Electricity and Magnetism (32221201)

At the end of this course the student will be able to Demonstrate the application of Coulomb's law for the electric field, and also apply it to systems of point charges as well as line, surface, and volume distributions of charges. Demonstrate an understanding of the relation between electric field and potential, exploit the potential to solve a variety of problems, and relate it to the potential energy of a charge distribution. Apply Gauss's law of electrostatics to solve a variety of problems. Calculate the magnetic forces that act on moving charges and the magnetic fields due to currents (Biot- Savart and Ampere laws). Understand the concepts of induction and self-induction, to solve problems using Faraday's and Lenz's laws. Understand the basics of electrical circuits and analyze circuits using Network Theorems. In the laboratory course the student will get an opportunity to verify network theorems and study different circuits such as RC circuit, LCR circuit. Also, different methods to measure low and high resistance, capacitance, self-inductance, mutual inductance, strength of a magnetic field and its variation in space will be learnt.

Waves and Optics (32221202)

On successfully completing the requirements of this course, the students will have the skill and knowledge to:Understand Simple harmonic oscillation and superposition principle. Understand different types of waves and their velocities: Plane, Spherical, Transverse,

Longitudinal. Understand Concept of normal modes in transverse and longitudinal waves: their frequencies and configurations.Understand Interference as superposition of waves from coherent sources derived from same parent source. Demonstrate basic concepts of Diffraction: Superposition of wavelets diffracted from aperture, understand Fraunhoffer and Fresnel Diffraction. In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt first hand. The motion of coupled oscillators, study of Lissajous figures and behaviour of transverse, longitudinal waves can be learnt in this laboratory course.

Mathematical Physics-II (32221301)

On successfully completing this course, the students will be able to Represent a periodic function by a sum of harmonics using Fourier series and their applications in physical problems such as vibrating strings etc. Obtain power series solution of differential equation of second order with variable coefficient using Frobenius method. Understand properties and applications of special functions like Legendre polynomials, Bessel functions and their differential equations and apply these to various physical problems such as in quantum mechanics. Learn about gamma and beta functions and their applications. Solve linear partial differential equations of second order with separation of variable method. In the laboratory course, the students will learn the basics of the Scilab software/Python interpreter and apply appropriate numerical method to solve selected physics problems both using user defined and inbuilt functions from Scilab/Python. They will also learn to generate and plot Legendre polynomials and Bessel functions and verify their recurrence relation.

Thermal Physics (32221302)

At the end of the course, students will be able to: Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics. Understand the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. Know about reversible and Irreversible processes. Learn about Maxwell's relations and use them for solving many problems in Thermodynamics. Understand the concept and behavior of ideal and real gases. Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equitation of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion. In the laboratory course, the students are expected to do some basic experiments in thermal Physics, viz., determination of Mechanical Equivalent of Heat (J), coefficient of thermal conductivity of good and bad conductor, temperature coefficient of resistance, variation of thermo-emf of a thermocouple with temperature difference at its two junctions and calibration of a thermocouple.

Digital Systems and Applications (32221303)

This course lays the foundation for understanding the digital logic circuits and their use in combinational and sequential logic circuit design. It also imparts information about the basic architecture, memory and input/output organization in a microprocessor system. The students also learn the working of CRO. Course learning begins with the basic understanding of active

and passive components. It then builds the concept of Integrated Chips (IC): its classification and uses. Differentiating the Analog and Digital circuits, the concepts of number systems like Binary,BCD, Octal and hexadecimal are developed to elaborate and focus on the digital systems. Sequential Circuits: Basic memory elements Flips-Flops, shift registers and 4-bits counters leading to the concept of RAM, ROM and memory organization. Timer circuits using IC 555 providing clock pulses to sequential circuits and develop multivibrators. Introduces to basic architecture of processing in an Intel 8085 microprocessor and to Assembly Language. Also impart understanding of working of CRO and its usage in measurements of voltage, current, frequency and phase measurement. In the laboratory students will learn to construct both combinational and sequential circuits by employing NAND as building blocks and demonstrate Adders, Subtractors, Shift Registers, and multivibrators using 555 ICs. They are also expected to use µP 8085 to demonstrate the same simple programme using assembly language and execute the programme using a µP kit.

Mathematical Physics III (32221401)

After completing this course, student will be able to Determine continuity, differentiability and analyticity of a complex function, find the derivative of a function and understand the properties of elementary complex functions. Work with multi-valued functions (logarithmic, complex power, inverse trigonometric function) and determine branches of these functions. Evaluate a contour integral using parametrization, fundamental theorem of calculus and Cauchy's integral formula. Find the Taylor series of a function and determine its radius of convergence. Determine the Laurent series expansion of a function in different regions, find the residues and use the residue theory to evaluate a contour integral and real integral. Understand the properties of Fourier and Laplace transforms and use these to solve boundary value problems. In the laboratory course, the students will learn the basics of the Scilab software/Python interpreter and apply appropriate numerical method to solve selected physics problems both using user defined and inbuilt functions from Scilab/Python.

Elements of Modern Physics (32221402)

After getting exposure to this course, the following topics would be learnt:

Main aspects of the inadequacies of classical mechanics as well as understanding of the historical development of quantum mechanics. Formulation of Schrodinger equation and the idea of probability interpretation associated with wave-functions. The spontaneous and stimulated emission of radiation, optical pumping and population inversion. Three level and four level lasers. Ruby laser and He-Ne laser in details. Basic lasing.The properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model and nuclear shell model and mass formula. Decay rates and lifetime of radioactive decays like alpha, beta, gamma decay. Neutrino, its properties and its role in theory of beta decay. Fission and fusion: Nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars. In the laboratory course, the students will get opportunity to measure Planck's constant, verify photoelectric effect, determine e/m of electron, Ionization potential of atoms, study emission and absorption line spectra. They will also find wavelength of Laser sources by single and Double slit experiment, wavelength and angular spread of He-Ne Laser using plane diffraction grating.

Analog Systems and Applications (32221403)

At the end of this course, the following concepts will be learnt Characteristics and working of pn junction. Two terminal devices: Rectifier diodes, Zener diode, photodiode etc. NPN and PNP transistors: Characteristics of different configurations, biasing, stabilization and their applications. CE and two stage RC coupled transistor amplifier using h-parameter model of the transistor. Designing of different types of oscillators and their stabilities. Ideal and practical op-amps: Characteristics and applications. In the laboratory course, the students will be able to study characteristics of various diodes and BJT. They will be able to design amplifiers, oscillators and DACs. Also different applications using Op-Amp will be designed.

Quantum Mechanics &Applications (32221501)

The Students will be able to learn the following from this course: Methods to solve time-dependent and time-independent Schrodinger equation. Quantum mechanics of simple harmonic oscillator. Non-relativistic hydrogen atom: spectrum and eigenfunctions. Angular momentum: Orbital angular momentum and spin angular momentum. Bosons and fermions - symmetric and anti-symmetric wave functions. Application to atomic systems. In the laboratory course, with the exposure in computational programming in the computer lab, the student will be in a position to solve Schrodinger equation for ground state energy and wave functions of various simple quantum mechanical onedimensional and three dimensional potentials.

Solid State Physics (32221502)

On successful completion of the module students should be able to Elucidate the concept of lattice, crystals and symmetry operations. Understand the elementary lattice dynamics and its influence on the properties of materials. Describe the main features of the physics of electrons in solids: origin of energy bands, and their influence electronic behavior.Explain the origin of dia-, para-, and ferro-magnetic properties of solids. Explain the origin of the dielectric properties exhibited by solids and the concept of polarizability.Understand the basics of phase transitions and the preliminary concept and experiments related to superconductivity in solid. In the laboratory students will carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop. They will also employ to four probe methods to measure electrical conductivity and the hall set up to determine the hall coefficient of a semiconductor.

Electromagnetic Theory (32221601)

At the end of this course the student will be able to:

Apply Maxwell's equations to deduce wave equation, electromagnetic field energy, momentum and angular momentum density. Understand electromagnetic wave propagation in unbounded media: Vacuum, dielectric medium, conducting medium, plasma. Understand electromagnetic wave propagation in bounded media: reflection and transmission coefficients at plane interface in bounded media. Understand polarization of Electromagnetic Waves: Linear, Circular and Elliptical Polarization. Production as well as detection of waves in laboratory. Learn the features of planar optical wave guide.Understand the fundamentals of

propagation of electromagnetic waves through optical fibres. In the laboratory course, the student get an opportunity to perform experiments with Polarimeter, Babinet Compensator, Ultrasonic grating, simple dipole antenna. Also, to study phenomena of interference, refraction, diffraction and polarization.

Statistical Mechanics(32221602)

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

Understand the concepts of microstate, macrostate, phase space, thermodynamic probability and partition function. Understand the use of Thermodynamic probability and Partition function for calculation of thermodynamic variables for physical system (Ideal gas, finite level system). Difference between the classical and quantums tatistics. Understand the properties and Laws associated with thermal radiation. Apply the Fermi- Dirac distribution to model problems such as electrons in solids and white dwarf stars. Apply the Bose-Einstein distribution to model problems such as blackbody radiation and Helium gas. In the laboratory course, with the exposure in computer programming and computational techniques, the student will be in a position to perform numerical simulations for solving the problems based on Statistical Mechanics.

Discipline specific Elective Course (DSE)

Advanced Mathematical Physics - I (32227502)

At the end of this course, students will be able to

Understand algebraic structures in n-dimension and basic properties of the linear vector spaces. Represent Linear Transformations as matrices and understand basic properties of matrices. Apply vector spaces and matrices in the quantum world. Learn basic properties of Cartesian and general tensors with physical examples such as moment of inertia tensor, energy momentum tensor, stress tensor, strain tensor etc. Learn how to express the mathematical equations for the Laws of Physics in their covariant forms. In the laboratory course, the students are expected to solve the problems using the Scilab/C++/Python computer language: Eigenvalues and Eigenvectors of given matrix, determination of wave functions for stationary states as eigenfunctions, eigen energy values of Hermitian differential operators, Lagrangian formulation in classical dynamics etc.

Nuclear and Particle Physics(32227504)

To be able to understand the basic properties of nuclei as well as knowledge of experimental determination of the same, the concept of binding energy, its various dependent parameters, N-Z curves and their significance.To appreciate the formulations and contrasts between different nuclear models such as Liquid drop model, Fermi gas model and Shell Model and evidences in support. Knowledge of radioactivity and decay laws. A detailed analysis, comparison and energy kinematics of alpha, beta and gamma decays. Familiarization with different types of nuclear reactions, Q- values, compound and direct reactions.To know about energy losses due to ionizing radiations, energy losses of electrons, gamma ray interactions through matter and neutron interaction with matter. Through the section on accelerators students will acquire knowledge about Accelerator facilities in India along with a

comparative study of a range of detectors and accelerators which are building blocks of modern day science.

Communication System (32227613)

At the end of this course, students will be able to Understand of fundamentals of electronic communication system and electromagnetic communication spectrum with an idea of frequency allocation for radio communication system in India. Gain an insight on the use of different modulation and demodulation techniques used in analog communication. Learn the generation and detection of a signal through pulse and digital modulation techniques and multiplexing. Gain an in-depth understanding of different concepts used in a satellite communication system. Study the concept of Mobile radio propagation, cellular system design and understand mobile technologies like GSM and CDMA.Understand evolution of mobile communication generations 2G, 3G, and 4G with their characteristics and limitations. In the laboratory course, students will apply the theoretical concepts to gain hands on experience in building modulation and demodulation circuits; Transmitters and Receivers for AM and FM. Also to construct TDM, PAM, PWM, PPM and ASK, PSK and FSK modulator and verify their results.

Classical Dynamics (32227626)

At the end of this course, students will be able to:

Understand the physical principle behind the derivation of Lagrange and Hamilton equations, and the advantages of these formulations. Understand small amplitude oscillations. Understand the intricacies of motion of particle in central force field. Critical thinking and problem-solving skills. Recapitulate and learn the special theory of relativity extending to Four – vectors. Learn the basics of fluid dynamics, streamline and turbulent flow, Reynolds's number, coefficient of viscosity and Poiseuille's equation.

Skill Enhancement Course (SEC)

Basic Instrumentation Skills (32223904)

At the end of this course the students will learn the following:

The student is expected to have the necessary working knowledge on accuracy, precision, resolution, range and errors/uncertainty in measurements. Course learning begins with the basic understanding of the measurement and errors in measurement. It then familiarizes about each and every specification of a multimeter, multimeters, multivibrators, rectifiers, amplifiers, oscillators and high voltage probes and their significance with hands on mode. Explanation of the specifications of CRO and their significance. Complete explanation of CRT. Students learn the use of CRO for the measurement of voltage (DC and AC), frequency and time period. Covers the Digital Storage Oscilloscope and its principle of working. Students learn principles of voltage measurement. Students should be able to understand the advantages of electronic voltmeter over conventional multimeter in terms of sensitivity etc. Types of AC millivoltmeter should be covered. Covers the explanation and specifications of Signal and pulse Generators: low frequency signal generator and pulse generator. Students should be familiarized with testing and specifications. Students learn about the working

principles and specifications of basic LCR bridge. Hands on ability to use analog and digital instruments like digital multimeter and frequency counter.

Computational Physics Skills (32223902)

Students will be able to Use computers for solving problems in Physics. Prepare algorithms and flowcharts for solving a problem. Use Linux commands on terminal. Use an unformatted editor to write sources codes. Learn "Scientific Word Processing", in particular, using LaTeX for preparing articles, papers etc. which include mathematical equations, picture and tables. Learn the basic commands of Gnuplot.

Generic Elective (GE)

Electricity and Magnetism (32225101)

At the end of this course, students will be able to

Gain the concepts of vector analysis. Apply Gauss's law of electrostatics to solve a variety of problems. Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential. Calculate the magnetic forces that act on moving charges and the magnetic fields due to currents (Biot- Savart and Ampere laws); Gain brief idea of dia, para and ferro-magnetic materials . Understand the concepts of induction and self-induction, to solve problems using Faraday's and Lenz's laws. Have an introduction to Maxwell's equations. In the laboratory course the student will get an opportunity to verify network theorems and study different circuits such as RC circuit, LCR circuit. Also, different methods to measure low and high resistance, capacitance etc.

Mechanics(32225201)

Upon completion of this course, students are expected to

Understand the role of vectors and coordinate systems in Physics. Learn to solve Ordinary Differential Equations: First order, Second order Differential Equations with constant coefficients. Understand laws of motion and their application to various dynamical situations. Learn the concept of inertial reference frames and Galilean transformations. Also, the concept of conservation of energy, momentum, angular momentum and apply them to basic problems. Understand translational and rotational dynamics of a system of particles. Apply Kepler's laws to describe the motion of planets and satellite in circular orbit. Understand concept of Geosynchronous orbits. Explain the phenomenon of simple harmonic motion. Understand special theory of relativity - special relativistic effects and their effects on the mass and energy of a moving object. In the laboratory course, the student shall perform experiments related to mechanics: compound pendulum, rotational dynamics (Flywheel), elastic properties (Young Modulus and Modulus of Rigidity), fluid dynamics, estimation of random errors in the observations etc.

Waves and Optics(32225310)

On successfully completing the requirements of this course, the students will have the skill and knowledge to: Understand Simple harmonic oscillation and superposition principle. Understand different types of waves and their velocities: Plane, Spherical, Transverse, Longitudinal. Understand Concept of normal modes in transverse and longitudinal waves:

their frequencies and configurations. Understand Interference as superposition of waves from coherent sources derived from same parent source. Demonstrate basic concepts of Diffraction: Superposition of wavelets diffracted from aperture, understand Fraunhoffer and Fresnel Diffraction. In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt first hand.The motion of coupled oscillators, study of Lissajous figures and behaviour of transverse, longitudinal waves can be learnt in this laboratory course.

Thermal Physics and Statistical Mechanics(32225415)

At the end of this course, students will Learn the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. They are also expected to learn Maxwell's thermodynamic relations. Know the fundamentals of the kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion. Learn about the black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances. Learn the quantum statistical distributions, viz., the Bose-Einstein statistics and the Fermi-Dirac statistics. In the laboratory course, the students are expected to: Measure of Planck's constant using black body radiation, determine Stefan's Constant, coefficient of thermal conductivity of a bad conductor and a good conductor, determine the temperature coefficient of resistance, study variation of thermo emf across two junctions of a thermocouple with temperature etc.

20. B.Sc. (Hons.) Zoology

Core Course

Non-Chordates I: Protists to Pseudocoelomates

Upon completion of the course, students should be able to: Learn about the importance of systematics, taxonomy and structural organization of animals. Appreciate the diversity of non-chordates living in varied habit and habitats. Understand evolutionary history and relationships of different non-chordates through functional and structural affinities. Critically analyse the organization, complexity and characteristic features of non-chordates making them familiarize with the morphology and anatomy of representatives of various animal phyla. Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem. Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

Principles of Ecology

Upon completion of the course, students should be able to: Demonstrate an understanding of key concepts in ecology with emphasis on historical perspective, role of physical factors and concept of limiting factors. Comprehend the population characteristics, dynamics, growth models and interactions.Understand the community characteristics, ecosystem development and climax theories. Know about the types of ecosystems, food chains, food webs, energy models, and ecological efficiencies. Apply the basic principles of ecology in wildlife

conservation and management. Inculcate scientific quantitative skills, evaluate experimental design, read graphs, and analyse and use information available in scientific literature.

Non-Chordates II: Coelomates

Upon completion of the course, students should be able to: Learn about the importance of systematics, taxonomy and structural organization of animals. Appreciate the diversity of non-chordates living in diverse habit and habitats. Understand evolutionary history and relationships of different non-chordates through functional and structural affinities. Critically think about the organization, complexity and characteristic features of non- chordates. Getting familiarized with the morphology and anatomy of representatives of various animal phyla. Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.

Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

Cell Biology

Upon completion of the course, students should to be able to: Understand fundamental principles of cell biology. Explain structure and functions of cell organelles involved in diverse cellular processes. Appreciate how cells grow, divide, survive, die and regulate these important processes. Comprehend the process of cell signalling and its role in cellular functions. Have an insight of how defects in functioning of cell organelles and regulation of cellular processes can develop into diseases. Learn the advances made in the field of cell biology and their applications.

Core V: Diversity of Chordates

Upon completion of the course, the students will be able to: Understand different classes of chordates, level of organization and evolutionary relationship between different subphyla and classes, within and outside the phylum. Study about diversity in animals making students understand about their distinguishing features. Appreciate similarities and differences in life functions among various groups of animals in Phylum Chordata. Comprehend the circulatory, nervous and skeletal system of chordates. Know about the habit and habitat of chordates in marine, freshwater and terrestrial ecosystems.

Physiology: Controlling and Coordinating Systems

Upon completion of the course, students will be able to: Know the basic fundamentals and understand advanced concepts so as to develop a strong foundation that will help them to acquire skills and knowledge to pursue advanced degree courses. Comprehend and analyze problem-based questions. Recognize and explain how all physiological systems work in unison to maintain homeostasis in the body and use of feedback loops to control the same.Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body. Synthesize ideas to make connection between knowledge of physiology and real world situations, including healthy life style decisions and homeostatic imbalances. Know the role of regulatory systems *viz.*

endocrine and nervous systems and their amalgamation in maintaining various physiological processes.

Fundamentals of Biochemistry

Upon completion of the course, students should be able to: Gain knowledge and skill in the fundamentals of biochemical sciences, interactions and interdependence of physiological and biochemical processes.Get exposed to various processes used in industries and gain skills in techniques of chromatography and spectroscopy. Demonstrate foundation knowledge in biochemistry; Know about classical laboratory techniques, use modern instrumentation, design and conduct scientific experiments, and analyze the resulting data.Be knowledgeable in proper procedures and regulations in handling and disposal of chemicals.

Comparative Anatomy of Vertebrates

Upon completion of the course, students should be able to:

Explain comparative account of the different vertebrate systems.Understand the pattern of vertebrate evolution, organisation and functions of various systems. Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates. Understand the evolution of heart, modification in aortic arches, structure of respiratory organs used in aquatic, terrestrial and aerial vertebrates; and digestive system and its anatomical specializations with respect to different diets and feeding habits. Learn the evolution of brain, sense organs and excretory organsto a complex, highly evolved form in mammals; Learn to analyze and critically evaluate the structure and functions of vertebrate systems, which helps them to discern the developmental, functional and evolutionary history of vertebrate species. Understand the importance of comparative vertebrate anatomy to discriminate human biology.

Physiology: Life Sustaining Systems

Upon completion of the course, students should be able to: Have a clear knowledge of basic fundamentals and understanding of advanced concepts so as to develop a strong foundation that will help them to acquire skills and knowledge to pursue advanced degree courses. Comprehend and analyse problem-based questions on physiological aspects. Recognize and explain how all physiological systems work in unison to maintain homeostasis in the body; and use of feedback loops to control the same. Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body.

Biochemistry of Metabolic Processes

Upon completion of the course, students will be able to Gain knowledge and skill in the interactions and interdependence of physiological and biomolecules Understand essentials of the metabolic pathways along with their regulation. Know the principles, instrumentation and applications of bioanalytical techniques. Get exposure to various processes used in industries. Become aware about classical laboratory techniques, use modern instrumentation, design and conduct scientific experiments and analyze the resulting data. Be knowledgeable in proper procedures and regulations in handling and disposal of chemicals.

Molecular Biology

Upon completion of the course, students will be able to: Describe the basic structure and chemistry of nucleic acids, DNA and RNA; Compare and contrast DNA replication machinery and mechanisms in prokaryotes and eukaryotes. Elucidate the molecular machinery and mechanism of information transfer processes– transcription and translation-in prokaryotes and eukaryotes; Explain post-transcriptional modification mechanisms for the processing of eukaryotic RNAs; Discuss general principles of transcription regulation in prokaryotes by exploring the structure and function of lactose and tryptophan metabolism operons; Give an overview of gene expression regulation in eukaryotes; Explain the significance of DNA repair mechanisms in controlling DNA damage; Recognise role of RNAs (riboswitches, siRNA and miRNA) in gene expression regulation. Demonstrate practical knowledge of raising, handling, maintenance and special features such as antibiotic resistance of a simple prokaryotic model organism, *Escherichia coli*. Quantitatively estimate concentration of DNA and RNA by colorimetric methods.

Principles of Genetics

Upon completion of the course, students will be able to:

Have a deeper understanding of the varied branches of the biological sciences like microbiology, evolutionary biology, genomics and metagenomics. Gain knowledge of the basic principles of inheritance. Analyse pedigree leading to development of analytical skills and critical thinking enabling the students to present the conclusion of their findings in a scientific manner. Know the mechanisms of mutations, the causative agents and the harmful impact of various chemicals and drugs being used in day to day life. Find out the effects of indiscriminate use of various chemicals, drugs or insecticides in nature by studying their effect on various bacterial species in soil and water samples from different industrial or polluted areas.

Developmental Biology

Upon completion of the course, students should be able to: Understand the events that lead to formation of a multicellular organism from a single fertilized egg, the zygote. Acquire basic knowledge of the cellular processes of development and the molecular mechanisms underlying these. Describe the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multicellular organisms. Discuss the general mechanisms involved in morphogenesis and to explain how different cells and tissues interact in a coordinated way to form various tissues and organs. Understand about the evolutionary development of various animals. Know the process of ageing leading to interventions that can improve the overall health and quality of life in aged people. Learn the importance of latest techniques like stem cell therapy, *in vitro* fertilization and amniocentesis etc. to be applied for human welfare. Develop the skill to raise and maintain culture of model system; *Drosophila* in the laboratory.

Evolutionary Biology

Upon completion of the course, students should be able to: Acquire problem solving and high order analytical skills by attempting numerical problems as well as performing simulation

studies of various evolutionary forces in action. Apply knowledge gained, on populations in real time, while studying speciation, behaviour and susceptibility to diseases. Gain knowledge about the relationship of the evolution of various species and the environment they live in. Get motivated to work towards mitigating climate change so that well adapted species do not face extinction as a result of sudden drastic changes in environment. Use knowledge gained from study of variations, genetic drift to ensure that conservation efforts for small threatened populations are focused in right direction. Predict the practical implication of various evolutionary forces acting on the human population in the field of human health, agriculture and wildlife conservation. Use various software to generate interest towards the field of bioinformatics and coding used in programming language

Discipline specific Elective Course (DSE)

Animal Behaviour and Chronobiology

Upon completion of the course, students should be able to: Understand types of animal behaviour and their importance to the organisms. Enhance their observation, analysis, interpretation and documentation skills by taking short projects pertaining to Animal behaviour and chronobiology. Relate animal behaviour with other subjects such as Animal biodiversity, Evolutionary biology, Ecology, Conservation biology and Genetic basis of the behaviour. Understand various process of chronobiology in their daily life such as jet lag. Learn about the biological rhythm and their application in pharmacology and modern medicine. Realize, appreciate and develop passion to biodiversity; and will respect the nature and environment.

Animal Biotechnology

Upon completion of the course, students should be able to: Use or demonstrate the basic techniques of biotechnology like DNA isolation, PCR, transformation, restriction digestion etc. Make a strategy to manipulate genetic structure of an organism for the improvement in any trait or its well-being based on the techniques learned during this course. Understand better the ethical and social issues regarding GMOs.Use the knowledge for designing a project for research and execute it.

Immunology

After completion of the course the students will be able to: Describe the basic mechanisms, distinctions and functional interplay of innate and adaptive immunity. Define the cellular/molecular pathways of humoral/cell-mediated adaptive responses including the role of Major Histocompatibility Complex.Explain the cellular and molecular aspects of lymphocyte activation, homeostasis, differentiation, and memory. Understand the molecular basis of complex, humoral (Cytokines and Complement) and cellular processes involved in inflammation and immunity, in states of health and disease. Describe basic and state-of-the-art experimental methods and technologies.Integrate knowledge of each subsystem to see their contribution to the functioning of higher-level systems in health and disease including basis of vaccination, autoimmunity, immunodeficiency, hypersensitivity and tolerance

Parasitology

After completion of the course the students will be able to: Understand the variation amongst parasites, parasitic invasion in both plants and animals; applicable to medical and agriculture aspects. Help to know the stages of the life cycles of the parasites and the respective infective stages. Develop ecological model, know population dynamics of parasite, establishment of parasite population in host body, adaptive radiations and methods adopted by parasite to combat with the host immune system. Develop skills and realize significance of diagnosis of parasitic attack and treatment of patient or host. Learn important case studies to highlight interesting researches, serendipities towards the advancement and enrichment of knowledge in the field of Parasitology.

Generic Elective (GE)

Animal Cell Biotechnology

Upon completion of the course, students will be able to: Get a clear concept of the basic principles and applications of biotechnology. Know the basic techniques used in genetic manipulation helping them continue with higher studies in this field. Acquire knowledge of the basic principles, preparations and handling required for animal cell culture. Understand principles underlying the design of fermenter and fermentation process and its immense use in the industry. Design small experiments for successful implementation of the ideas and develop solutions to solve problems related to biotechnology keeping in mind safety factor for environment and society. Apply knowledge and skills gained in the course to develop new diagnostic kits and to innovate new technologies further in their career. Enhance their understanding of the various aspects and applications of biotechnology as well as the importance of bio-safety and ethical issues related to it.

Food, Nutrition and Health

Upon the completion of the course, students will be able to: Have a better understanding of the association of food and nutrition in promoting healthy living.Think more holistically about the relationship between nutrition science, social and health issues.Move on to do post-graduation studies and can apply for jobs as food safety officers, food analysts, food inspectors, food safety commissioners or controllers for jobs in organizations like FSSAI.Specialize in various fields of nutrition.

Human Physiology

Upon completion of the course, students will be able to: Know the principles of normal biological function in human body. Outline basic human physiology and correlate with histological structures. Understand how animals maintain an internal homeostatic state in response to changes in their external environment.

Skill Enhancement Course (SEC)

SEC-III Medical Diagnostics

After completing this course, the students should be able to: Gain knowledge about various infectious, non-infectious and lifestyle diseases, tumors and their diagnosis .Understand the use of histology and biochemistry of clinical diagnostics and learn about the molecular diagnostic tools and their relation to precision medicine. Develop their skills in various types

of tests and staining procedure involved in hematology, clinical biochemistry and will know the basics of instrument handling. Learn scientific approaches/techniques used in the clinical laboratories to investigate various diseases and will be skilled to work in research laboratories. Gain knowledge about common imaging technologies and their utility in the clinic to diagnose a specific disease.

Research Methodology

After completing this course, the students should be able to: Describe basic concepts of research and its methodologies.Identify appropriate research topics and set up hypothesis. Perform literature review using library (print) and internet (online) resources.Design experiments/surveys, collect data and represent data intables/figures. Analyze data with appropriate software tools, interpret results and draw conclusion. Write scientific report/ review/ thesis and prepare seminar/ conference presentations - oral as well as poster. Understand the methods of citation and referencing styles, check plagiarism and get insight of intellectual property right

21. M.A. Hindi

प्रथम सेमेस्टर

1. हिंदी साहित्य का इतिहास आदिकाल से रीतिकाल तक

इतिहास लेखन और साहित्यिक इतिहास की समझ विकसित होगी

हिंदी साहित्य की विभिन्न युगों का विश्लेषणात्मक अध्ययन

2. आदिकालीन हिंदी काव्य

हिंदी साहित्य के आरंभिक युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविताओं की समझ विकसित होगी

3. भक्ति कालीन हिंदी काव्य

हिंदी साहित्य के मध्यकालीन युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविताओं की समझ विकसित होगी

4. हिंदी कथा साहित्य

हिंदी साहित्य की कथा साहित्य का विशिष्ट ज्ञान

प्रमुख लेखकों और उनकी रचनाओं की समझ विकसित होगी

5. भारतीय काव्यशास्त्र

भारतीय काव्यशास्त्र की जानकारी अतीत और वर्तमान की कृतियों के बीच आलोचनात्मक संबंध निर्माण करती है

भारतीय चिंतन परंपरा की समझ विकसित होगी

सेमेस्टर 2

1. रीतिकालीन हिंदी काव्य

हिंदी साहित्य के रीतिकाल का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविता की समझ विकसित होगी

2. आधुनिक हिंदी काव्य 1

हिंदी साहित्य के आधुनिक युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविता की समझ विकसित होगी

3. हिंदी नाटक

हिंदी साहित्य के नाटकों का विशिष्ट ज्ञान

प्रमुख नाटककार और नाटकों की समझ विकसित होगी

4. सामान्य भाषा विज्ञान

भाषा और उसके उपांगो का ज्ञान

सेमेस्टर 3

1. आधुनिक हिंदी काव्य 2

हिंदी साहित्य के आधुनिक युग का विशिष्ट ज्ञान

प्रमुख कवियों का उनकी कविताओं की समझ विकसित होगी

2. हिंदी आलोचना

हिंदी साहित्य में आलोचनाओं का विशिष्ट ज्ञान

प्रमुख आलोचक और आलोचनात्मक कृतियों की समझ विकसित होगी

3. हिंदी के अन्य गद्य रूप

हिंदी साहित्य के गद्य का विशिष्ट ज्ञान

प्रमुख लेखकों और उनकी कृतियों की समझ विकसित होगी

4. हिंदी साहित्य का इतिहास आधुनिक काल

इतिहास लेखन और साहित्य के इतिहास की समझ विकसित होगी

हिंदी साहित्य के आधुनिक युग का विश्लेषणात्मक अध्ययन

5. पाश्चात्य काव्यशास्त्र

पाश्चात्य काव्यशास्त्र की समझ भाषा कला की आवश्यकता और जीवन के बीच आलोचनात्मक संबंध निर्माण करती है

पाश्चात्य चिंतन परंपरा की समझ विकसित होगी

सेमेस्टर 4

ऐच्छिक विकल्प

क मध्यकालीन हिंदी साहित्य

1. मध्यकालीन हिंदी साहित्य अवधारणा और स्वरूप

हिंदी साहित्य के मध्यकालीन युग का विशिष्ट ज्ञान

इतिहास आलोचना और विचारकों की समझ विकसित होगी

2. पूर्व मध्यकालीन काव्य

हिंदी साहित्य के पूर्व मध्यकालीन युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविता की समझ विकसित होगी

3. उत्तर मध्यकालीन काव्य

हिंदी साहित्य के रितिकालीन युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविता की समझ विकसित होगी

4. मध्यकालीन नीति भक्ति प्रेम एवं संत काव्य

हिंदी साहित्य के मध्यकालीन युग का विशिष्ट ज्ञान

आने धाराओं के कवियों व उनकी कविताओं की समझ विकसित होगी

ख आधुनिक हिंदी साहित्य

1. आधुनिकता की यात्रा

हिंदी साहित्य के आधुनिक युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनकी कविता की समझ विकसित होगी

2. आधुनिक हिंदी साहित्य की विशेषताएं

हिंदी साहित्य के मध्य कालीन युग का विशिष्ट ज्ञान

प्रमुख कवियों व उनके युग की समझ विकसित होगी

3. आधुनिक भारतीय साहित्य का संदर्भ

हिंदी साहित्य के आधुनिक युग का विशिष्ट ज्ञान

प्रमुख लेखकों की समझ विकसित होगी

4. आधुनिक विश्व साहित्य

विश्व साहित्य के आधुनिक युग का विशिष्ट ज्ञान

प्रमुख विश्व लेखकों की समझ विकसित होगी

ग नाटक एवं रंगमंच

1. रंगमंच सिद्धांत और इतिहास

हिंदी साहित्य के नाटकों का विशिष्ट ज्ञान

प्रमुख नाटककार और नाटकों की समझ विकसित होगी

2. रंगमंच पाठ और प्रदर्शन

हिंदी साहित्य के नाटकों का विशिष्ट ज्ञान

प्रमुख नाटककार और निर्देशकों का मत और रंगकर्म का व्यवहारिक ज्ञान

3. भारतीय भाषाओं का रंगमंच

भारतीय नाटकों का विशिष्ट ज्ञान

प्रमुख नाटककार और नाटकों की समझ विकसित होगी

4. हिंदी नाटक का कोई एक युग

हिंदी साहित्य के नाटकों का विशिष्ट ज्ञान

नाटककार और नाटकों की समझ विकसित होगी

घ भाषा विज्ञान

1. हिंदी भाषा की संरचना

हिंदी भाषा की समझ

भाषा के विश्लेषण की क्षमता

2. समाज भाषा विज्ञान

हिंदी भाषा की सामाजिक समाज और उसका प्रयोग

भाषा के सामाजिक विश्लेषण की क्षमता और उसके उपकरण

3. भाषा शिक्षण

आधुनिक शिक्षण की समझ और मूल्यांकन की व्यवस्था

भाषा के शिक्षण की क्षमता और विभिन्न शिक्षण मतों की समझ

4. शैली विज्ञान

शैली विज्ञान और साहित्यिकता की समझ

कृति विश्लेषण की क्षमता

च आधुनिक जनसंचार माध्यम

1. संचार माध्यम अवधारणा स्वरूप और सिद्धांत

संचार की सैद्धांतिक समझ

संचार जगत के विश्लेषण की क्षमता

2. संचार माध्यमों का विकास

मीडिया के इतिहास की समझ

संचार क्रांति के विश्लेषण की क्षमता

3. समाचार निर्माण और प्रसारण

समाचार की सैद्धांतिक समाज

विभिन्न समाचारों की विश्लेषण की क्षमता

4. जनसंचार अध्ययन प्रविधियां

जनसंचार की सैद्धांतिक समझ

जनसंचार जगत के विश्लेषण की क्षमता

छ अनुवाद अध्ययन

1. अनुवाद के सैद्धांतिक आयाम

अनुवाद की सैद्धांतिक समझ

अनुवाद जगत के विश्लेषण की क्षमता

अनुवाद का व्यवहारिक ज्ञान

2. भाषा कोश विज्ञान शब्दावली और अनुवाद

भाषा कोश विज्ञान शब्दावली और अनुवाद की सैद्धांतिक समझ

भाषा कोश विज्ञान शब्दावली और अनुवाद जगत के विश्लेषण की क्षमता

3. अनुवाद के प्रकार्य

भाषा शब्दावली और अनुवाद की सैद्धांतिक समझ

भाषा और अनुवाद जगत के विश्लेषण की क्षमता

4. अनुवाद व्यवहार

साहित्यिक भाषा और अनुवाद की सैद्धांतिक समझ

भाषा और अनुवाद जगत के विश्लेषण की क्षमता

ज अस्मिता विमर्श और हिंदी साहित्य

1. अस्मिता अवधारणा और सिद्धांत

विभिन्न अस्मिता का ज्ञान

अस्मिता के निर्मित विभेदन इतिहास और अन्य अवधारणाओं की समझ

2. **स्त्री अस्मिता और हिंदी साहित्य**

स्त्री अस्मिता और साहित्य आलोचना की समझ

रचनाओं के विश्लेषण की क्षमता

3. दलित अस्मिता और साहित्य

दलित अस्मिता की सैद्धांतिक समझ

दलित अस्मिता से संबंधित साहित्य की विश्लेषण क्षमता

4. आदिवासी अस्मिता और हिंदी साहित्य

आदिवासी अस्मिता और साहित्य की सैद्धांतिक समझ

आदिवासी जगत के विश्लेषण की क्षमता

झ हिंदी का लोक साहित्य

1. लोक की अवधारणा और लोक साहित्य का स्वरूप

लोक की अवधारणा और लोक साहित्य की सैद्धांतिक समझ

लोक के विश्लेषण की क्षमता

2. लोक संस्कृति विस्तार और अभिव्यक्ति के आयाम

लोक तथा लोक संस्कृति की अवधारणा और साहित्य की सैद्धांतिक समझ

लोक संस्कृति के विश्लेषण की क्षमता

3. हिंदी के क्षेत्र लोक शैलियों और लोक साहित्य के विविध आयाम

लोक सिद्धांत एक समाज

लोक शैली और साहित्य के विश्लेषण की क्षमता

4. लोक साहित्य और अनुसंधान के आयाम

लोक की सैद्धांतिक समझ

लोक साहित्य और उनके अनुसंधान विश्लेषण की क्षमता

मुक्त इच्छुक पाठ्यक्रम

1. हिंदी सृजनात्मक लेखन

सृजनात्मक लेखन और साहित्य की सैद्धांतिक समझ

सृजनात्मक जगत की विश्लेषण की क्षमता

2. प्रयोजनमूलक हिंदी

प्रयोजनमूलक हिंदी की सैद्धांतिक समझ

प्रयोजनमूलक हिंदी के विश्लेषण की क्षमता

3. हिंदी भाषा शिक्षण

हिंदी भाषा शिक्षण की सैद्धांतिक समझ

हिंदी शिक्षण विश्लेषण की क्षमता

4. हिंदी सिनेमा और साहित्य

हिंदी सिनेमा और साहित्य की सैद्धांतिक समझ

सिनेमा और साहित्य जगत के विश्लेषण की क्षमता

22. M.A. Sanskrit

Semester I

Vaidika Vāṅmaya : ṛksaṁhitā& Nirukta

After completion of this course the students: will form a basic understanding of some fundamental concepts of Vedas, particularly of the Ṛgveda.Will know about the nature, action and representation of some Vedic deities. will be able to explain meaning of the Vedic verses according to some famouscommentaries of ancient and modern commentators. Will be able to appreciate the role of Nirukta for understanding the essence of Vedic verses through application of Nirukti or etymology. Will try to recite Vedic mantras in their true form with the knowledge of Vedic Svara and grammar. Will be able to understand Vedas as our valuable ancient heritage. Will be successful in applying this knowledge for exploring other Vedic texts

Poetics: Sāhityadarpaṇa

After completion of this course the students Will form a basic understanding of various poetic notions such as aims of poetry, definition of poetry, Word, Sense, Rasa, types and subtypes of Dhvani and Guṇ ībhūtavyaṅ gyakāvya and various genres of poetry as defined and refined up to the 13th-14th centuries AD specially in the premises of Rasa and Dhvani schools of Sanskrit Poetics. Will be able to understand and critically explain the prescribed text and terms propounded within.Will be supposed to be equipped with the sufficient tools for poetic appreciation of the literature of ancient as well modern languages based on the parameters accepted to said prominent Poetic Schools.

Sāhitya: Naiṣadha & Mṛcchakaṭika

After completion of this course the students: will be able to appreciate the aesthetical, social, political, cultural, etc. values expressed in prescribed compositions.Will understand the structural patterns of Sanskrit dramatic compositions. Will be able to know the finer and minor nuances of Prakarana form of drama.Will be able to peep into the social history of ancient India.Will be familiar with the individual styles of the two of the greatest of Sanskrit Writers.

Outline of Culture & Civilization as depicted in Sanskrit Literature

After the completion of this course the students will: know the various aspects of Indian culture and civilization of the Vedic period. able to acquire the knowledge of the culture and civilization as reflected in the Ramayana, Mahabharata and Puranic literature. Gain the knowledge of the social institutions specially Varna, Ashrama, Purushartha and Samskara system Status of Women and Ancient Indian education system. In ancient India. Learn about the origin, development and doctrines of the four major dharmas: Shaiva, Vaishnava, Jainism and Buddhism.

Semester II
Darśana: Nyāya & Vedānta

After the completion of this course the students will be able to critically analyse and examine the fundamental concepts of Nyāya and Advaita Vedānta Philosophies. Be able to understand and explain the prescribed text and the conceptual terms therein. Be able to critically analyse the prescribed theories. Get to know the scientific approach of Nyaya-Vaisheshika & Advaita Vedanta philosophers in the analysis of the phenomenal world and its process of evolution. Understand the contribution of Nyaya-Vaisheshika & Advaita Vedanta philosophers in the epistemological studies, application of which is very important in the day to day life situations; helping them in the proper judgment of the Truth

Vyākaraṇa: Laghusiddhāntakaumudī
After the completion of this course the students will:know the structure of Aṣṭādhyāyī along with the operational techniques of Pāṇini. This will enable them to understand the Sūtras of Pāṇinī without any derivational problem or syntactic gap. know the process of deriving the nominal forms under Pāṇini's system. The learning of the derivational processes of the selected representative nominal words from all genders will give the students a thorough idea of Sanskrit declensions. Equipped with the knowledge of the techniques of conjugation of Sanskrit roots, belonging to various Gaṇas. Gain the knowledge of conjugating the prefixed roots of Sanskrit denoting various senses, e.g.-desiderative, causative, and intensive etc. know the application of Pāṇini's Metarules which will enable them to understand the techniques of Indian Grammatical system in general.

Sāhitya: Meghadūta & Uttararāmacarita
After the completion of this course the students: Will form an idea of the superb aesthetic expressions that make Sanskrit composition occurs the position of pride in world Literature. Will be able to appreciate the expressions of Rasa, Dhvani and other literary elements contributing to the making of an art called poetry. Will be able to see the depiction of nature in various human forms and emotions in two of the master pieces of literary art.Will be exposed to the art of employment of Alankaras and Chandas in a poetic creation.

Outline of Culture & Civilization as depicted in Sanskrit Literature

Course Learning OutcomeAfter the completion of this course the students will: know the various aspects of Indian culture and civilization of the Vedic period, able to acquire the knowledge of the culture and civilization as reflected in the Ramayana, Mahabharata and Puranic literature. gain the knowledge of the social institutions specially Varna, Ashrama, Purushartha and Samskara system Status of Women and Ancient Indian education system. In ancient India. earn about the origin, development and doctrines of the four major dharmas: Shaiva, Vaishnava, Jainism and Buddhism.

Semester III

Linguistic Analysis of Sanskrit, Translation and Laghusiddhānta-Kaumudī

After the completion of the course the students will: be able to observe and analyse Sanskrit language with reference to the developments taken place with the advent of modern linguistic.understand the basic concepts of historical linguistics and will know the rules of language change and their application in Sanskrit. Understand the important causes and directions of phonetic change and semantic change with reference to Sanskrit. Learn the techniques of translation into Sanskrit. Know the rules of case, compounds and primary-secondary suffixes of Sanskrit and their usages in actuals language situations.

Sāhitya: Kādambarī & Vāsavadattā

After the completion of this course the students: Will find themselves well acquainted with the highest forms of prose writings with its poetic beauty along with social relevance. Will form an idea of the superb aesthetic expressions that make Sanskrit composition occurs the position of pride in world literature. Will be able to appreciate the expressions of Rasa, Dhvani and other literary elements contributing to the making of art called poetry.Will be exposed to the art of employment of Alankaras in a prose form of poetry.

For paper 303, 304, 401 and 402, there would be following optional groups covering the specialised fields of Sanskrit studies so that students may choose any one group for these papers according to their area of interest:

Elective Group

1. Group A:Vaidika Vāṅmaya
2. Group B:Darśana
3. Group C :Sāhityaśāstra
4. Group D : Sanskrit Bhāṣā aur Vyākaraṇa5. Group E : Dharmaśāstra6. Group F : Epigraphy
7. Group G : Modern Sanskrit Literature
8. Group H : Itihāsa & Pūrāṇa
9. Group I : Bhāratīya Jyotiṣaśāstra

11) Elective Course 303

A303: Ṛgveda, Bṛhaddevatā & Paṇiniyaśikṣā/

Course Learning Outcome

After completion of this course the students will form a clear understanding of some essential concepts of Vedas, particularly of the rigveda. Will know about the nature, actions and symbolism of few important Vedic deities. will be able to know and explain the meaning of prescribed verses according to some famous ancient and modern commentaries. Will be able to appreciate the role of Bṛhaddevataaand Paaṇiniiyas ikṣa for understanding Vedic verses, and related issues. will try to recite Mantras in their true form with the knowledge of Vedic Svara. Will be successful in applying this knowledge for exploring other Vedic texts.

Yogasūtra & Gauḍapādakārikā

After the completion of this course the students:Will form some understanding of the dualistic and Non-dualistic trends of Indian thought tradition. Will have acquired an in-depth knowledge of the fundamental theories and concepts of Yoga and Adavaita Vedanta systems. Will form an idea of the well-developed science of conciseness in ancient India. Will appreciate the contributions of Gaudapada a pre-shalicare acharya in the development of a dualistic tradition in thought. Will gain an insight into the metaphysical and epistemological positions of accepted Sankhya-Yoga and Adaivata Vedanta.

C303: Nāṭyaśāstra & Dhvanyāloka

After completion of this course the students:will form a basic understanding of some fundamental terminologies of the Natya and Kavya as presented by Baharat and Anandavardhana. will have acquired an in-depth knowledge of the theories of Rasa and Dhvani. will be able to understand and explain the prescribed text and the terms therein.will be successful in applying this knowledge for critical analysis in the light of suggestive meanings in drama and poetry.will be able to appreciate and enjoy the expressions of poetry.

D303: Siddhāntakaumudī (tiṅanta)/

After the completion of this course the students will: be able to understand some very important metarule and structural aspects of Aṣṭādhyāyī. Be able to identify the structures of Sanskrit Language in general and the usages of the Case-endings in particular. Be able to interpret the Sūtras of the relevant portion of the text. Be able to understand the derivational process of the compounded words of Sanskrit. Be able to understand Paninian Nomenclatures (saṃjñā) and their application in the interpretation of the Sūtras and in the derivational process of the Sanskrit compounds.

Pāraskaragṛhyasūtra & Arthaśāstra/

By the end of this course the students: will be able to learn about the Kalpa Vedanga in detail, through different samskaras depicted in Paraskaragrhyasutras and other grhyasutras. Will be able to appreciate many aspects of administrative system and taxation policy depicted in the Arthashastra. Will also be able to compare ancient Indian social, cultural, administrative with the present system. Will also be able to compare ancient Indian administrative with the present system.

F303: Edicts of Ashoka Period

After the completion of this course the students will: be aware of the social, religious, administrative and political conditions of the time of the reign of Asoka, be thoroughly able to decipher, understand and interpret all the facts available regarding Asok and his empire. Be well grounded for perusing the advance learning in the field of archaeology, acquire the knowledge of the features of the Asokan Brahmi script.

Be thoroughly skilled for explanation and transliteration of the edicts.

G303: Modern Sanskrit Poetics

After completion of this course the students: Will have an understanding of the new approach in the realm of Sanskrit Poetics; Will acquire knowledge of the different dimensions of poetry i.e. effects (Prayojana), cause (Hetu), definition (Lakshana) and forms (Kavya-bheda), blemishes (Kavyadosha), poetics -Excellences (Kavya-guna) etc. through the reading of the texts of Kavyalankarakarika of Revaprasada Dwivedi Will become aware of new concept of Alamkara as soul of Poetry. Will be able to compare modern and ancient thoughts of poetics and will gain the ability to explaining and critically analyzing the prescribed texts.

H303: Rāmāyaṇa & Mahābhārata

After the completion of this the course students will:

be able to learn about the behavioral values, ethics and belief patterns through the individual characters of the epics. Be able to explain the aesthetic and poetic beauty and style of presentation of the texts of Rāmāyaṇ a and Mahābhārata.Get the knowledge of the historic value of Rāmāyaṇ a and Mahābhārata. Learn about the social, economic, geographical, political, philosophical and educational aspects of Rāmāyaṇ a and Mahābhārata.

Suryasiddhanta & Vedanga-Jyotisa

After studying this course students:will be able to know the ancient Indian astronomical calculation. Will be able to know development of calendar system.will be able to know the ancient Indian time units. Will be able to get the knowledge of Srishti-Prakriya.

A304: Nirukta & Bhāradwāja-Śrautasūtra

After completion of this course, the students Will understand the ancient Indian science of etymology as depicted in Nirukta. Will be able to realize ancient ideas of linguistics and original form of Divinities. Will be able to form a basic idea of vast ritualistic life of Vedic people. Will know the symbolic meanings of the religious activities described in the Vedic literature. Will know different Yajnnas according to the SSrauta literat

B304: Nyāyasiddhāntamuktāvalī

After the completion of this course the students Will form an idea of Realism in Indian context. Will have an extensive knowledge of Nyaya-Vaisheshika categories. Will also gain some fundamental ideas of other philosophical positions with regard to the categories accepted by the Nyaya-Vaisheshikas. Will be able to appreciate and differential the various divergent philosophical within the Nyaya-Vaisheshika tradition.

C304: Kāvyaprakāśa

Upon Successful completion of this course students: will form a deep understanding of the fundamental terminologies of kavya as presented by Mammata. Will acquire an in-depth knowledge of the theories of meaning, the importance of suggestive meanings and rasa in poetry. Will be successful in applying this knowledge for critical analysiin the light of suggestive meanings. Will gain the ability to explaining and critically analyzing the prescribed texts. Will be able to appreciate and enjoy the expressions of poetry.

D304: Aṣṭādhyāyī (Kāśikāvṛtti) & Siddhāntakaumudī (samāsa)

After the completion of this course the students will be able to understand some very important metarule and structural aspects of Aṣṭādhyāyī. Be able to identify the structures of Sanskrit Language in general and the usages of the Case-endings in particular. Be able to interpret the Sūtras of the relevant portion of the text. Be able to understand the derivational process of the compounded words of Sanskrit. Be able to understand Paninian Nomenclatures (saṃjñā) and their application in the interpretation of the Sūtras and in the derivational process of the Sanskrit compounds.

E304: Manusmṛti

By the end of this course the students: will be able to learn the ancient legal system, will be able to acquire the knowledge of political and religious institutions, will be able to compare ancient Indian legal, political, religious and constitutional systems with modern Indian systems.

F304: Inscriptions of Gupta Period

After the completion of this course the students will be aware of the social, religious, administrative and political conditions of the time of the reign of Guptas.be thoroughly able to decipher, understand and interpret all the facts available regarding Guptas and their empire. Be well grounded for perusing the advance learning in the field of archaeology. Acquire the knowledge of the features of the Gupta-Brahmi script. Be thoroughly skilled for explanation and transliteration of the inscriptions.

G304: Modern Sanskrit Prose & Poetry

After the completion of this course the students: Will acquire the knowledge of leading samples of modern Sanskrit prose and poetry. Will become aware of Indian value-system and cultural heritage which is useful to social harmony; Will become aware of the ideas of Indian personalities like Swami Vivekananda,Rani Padmini and Meera bai to develop a sense of nationalism. Will gain the ability to explaining and critically analyzing the prescribed texts.

H304: Purana: Bhāgavata, Viṣṇu & Viṣṇudharmottara/

After the completion of this course the students will: able to appreciate rhetoric beauty of the Rāsapañcādhāyī of Bhāgavatamahāpurāṇa. able to understand and explain the devotional and spiritual values of Bhāgavatamahāpurāṇa . able to know about the Puranic cosmology and Indian theory of world's creation in the light of Viṣṇumahāpurāṇa and compare with the

modern theories. Be able to explain the idea and emotion (Bhāva) and sentiment(rasa) in the light of dramaturgy and dance forms.

I 304: Laghupāraśarī & Jātakālaṅkāra

After studying this course students: will be able to know the basic concept of Jataka-Skandha and prediction according to Parashar theory.Will be able to understand and critically explain the prescribed text and terms. WSill be able to know the basic concept of Jataka-Skandha and prediction according to **Jatakalankar which is based on Shukasutra.**

Semester IV

Elective Course 401

A401: Yajurveda, Atharvaveda & Pratiṣākhya/

After completion of this course the students: will broadly know about the contents, methods and language of the Yajurveda and the Atharvaveda.will understand the ideas and feelings of Vedic seers for nature, nation, earth and time through the explanation of prescribed mantras. will be able to realize the comprehensive approach of Vedic thoughts and culture which nourished the roots of our culture and civilization.Will understand the real meaning of Vedic verses after gaining knowledge of its language through the study of Praatissa khya text. will learn various aspects of phonological and morphological rules depicted in Vaajasaneyi Praatissaakhya of theYajurveda.

B401: Brahmasūtra

After the completion of this course the students: Will be able to make sense of idealism as a philosophical position. Will be able to evaluate Shankar and Ramanujan's interpretations of the Brahamsutra. Will have extensive and in-depth knowledge of Adaivatic metaphysical, ethical and analytical appreciation. Will develop Shankar and Ramanuja's employment of Shruti, Smriti and Anubhava in deriving his Advaitic theories.

C401: Kāvyaprakāśa

Upon Successful completion of this course students: will form a deep knowledge of poetic blemishes, poetics -Excellences, and Figures of speech as propounded by Mammaṭa, will be success in applying this knowledge for critical analysis in the light of the above elements of poetry. will gain the ability to explaining and critically analysing of the prescribed texts. Will be able to know that even though Mammata was a pioneer in the known followers of the Dhvani school, he never subsided other factors of poetry in the wider concept of Dhvani and will be able to appreciate and enjoy the expressions of poetry.

D401: Mahābhāṣya and Vākyapadīya

After the completion of this course the students will be able to observe and appreciate the contributions of the ancient Indian Thinkers of the philosophy of language and linguistic.be able to understand the important, relevant and the purposes of the study of the Grammar.be able to understand the issues of philosophy of Grammar in general. be able to understand the

nature of the word, meaning and their relation. be able to understand the Sphoṭa theory of the Grammarians.be able to understand the different levels of language.

EC SDC- D401: Descriptive Grammar and Structure of Sanskrit

After the completion of this course the students will: be able to analyse Sanskrit phonology with reference to its historical development. be able to critically observe the structural pattern of Sanskrit declension and conjugation, with special reference to the Epic and Buddhist Hybrid Sanskrit.be able to examine primary and secondary Sanskrit suffixes in their developmental phases , be able to analyse to the Sanskrit cases and their import historically syntactically. be able to identify the different aspects, types and linguistic importance of accent throughout the ages.

E401: Yājñavalkyasmṛiti

By the end of this course the students: will be able to learn about various provisions of the law on inheritance. will be able to understand how Hindu law has responded to changing ground situations. Will also be able to compare ancient Indian laws of inheritance present system

F401: Inscriptions of Post-Gupta Period

After the completion of this course the students will be aware of the social, religious, administrative and political conditions of the time of the reign of Post Guptas, be thoroughly able to decipher, understand and interpret all the facts available regardingPost Guptas and their empire. be well grounded for perusing the advance learning in the field of archaeology. acquire the knowledge of the features of the Post Gupta-Brahmi script. be thoroughly skilled for explanation and transliteration of the inscriptions.

G401: Modern Sanskrit Drama

After the Completion of this course students:Will be able to know new trends and new forms of Dramas. Will become aware of changing social scenario of modern Sanskrit authors which is displayed in their writings. Will be able to grasp the concept and historical development of Indian nationalism.will gain the ability to explaining and critically analyzing the prescribed texts.

H401: Agnipūrāṇa

After the completion of this the course the students will:be able to acquire the knowledge of geography as reflected in the texts. be able to gain the knowledge ancient judicial system and be able to compare and contrast it with the smriti texts and modern judiciary, be able to gain the knowledge of puranic medical science for human being and plants. Know about the Vedic phonetics, be able to understand and explain the prescribed texts.be able to apply their knowledge in day to day practical life.

I 401: Bhartiya Kuṇḍalī Vijñyāna

After studying this course students : Will be able to know the concept behind Panchanga. Will be able to get Knowledge about how to make a horoscope. Will be able to know the concept of dasha-sadhana. Will be able to know basic concept of Varshphal/Tajikshastra.

14) Elective Course 402

A 402: Vedic Exegesis, History & Thought

After completion of this course, the students: will have a clarity about the Vedic wisdom and Vedic concepts, will know about certain aspects involved in the interpretation of Vedic verses.will be able to explain various theories of interpretations according to some important ancient, and modern Indian commentators. Will be able to understand the role of few selected western scholars in the field of Vedic literature and interpretation, will have a comprehensive vision about the basic nature of wide-ranging Vedic texts and history of Vedic literature.

B402: Survey of Indian Philosophy

After the completion of this course, the students: Will acquire some through knowledge of its various philosophical theories proposed by different systems of philosophies. Will be able to compare and contrast the ideas advanced in positions taken by the systems have acquired an in-depth knowledge of the fundamental theories and concepts of Yoga and Adavaita Vedanta systems, Will form an idea of the origin and development of different philosophical systems. Will have a critical and further knowledge of contributions of individual Acharyas to their respective systems. Will be introduced to minor differences within the system.

C402: Daśarūpaka & Survey of Sanskrit Poetics

Upon Successful completion of this course students: will gain the ability to explaining and critically analysing of the prescribed texts in the light of commentator Dhanika.will be able to know the depth knowledge about of various terminology i.e. plot, actor and rasa, etc. for criticism a dramatic composition. will have a broad perspective of the field of famous rhetoricians of Alaṁkāraśāstra and their theories, will be successful in applying this knowledge for critical analysis.

D402: Siddhāntakaumudī (kṛdanta) and History of Sanskrit Grammar

After the completion of this course, the students will learn the structural patterns and semantic aspects of primary Sanskrit suffixes, learn the derivational processes of Sanskrit words ending with primary suffixes, learn to identify the general and exceptional patterns of primary suffixes and their interchangeability. Have the knowledge of the history and the structures of different schools of Sanskrit grammar. Have a thorough idea of the Astadhyayi tradition and Kaumidi tradition of the teaching of Paninian grammar. Have the knowledge of the contributions of individual Acharyas in the making of Paninian grammar. Be familiar with the history of the philosophy of language with paninian grammar as focal point.

EC - SDC D 402: Linguistic Speculations in Sanskrit

After the completion of this course the students will: Acquire a historical overview of the prominent Acharyas of the philosophy of language belonging to the different schools of thought. Acquainted with the some very important theories developed in Ancient India,

regarding word, meaning, sentence and syntactic relationship etc. Be able to critically evaluate the thought process of different philosophical schools casting effect on language philosophy. Simultaneously get acquainted with heterodox and orthodox systems of Indian philosophy and their main a priori opinions.

E402: Āpastambadharmasūtra & History of Dharmaśāstra/

Course Learning Outcome:

By the end of this course the students: will be able to form a thorough idea of the Apastambian viewpoints regarding the ways and aims of the life of four Ashramas. Will gain a thorough understanding of the position of women, the legal system, various types of Shraut rituals and other issues as reflected in different Dramashastric texts. Will be familiarized with the individual contribution of Acharyas in the making of the rich Dharmashastra tradition.

F402: Indian Paleography

After the completion of this course the students will be well aware of the ancient vivid writing traditions be able to know the different styles of script and their inter- relations. Learn about the Indian dating systems and four eras, i.e. the Vikrama, Saka, Gupta and Harsha. Understand the significance of inscriptions throwing light on the social, economic, political, religious, administrative conditions of the time.

G402: Sanskrit Novel and Survey of Modern Sanskrit Literature/

After the completion of the course students will:become aware of the expanse and the depth of modern Sanskrit literature; become aware of how the idea of unity in diversity can promote social harmony; gain the ability to explaining and critically analysing the prescribed texts.

H 402: Survey of Puranic Literature

After the completion of this course the students will:Be informed of the basic structure, contents and importance of Puranas. Know the differences between the Puranas and Upapuranas. Have thorough understanding contents & historical importance of the puranic literature. Gain the knowledge of Geographical and Cultural aspects of Puranas and Upapuranas. Be familiarized with the forms of Puranas as a source of various arts, religion, literature, culture, sciences etc.

I 402 Survey of Indian Astrology

After studying this course students will be able to know the development of various branches of Indian astrology and its importance in day to day life.Will be able to know the contribution of Indian astrology to the modern science. Will be able to contribute the society, nation and humanity through Indian astrology. Will be familiarize with the individual contribution of Acharyas in the making of the rich tradition of Jyotish-shastra

15) Core 403 Darśana: Sāṅkhya & Mīmānsā

After the completion of this course the students will be able to explain the stanzas and assages of Sankhyakarika and Arthasangraha and the fundamental concepts of Sankhya and

Mimansa philosophies in the lines of these two premier texts. familiar with many important Sankhya and Mimansa terminologies. Able to elucidate the metaphysics and epistemology propounded by the Sankhya and Mimansa philosophers. Familiar with different types of vedic sentences and their purport. Able to observe and explain the linguistic aspects of the mimansakas.

List of Open Elective Papers

Currently Department of Sanskrit offers following course as Open Elective Course:

16) Paper 404 Option One - Linguistic Speculations in Sanskrit

After the completion of this course the students will:acquire a historical overview of the prominent Acharyas of the philosophy of language belonging to the different schools of thoughts. acquainted with the some very important theories developed in Ancient India, regarding word, meaning, sentence and syntactic relationship etc. be able to critically evaluate the thought process of different philosophical schools casting effect on language philosophy. simultaneously get acquainted with heterodox and orthodox systems of Indian philosophy and their main a priori opinions.

23. **M.A.Political Science**

Theories of International Relations

Towards the end of the course, the students shall have acquired a grounding in the academic debates and research literature in the field of international relations (IR), and understood how to apply key theories and concepts of IR to global and regional issues. The students would gainknowledge of significant developments in contemporary international relations, and would develop practical skills relevant to a career in international affairs, including in academia, research think-tanks, international organisations, government, media and NGOs.

Politics in India

After studying this course the students will have an in depth understanding of : The different ways in which politics in India has been studied.The themes and conceptual categories which can be deployed to understand the specificities of Indian politics.The relationship between social, economic and political processes.The relationship between the government institutions and political processes.

Themes in Indian Political Thought

The course will provide students a preliminary grasp over somecritical issues animating Indian political thought today and acquaint them with some key debates within this tradition.

Comparative Political Analysis

After completing this course, the students would become familiar with the debates on key concepts and theoretical perspectives in comparative politics. Learn to use the comparative method to analyse why and how political institutions, processes, regimes, and ideologies change over time and across regions. Learn to use conceptual tools to understand new

developments in political experiences across the world in a historical, sociological, political economy, and institutional perspectives. Develop a thorough understanding on how to study politics comparatively, that is, understand similarities and differences in political experiences

Administrative Theory
The students learn from this course the fundamental and key concepts in public administration and how these concepts can be used to explain the working of modern public organizations. It givesthe students better grounding in the disciple which they further can use to understand issues inpublic policy and governance.

Ethics and Politics
The course offers a more focused and comprehensive engagement between ethics and politics andhelps imbibe skills of ethical reasoning to evaluate contemporary political practices.

Global Justice and the South
The course offers the perspective of the global south and interrogate the norms and practices of global institutions.

Themes in Citizenship
The course will help the students revisit the earlier debates on citizenship, by studying citizenshipin the contemporary context, particularly the plural political and social cultures of citizenship andits practices in different locations.

Theory and Practice of Democracy
The course intends to deepen an understanding of the relationship between norms, institutions andpolitical processes as they have evolved in some political communities, including India.

Critical Traditions in Political Theory
This course intends to make students aware of critical challenges to mainstream normative political theory and acquaints familiarity with theorists and critics who do not belong to the canonical tradition.

Key Ideas in Contemporary Critical Theory in India
This course will inculcate a critical look at the political and social concepts by exposing the students to debates conducted over them in Indian context.

Ambedkar in Contemporary India
To assess the significance of Ambedkar's thought and politics in contemporary political discourse in India.

Gandhi, Autonomy and Discourse
To assess the significance of Gandhi's ideas especially with regard to how he articulated them to mobilize an unarmed section of humanity against the colonial state.

Dalit-Bahujan Political Thought
To provide an alternative understanding of caste, conjugality, and patriarchy in contemporary India.

Contemporary Explorations in Tagore's Ideas and Actions.
To engage with Tagore's thought especially in the context of nationalism and discuss these in the light of recent commentaries drawn from different disciplinary backgrounds.

Discourses on Hindu Nationalism
Students learn the core issues of Hindu Nationalism which is the most contested subject of debatein the Indian politics. Further, they will have insight into ideas that seek to define India in a waysthat is different from Modernists arguments.

Culture and Politics in India
To analyse how conceptions of the self and the nation are intertwined and shaped by cultural processes and their institutionalized expressions.

Social Conservatism in India
To explore various manifestations of conservatism across the political spectrum in India and evaluate them on the basis of contemporary political issues.

Social Exclusion: Theory and Practice
To equip students in critically understanding multifaceted dimensions of social exclusion practisedin the Indian society.

Indian Strategic Thought
The students will explore conceptualization of India's strategic culture from the ancient times tothe present era and connect to contemporary security discourse. Students will also generate an indepth understanding of India's contemporary diplomatic maneuvers and position in global politics.

Gender in International Relations
This course will equip students to develop an understanding of how women are made invisiblefrom the very conceptual underpinnings of International Relations and, how masculinity isnaturalized and normalized in the practices of its core concepts such as state, sovereignty, powerand security. By the end of this course the students would not only be able to problematize themasculine concepts, learn to de-code the gendered language of IR and its practices but alsoexplore alternative paradigms.

State and Society in Pakistan
The students will acquire comprehension of political dynamics, its contexts, and forces in contemporary Pakistan.

Pakistan and the World

This course will inculcate understanding and knowledge of context, contour, and forces at workand directions of goals, interests and probability of success in the domain of foreign policy ofPakistan.

The Politics of Violence in South Asia

Students are expected to develop an in-depth understanding of varied and multi-dimensional character of violent conflicts in the South Asian region. As part of the course work, students willlearn how to undertake some case studies of conflicts in order to understand 'what works' and'what doesn't' in managing or resolving such conflicts.

Security Studies

The students would gain an understanding of the mainstream and alternative theoretical approaches to security, and shall be aware of the several sectors and levels of analysis that aimtowards widening and deepening of the security agenda. The students shall be in a position toidentify a particular security issue sectorally and analyse it using the core variables of anappropriate theoretical framework.

Comparative Federalism: Theory and Practice

This course will students understand the development of national and supranational confederalsystems especially focusing on the pathologies and failure of federations in a comparativeperspective.

The Modern State in Comparative Perspective

The outcome of the course is envisaged in terms of providing students the conceptual tools andtheoretical frameworks with which they can make sense of the forms in which the modern statemakes itself manifest globally in the contemporary context.

Social Movements and Revolutions

Students gain comparative understanding of ideology and practice different movements as unfolded in Asia, Africa and Latin America.

The Politics of South Asia in Comparative Perspective

The course will inform students of South Asian politics, institutions and state building in postcolonialcontext. The comparative perspective enhances understanding of South Asia in contemporary context.

Constitutionalism in Comparative Perspective

This course will help students understand the working of the constitution, processes through whichconstitutions evolve, and different underlying principles they pledge.

The State in Diverse Political Traditions

This course attempts to sensitise students to diverse political traditions of the state so that they candevelop a comprehensive view of the state by locating it within the specific social and culturalpolitical traditions.

Society, State and Politics: Comparing India and Israel

Integrating India and Israel with the South Asian and West Asian contexts respectively, the course will familiarize the students with the success of two parliamentary models with glaringcommonalities – historical, cultural, sociological and political - and their emergence asmulticultural pots in the contemporary global politics. Sharing common history and culture, thetwo parliamentary democracies in South and West Asia will make students understand the successof democratization and democratic transformation, particularly in addressing issues like peace andsecurity, migration and infiltration, technological and defence cooperation.

The Politics of Identity in Comparative Perspective

To study how identities are shaped not merely by state processes, but also by mobilization undertaken by parties and movements, often in response to state processes themselves.

Nationalism in a Comparative Perspective

This course will help students understand the debates on the emergence of nationalism in a variety of historical and political contexts.

Identities and Political Transformation in India

This course would allow for a comprehensive grasp of how historical processes have shaped identity politics in the postcolonial period, and of how identities have been shaped both by stateand non-state processes in postcolonial India.

Development Process and Politics in India

This course focuses on a critical analysis of the concept of development and the manner in whichit has been operationalised in post-colonial India through policy and practice. This will also enable students to understand what inter-disciplinary analysis means and how to locate the political inanalyzing literature that is produced in other social science disciplines.

Democracy and Human Rights in India

To make students more sensitive to human rights discourse by focusing on various cases of human-right violations in India.

Politics and Ethnic Conflicts in Jammu & Kashmir

The student will learn the special powers and autonomy that the state enjoys in federal scheme ofIndia and why despite comparatively higher degree of autonomy the state is witness to ethnicconflicts, terrorism and political violence

Law, Crime, and Politics in India

This course presents intricate relationship between law, crime, judicial intervention.

State Politics in India

The Course will familiarize the students with existing diversities among states in India and theneed for addressing important issues of development and governance in the contemporary

Indianpolitics. The changing role of primordial identities like caste and tribe along with power andparticipation will sensitize them towards the need for both social and political inclusion. Moreover, the contemporary challenges of liberalization and globalization will make studentsunderstand the need for looking local governance from global perspective and global governancefrom local perspective.

Indian Polity in State-Society Interaction Since the 1960s

Students are expected to comprehend and conceptualize the changing nature, texture and vocabularies of Indian politics with reference to the rapidly transforming social, economic andcultural milieu.

Elections and Electoral Process in India

The course familiarizes students with the role of The Election Commission of India in conductingfree and fair elections in the context of interplay between structure and agency. The course seeksto answer questions like: what influences voters' behaviour and what can be the possibility ofsimultaneous elections in India.

Public Institutions and Governance

It enables the student to have a grasp over the governance of public sector vis-a-vis private sector; development processes; accountability and regulation issues and social and physical infrastructuredevelopment. The course equips student to do research in the areas of public policy and governance issue.

Institutions, Development and Poverty

To explore relations between institutions, development and poverty.

Collaborative Governance: Transforming Engagements in Public Management

It provides students with a theoretically underpinned analytical perspective on CG and enablingthem to critically assess Collaborative Governance issues, initiatives, drivers and responses. Thecourse takes multi-sector and multi-disciplinary perspective. Collaborative Governance has become significant issues for a wide range of organizations and for the practitioners who workwithin them. Now it is a mainstream focus across all sectors of government, industries, spanningcompanies of all sizes.

Corporate Citizenship and Governance: Theories and Practices

It provides students with a theoretically underpinned analytical perspective on Corporate Citizenship and enabling them to critically assess issues, initiatives, drivers and responses by government and corporates. The paper Corporate Citizenship and Governance is also designed toprovide a broad understanding of Corporate Citizenship and governance. To stimulate criticalthinking in this domain and to train oneself into problem-focused decision-making on a range ofinextricably interlinked aspects of economic, social and environmental issues that affect the theoryand operation of global economy.

The Political in Local Governance

To explore the practices of decentralization and democratization with a view to understanding how institutional architecture and power relations affect governance outcomes.

Environmental Policies & Politics
To study emerging political and policy issues related to environmental degradation.

Politics of Knowledge: An Introduction
The course will deepen the understanding of political theory by expanding their sense of the 'political' and exposing the students to some of the most exciting contemporary debates in thefield of politics of knowledge. This course can serve as foundation for students who wish topursue research in political theory and politics of development, besides sensitizing all students tointerrogating knowledge claims in any other field.

Marx's politics: labour, equivalence, rights
This course will enable students to see how the Marxist approach to politics is connected with Marx's economics, in particular, the Marxist theory of value. It will help them connect the manydots between politics and economics and bring them up to date with theories of democracy, justiceand rights within the critical Marxist tradition.

Politics and Psychoanalysis
This course aims to equip students with the conceptual tools to relate the political and the socialwith the domain of the individual self, psyche - and, the Other. It will help students see theunderlying psychic investments that constitute both the real-life domains of the political and theeconomic.

Political Theology Debates: Vedic and Buddhist
This will give students a small window to the richness of Indian philosophical debates and alsogive them some grasp over the key conceptual categories that are foundational to Indian thinkingon morality and politics.

Black Radical Tradition
The course will enable students to better appreciate the African or black influence on global history and thought through a concrete knowledge of slave uprisings.

Comparative Political Theory
This course hopes to encourage deep reading and reflection, as well as discussion and writing, onmethodological issues in political theory, both contextual and comparative.

Egalitarianism: Theory and Practice
The course offers a comprehensive understanding of egalitarian discourses cutting across ideological divides, and equips students with analytic skills to question inegalitarian practices.

Theorizing the Politics of Diversity

The course intends to enhance a background understanding and an informed perspective of thehistorical, contextual and political practices that belie the current discussions and debates surrounding issues of diversity held in most societies today.

Interpreting Indian Classical Texts

The course will lead towards a better understanding of Indian Classical Texts. Students will learn and will be encouraged to research in this much needed area ofstudy.

Modern Indian Political Thinkers

This course will provide students a preliminary handle over some key aspects of the thought ofthese seven thinkers, who are located across the ideological spectrum, and thus make them awareboth of the rich diversity and complexity of this tradition.

Regions and Regionalism

The course shall largely comprise of lectures. By the end of the course, the student is expected to: acquire a fair understanding of the role and functions of regions and regionalism within theinternational system; knowledge of some of the main regional institutions and processes,including underlining theories (where applicable); be able to map, interpret and evaluate regionalarrangements.

India in World Affairs

Students are expected to be understand and critically analyze India's role in world affairs from atheoretical as well as empirical perspective and, on a diverse range of issues. They should be ableto grasp the changing dynamics of India's foreign relations in the bilateral, regional and globaldomains.

Power Transition and the Dynamics of Foreign Policy in International Relations

By the end of the course, the student shall have a fair idea of power transition theory and would beable to analyze any foreign policy shifts, and altered structural arrangements caused by thechanging power equations.

Conflict Analysis

At the end of the course, the student will become aware of theoretical frameworks and models ofconflict analysis. The student will be able to analyse the changing nature of conflict in the changed global context and the different ways in which conflict resolution, conflict management andconflict transformation evolves.

'Worlding' International Relations: Perspectives from the Global South

It will enable am understanding of the intellectual genesis and development of the field of IR; problematise the Euro-centric nature of the field and critically discuss the benefits of opening upthe field to previously marginalised voices; illustrate familiarity with a range of non-westerncontributions to IR and develop the necessary skills to both write and speak about theoreticalmatters.

Islam and International Relations

By the end of the course, the students are expected to understand the emerging linkages that aregetting forged between the theological, ideological and popular dimensions of the religion ofIslam and the working of contemporary international relations. They are supposed to get a theoretical understanding as to how public religion and international relations tend to meet andproduce profound consequences on the nature and functioning of the contemporary world order.Most significantly, the students are expected to comprehend as to how the notion of Islamophobiahas become an integral part of contemporary global affairs and they should also understand as tohow Islam as a religion has been misrepresented in the sphere of international politics.

International Relations of South Asia

By the end of the course, the students would have gained a fair understanding of the various theories ofInternational relations and explore the myriad ways in which various issues pertaining to South Asiamay be viewed through these theoretical lenses. The students would further be able to gauge theimplications of such issues for the regional and global environments.

United States of America in the Transforming Global Order

The students will be introduced to the contemporary international relations, which will help themto understand and factor the diplomatic manoeuvres of United States of America. It will thereforeenable them to shape their own independent understanding of complex international events of theworld and prepare them for future challenges.

China's Role in Contemporary World

By the end of this course, the students will be able to understand the key concepts used in studyingChina's role in contemporary world; demonstrate familiarity with some of the major theories andhistorical trajectory used to explain contemporary China's world view; critically assess andengage in current debates about China's emerging role and attain a foundation for further, moreadvanced study or policy engagement with China.

Citizenship and Borders

The interdisciplinary course will provide platform to scholars from different field of work such aspolitical science, philosophy geography, sociology and history to help understand city formation,space and rights discourse.

North America in Comparative Perspective

The syllabus is designed in a way to acquaint the students with contours of establishment, evolution and contemporary trends in North American continent. Three North American countries- US, Canada, Mexico are federal in terms of their political apparatus and have processesin society which make for linkages that have remarkable insights for a comparative study.

Political Parties and Party system in India

The course provides in-depth understanding of ideology, social base, electoral performance andhistorical trajectories of different national and regional parties and understand the evolution ofparty system in India and present an opportunity to understand the debate on party reforms.

International Political Economy

The course enables students to get familiarized with key concepts for analyzing International political economy. A detailed study of any four texts from the given list will be offered in an academic session. By the end of the course students would be able to: Understand how to read and decode the classics and use them to solve contemporary socio-political problems. Connect with historically written texts and can interpret it in familiar way (the way Philosophers think). Clearly present their own arguments and thoughts about contemporary issues and develop ideas to solve them through logical validation.

Public Policy

Course Learning Outcomes:

This course is meant to complement the other course in the sub-discipline, Administrative Theory.It will ground the students' understanding in the Indian and other contexts, so that there is anacquaintance with the ground realities of policy making and implementation.

Ethics and Governance

The course will allow students to reflect on some real world ethical questions and equip them withthe analytical and critical skills necessary to enrich their ethical decision-making abilities and thedemands on leadership in the public domain.

Understanding the International

By the end of the course, the students are expected to achieve a basic understanding of the world in which we live today from a politico-economic, geographic and socio-cultural perspective. Thestudents are expected to be in a position to make sense of the structural and ideational drivers thatdetermine the fundamental contours underpinning the workings of our world.

Political Institutions And Processes In India

This open elective course is expected to deepen the understanding of the political philosophy, institutions, and processes in India with respect to various levels of government.

Gender Studies

This course on gender studies will open up the structural and institutional basis of patriarchy aswell as establish that gender identity and gender injustice cannot be understood in isolation, butonly with reference to caste, class and religious community identities. Gender itself is not asynonym for 'women'. It enables rather, an understanding that the identities of 'men' and 'women' are constructed historically and culturally.

Development

This course will enable students of political science to see that Development is not only not a primarily economic issue, but also needs to be understood comprehensively. The variety of theliterature will also bring home to them the amount of work being done across the world andsensitise them to the issues through that.

Security: An Interdisciplinary Discourse

At the end of this course, the students are expected to have a broad understanding of the various aspects of security that have a direct or indirect bearing on the day to day lives of all the people living in the present day world. They should become aware of the threats posed by various human and non human sources to the security of the community and State. The course also expects the students to reach a position so that they could make some contribution toward building sensitivity in the society regarding different kinds of dangers to our security.

Environment

This course will draw students out of the everyday, commonplace notions of what these issues areabout and enable them to argue for issues of policy, politics and practice whether of states orcitizens. They will be able to see the political in all issues related to the environment.

Human Rights: Challenges and Concerns

Students' acquaintance with Human rights concerns would help them to make meaningful contribution to the society by making them aware citizens. This can translate into a better world where individuals can enjoy dignified life.

Research Methods in Political Science

All students will be expected to start with a research question and work their way through the course with the teacher. This will enable them to work toward the preparation of a rough researchproposal. The logic of research methods should be unraveled, such that the intimidation thatstudents suffer from it, be overcome once and for all.

Digital/Social Media and New Public

This course will equip students to critically approach the themes of popular digital culture andmedia society. Rigorous concepts will allow them to see what is new and what is not new in theever-changing present of the network society.

Applied Political Science

Developing skills in academic reading, writing and formal presentation. All students will be expected to start with a research question and work their way through the course with the teacher.This will enable them to underline the scientific orientation in the research and its applicability insolving problems as part of policy research.