



UNDERGRADUATE PROGRAMMES

POs, PSOs and COs

SACRED HEART COLLEGE, THEVARA

Undergraduate Programme Outcomes (POs)

- PO1** Critical Thinking and Deep Domain Knowledge
- PO2** Effective Communication
- PO3** Contribute to Nation Building
- PO4** Care for the Environment
- PO5** Ethical Values
- PO6** Global Perspective

B.A. Animation & Graphic Design (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand the basic concepts and theories of Animation, Graphic Design, Visual Effects, Photography and Editing, and develop software skills required to demonstrate competence in these fields.

PSO2

Students should be equipped with the ability to multitask in the areas of animation, graphic design, and VFX handling tasks including concept development, production design and the completion of finished segments.

PSO3

Develop a positive attitude towards entrepreneurship and innovation through confidence building measures and awareness of the latest developments in key areas.

PSO4

Understand and apply the roles, practices and ethics of communication design for social awareness and education.

PSO5

Cultivate their own philosophy of life and develop unique ways of working as a team by sharing ideas with others.

Model III English I

Course Title: Model III English I
Course Code: 19U1CCAGD1
Semester: One

Course Outcomes

C01: Appreciating English as a language

C02: Feeling confident in reading, writing and speaking English as a language

C03: Treating everyone with respect despite the differences

C04: Learning to be creative with English language

C06: Feeling more confident with negotiating way through life

C07: Working on students' individual confidence

C08: Learning about why we need to take care of our planet

C09: Participating more in activities with confidence

History Of Art And Design

Course Title: History Of Art And Design
Course Code: 19U1CRAGD1
Semester: One

Course Outcomes

C01: Examine the role and developments of visual arts in past and present cultures throughout the world.

C02: Better understanding on art application, aesthetic judgment, and to increase visual perception and critical thinking skills.

C03: To strengthen the artistic background of a student to a cognizable level.

C04: Analyze the developments in the techniques of printing and its importance in communication.

C06: Evaluate the impact of industrial revolution and its influence in the graphic design

C07: Create new concepts and designs by evaluating different imaginative and ideological art movements.

Techniques of Photographic Composition

Course Title: Techniques of Photographic Composition
Course Code: 19U1PCAGD1
Semester: One

Course Outcomes

- C01:** Identify and practice compositional elements (i.e. line, texture, shape, patterns, perspective) of a photographic image
- C02:** Use and describe basic technical and aesthetic aspects of photography such as depth- of- field, composition, color theory and image content.
- C03:** Analyze a diverse range of fine art photographers and cinematographers and their techniques
- C04:** Describe and apply the basic principles of visual literacy.
- C05:** Describe visual texts in technical and theoretical terms.
- C06:** Become familiar with multiple schools of thoughts in art history/visual studies.

Rudiments of Animation Drawing

Course Title: Rudiments of Animation Drawing
Course Code: 19U1PRAGD1
Semester: One

Course Outcomes

- C01:** Develop the skill of quick drawing
- C02:** Draw Life Sketches with Line of Action
- C03:** Draw the dimensions for layout design
- C04:** Study of the Anatomy of Human Body
- C05:** Study of the Anatomy of Animals and Birds
- C06:** Analyse Characters according to the concept/story
- C07:** Understand the Realistic, Semi-Realistic and Cartoony characters
- C08:** Create Character Model sheet, Facial Expressions and Gestures

Elements of Graphic Design

Course Title: Elements of Graphic Design
Course Code: 19U1RJAGD1
Semester: One

Course Outcomes

- C01:** Confidently produce design solutions for any communication design.
- C02:** Integrate the elements, principles and theories involved in the fundamental study of design.
- C03:** Inter-disciplinary understanding of the application of art and aesthetics.
- C04:** Understand terminologies and develop analytic and critical thinking skills.
- C05:** Nurture creativity in design production and out of the box thinking skills.
- C06:** Understand the psychology of the audience and bring out design solutions for effective communication.

Model III English II

Course Title: Model III English II
Course Code: 19U2CCAGD2
Semester: Two

Course Outcomes

C01: Making students well aware of social surroundings and issues.

C02: Being able to express themselves well in written as well as conversational English.

C03: Developing more aware individuals with understanding of current issues such how to treat each other equally and sensitively.

C04: Making them more employable by giving them basic life skills such as understanding the importance of teams as well as working well individually.

C05: Appreciating English as a language by reading more.

C06: Creating good employers and employees for the future-individuals with a good understanding of what makes a good and balanced workplace; and individuals who can express themselves well.

Planning for Animation

Course Title: Planning for Animation
Course Code: 19U2CJAGD1
Semester: Two

Course Outcomes

C01: Understanding the basics of animation pre production

C02: Creating concepts

C03: Script writing

C04: Designing story characters.

C05: Creation of storyboard layouts.

C06: Creation of animatics layouts.

History of Animation and Visual Effects

Course Title: History of Animation and Visual Effects
Course Code: 19U2CRAGD2
Semester: Two

Course Outcomes

C01: Understand the early animation attempts and optical devices.

C02: Evaluate the process of photography and motion picture development.

C03: Analyze the role of pioneers and their contributions in the field of animation.

C04: Analyze the animation techniques and technical advancements.

C05: Understand the history of visual effects and techniques used before and after the CGI era

C06: Evaluate the animation and VFX studios around the world.

Raster Graphics for Designers

Course Title: Raster Graphics for Designers
Course Code: 19U2PRAGD2
Semester: Two

Course Outcomes

C01: Discover the area of specialization inside designing where they can perform their best.

C02: Demonstrate an understanding of graphic design principles (raster aspect) in applied practice.

C03: Develop a vocabulary and visual language for design using various raster design techniques.

C04: Familiar with Industry standard graphic toolsets and plug-ins -Adobe Photoshop.

C05: Become a team person who can complete their expertise at the best possible way.

C06: Shall be able to work and fulfill various raster design/web design requirements using Photoshop

Vector Graphics for Designers

Course Title: Vector Graphics for Designers
Course Code: 19U2PRAGD3
Semester: Two

Course Outcomes

C01: Create illustrations from the development of the original concept to final execution.

C02: Apply theories and principles of design and communication to the development of effective illustrations.

C03: Communicate visually using drawing as a means of visual exploration, idea analysis, problem solving and expression of thought.

C04: Use a variety of technologies to create, capture and manipulate illustration elements in producing a final product.

C05: Work in a professional manner, maintaining professional relationships and communicating effectively with clients, co-workers, supervisors, and others.

C06: Apply appropriate and effective business practices when dealing with clients.

Typography

Course Title: Typography
Course Code: 19U3PCAGD2
Semester: Three

Course Outcomes

- C01:** Understand evolution of typography and industrial practices.
- C02:** Create original typographic designs using calligraphy techniques.
- C03:** Understand the terminologies, anatomy and theories of typography basics
- C04:** Communicate content using typography as design, text and grid.
- C05:** Create designs for publication, online and branding materials.
- C06:** Experiment and explore typography as medium of art and communication.

Branding Design

Course Title: Branding Design
Course Code: 19U3PRAGD4
Semester: Three

Course Outcomes

- C01:** Apply visual vocabulary and use technical skills relevant to graphic design.
- C02:** In-depth understanding of print and branding communication with know-how basics, techniques and technology.
- C03:** Explore and experiment the form and function and techniques of producing package design
- C04:** Create design for various events and campaigns using various strategies.
- C05:** Knowledge in tools and technology in the creation, reproduction, and distribution of visual messages.
- C06:** Update the latest design trends in Print and branding.

Basics of 3D Animation

Course Title: Basics of 3D Animation
Course Code: 19U3PRAGD5
Semester: Three

Course Outcomes

C01: Work with and navigate the unique features of the digital 3D modelling workspace to create 3D objects.

C02: Identify characteristics of rendering 3D objects for optimal system processing and analysis.

C03: Create a 3D environment featuring lighting and textures.

C04: Create basic 3D models and animations.

C05: Evaluate digital 3D projects, identify items for improvement, and implement changes.

C06: Creating a three-dimensional (3D) animation as final digital outputting using modelling, rendering and animation software.

Classical Animation

Course Title: Classical Animation
Course Code: 19U3RJAGD2
Semester: Three

Course Outcomes

C01: Understand the traditional animation

C02: Understand the basics of animation principles.

C03: Planning of animation

C04: Acting for animation

C05: Gestures of character animation.

C06: Understand the human walk..

Stop Motion Animation (PROJECT)

Course Title: Stop Motion Animation (PROJECT)
Course Code: 19U3RJAGD3
Semester: Three

Course Outcomes

C01: Examine the role and developments of traditional animation in past and present animation world.

C02: Better understanding on motion studies , and to increase visual perception and creative thinking skills.

C03: To strengthen the artistic background of a student to a cognizable level.

C04: Analyze the developments in the techniques of Stopmotion and its importance in world animation .

C05: Evaluate the impact of industrial revolution and its influence in Stop motion and other Traditional techniques.

C06: Create new concepts and designs by evaluating different imaginative and ideological Animation techniques.

Publication Design

Course Title:	Publication Design
Course Code:	19U4PCAGD3
Semester:	Four

Course Outcomes

C01: Create designs according to the content to be communicated

C02: Practice and understanding of tools and technology, including their roles in the creation, reproduction, and distribution of visual messages.

C03: Understanding of proportion and its application in layout design.

C04: Create publication design using different layouts for different mediums according to their function.

C05: Analyse, critique and revise designs for better communication.

C06: Regular updates with trends in designs and industry standards.

Design for Web (Practical)

Course Title: Design for Web (Practical)
Course Code: 19U4PRAGD6
Semester: Four

Course Outcomes

C01: Learn the language of the web: HTML and CSS.

C02: Understand the principles of creating an effective web page, including an in-depth consideration of information architecture..

C03: Become familiar with graphic design principles that relate to web design and learn how to implement theories into practice.

C04: Learn CSS grid layout

C05: Learn techniques of responsive web design, including media queries.

C06: Develop skills in digital imaging and analysing the usability of a web site.

Digital Illustration

Course Title: Digital Illustration
Course Code: 19U4PRAGD7
Semester: Four

Course Outcomes

- C01:** Conceptualize and design illustrations for various media.
- C02:** Use digital technology for accuracy and speed up the process of creation.
- C03:** Create graphics for information design using design concepts
- C04:** Understand the psychology of the audience before creating designs.
- C05:** Refine massive content and simplify information using graphical elements.
- C06:** Visualize the layout for preparing the design.
- C07:** Capable of producing designs confidentially using wacom, ipad, computers and lightbox

Techniques of 3D Animation

Course Title: Techniques of 3D Animation
Course Code: 19U4PRAGD8
Semester: Four

Course Outcomes

C01: Understand the techniques of modeling automobiles and human body

C02: Understand the basic concepts and techniques of 3D modeling and texturing

C03: Analyse the use of 3D cameras in the layout design

C04: Explore the basic rendering techniques design.

C05: Gain key knowledge in Key frames and graph editors and human body

C06: Communicate ideas, believable action and emotion effectively by employing principles of animation.

Advanced Cel Animation

Course Title: Advanced Cel Animation
Course Code: 19U4RJAGD4
Semester: Four

Course Outcomes

C01: Understand about human mass and weight

C02: Creation of Stylized animation walk

C03: Analyze the techniques of Lip sync

C04: Study of animal movements

C05: Creating animation special Effects

C06: Creation of classical 2D animation

Environment Studies and Communications

Course Title: Environment Studies and Communications
Course Code: 19U5ARAGD1
Semester: Five

Course Outcomes

C01: Practice the very basic implementation of modern communication technologies in Environment studies.

C02: Characterize and analyze human impacts on the environment.

C03: Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving through communication.

C04: Appreciate ethical, cross cultural and historical context of environmental issues and links between human and natural systems.

C05: Create designs and evaluate strategies, technologies and methods for assessment and sustainable management of environmental systems and for the remediation or restoration of degraded environments.

C06: Demonstrate ethical conduct in all environmental activities.

Video Editing (Practical)

Course Title: Video Editing (Practical)
Course Code: 19U50CAGD1
Semester: Five

Course Outcomes

C01: Understand video formats and principles.

C02: Better understand techniques editors use to construct stories.

C03: Apply professional style color correction.

C04: Evaluate and analyze working knowledge of a non-linear editing software.

C05: Evaluate digital video projects, identify items for improvement, and implement changes.

C06: Edit and compress video for use in various delivery modes of digital media using standard digital video editing software.

Basic Compositing and Visual Effects.

Course Title: Basic Compositing and Visual Effects
Course Code: 19U5PCAGD4
Semester: Five

Course Outcomes

- C01:** Build precision, control and fluency within post production work environments.
- C02:** Demonstrate an understanding of post production principles in applied practice.
- C03:** Become a team person who can complete their expertise at the best possible way.
- C04:** Develop a vocabulary and visual language for Compositing and Visual effects.
- C05:** Creating a Compositing project with requirement of 2D, 3D elements and real footages
- C06:** Able to create work and fulfill various visual effects requirements effects.

Interaction Design

Course Title: Interaction design
Course Code: 19U5PCAGD5
Semester: Five

Course Outcomes

C01: Learn Programming skills on internet-based applications

C02: Understand the various steps in designing a creative and dynamic website

C03: Design dynamic and interactive web pages by embedding Javascript code in HTML

C04: To provide knowledge of PHP scripting.

C05: To provide knowledge of database connectivity with PHP.

C06: Providing students to showcase their creative and innovative works in the multimedia world.

Advanced 3D Animation Techniques

Course Title: Advanced 3D Animation Techniques
Course Code: 19U5PRAGD9
Semester: Five

Course Outcomes

- C01:** Understand about inverse kinematics and forward kinematics
- C02:** Evaluate the role of constraints to control the bones.
- C03:** Analyse the method of Advance unwrapping and texture creation in Photoshop
- C04:** Explore the possibilities of Character Modeling
- C05:** Application of Animation principles using biped
- C06:** Evaluate the basic concept and application of Dynamics

Visual Effects Project

Course Title: Visual Effects Project
Course Code: 19U6EJAGD1
Semester: Six

Course Outcomes

C01: Create an industry standard portfolio on the selected specialization under visual effects.

C02: Familiar with industry software pipeline and workflow in an applied practice.

Advertising Design

Course Title: Advertising Design
Course Code: 19U6EJAGD2
Semester: Six

Course Outcomes

CO1: Understand the evolution of Modern Advertising

CO2: Apply industry knowledge and critical thinking skills to analyze, develop, implement effective advertising solutions that meet professional standards.

CO3: Develop concepts as well as analyze and incorporate aesthetics and layout in the design process for advertising campaigns and marketing communications

UI Design (Project)

Course Title: UI Design (Project)
Course Code: 19U6EJAGD3
Semester: Six

Course Outcomes

C01: Evaluate and understand how user interface design patterns can speed up your design process.

C02: Create awareness to organize content to achieve maximum usability.

C03: Creating brand guidelines for interactive applications

Internship (On the Job Training)

Course Title: Internship (On the Job Training)
Course Code: 19U6INAGD1
Semester: Six

Course Outcomes

C01: Efficiently work on live projects in the industry.

C02: Facing challenges in the industry with confidence.

C03: Analyze and Create designs for effective communication.

2D Digital Animation

Course Title: 2D Digital Animation
Course Code: 19U6RJAGD5
Semester: Six

Course Outcomes

- C01:** Understanding digital animation software.
- C02:** Creating Concept with Story
- C03:** Script Creation
- C04:** Developing Storyboard with Animaticsware. biped
- C05:** Character Development Story
- C06:** Creating animation
- C07:** Pre-Compositing and Final Compositing Video with Audio

Animation Project

Course Title: Animation Project
Course Code: 19U6RJAGD6
Semester: Six

Course Outcomes

C01: Full 3D Animation

C02: Full Stop-motion Animation

C03: 2D Animation + 3D Animation

C04: 3D Animation + Stop-motion Animation

C05: 2D Animation + Stop-motion Animation

C06: 2D Animation + Visual Effects

C07: 3D Animation + Visual Effects

C08: Stop-motion Animation + Visual Effects

C09: 2D Animation + 3D Animation + Visual Effects

C010: 3D Animation + Stop-motion Animation + Visual Effects

C011: 2D Animation + Stop-motion Animation + Visual Effects

C012: Live Action + Animation

Design Project

Course Title: Design Project
Course Code: 19U6RJAGD7
Semester: Six

Course Outcomes

CO1: Create the opportunity to develop a project focusing on each student's personal design vision.

CO2: Create an engaging demo reel and to face a job interview successfully.

Bachelor of Business Administration (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Demonstrate a comprehensive understanding of integrated marketing communication theories and concepts along with being capable of understanding and resolving managerial issues in a successful manner.

PSO2

Possess the right aptitude to communicate and negotiate effectively, to achieve individual and business goals; be able to upgrade their professional and managerial skills in the media management field, and display their talent in workplace.

PSO3

Explore and reflect about challenges, develop opportunities in the media and marketing industry environment; and demonstrate effective communication skills consistent with a professional marketing environment.

PSO4

Understand one's own capability to set achievable targets and complete them; and develop integrated marketing solutions for businesses by employing appropriate media strategies.

PSO5

Launch a successful business career in a meaningful way, contributing to personal, professional and societal growth; and pursue lifelong learning and achieve holistic development.

PSO6

Take up challenging assignments and work for nation building in various sectors and industries.

Introduction to Business Communication

Course Title: Introduction to Business Communication
Course Code: 15U1CPBBA
Semester: One

Course Outcomes

C01: to be familiar with the basic nuances of business communication and the process.

C02: To demonstrate his/her ability to write error free while making an optimum use of correct Business Vocabulary and Grammar

C03: To distinguish among various levels of organizational barriers while developing an understanding of communication as a process in an organization communication and communication

C04: to draft effective business communication with clarity and brevity

C05: to demonstrate his/her verbal and non verbal communication ability through presentations and report

Principles of Management

Course Title: Principles of Management
Course Code: 15U1CRBBA1
Semester: One

Course Outcomes

- C01:** Understand concept of Management and its Principles.
- C02:** Understand the Evolution of Management
- C03:** Understand Planning and Decision Making in management.
- C04:** Understand the concepts of Organizing & Departmentation
- C05:** Understand the Elements of Directing, Co-ordination and Control

Accounting

Course Title: Accounting
Course Code: 15U1CRBBA2
Semester: One

Course Outcomes

- C01:** Students will learn accounting principles and identify the needs for accounting.
- C02:** The students will be familiar with Accounting Principles and Practices.
- C03:** The students will be familiar with Accounting Principles and Practices.
- C04:** The students will be able to assess financial performance and Evaluate financial position of business concerns
- C05:** The students will be equipped to face challenges and meet the industry requirements in the area of Accounting

Managerial Accounting

Course Title: Managerial Accounting
Course Code: 15U1CRBBA3
Semester: One

Course Outcomes

C01: To gain knowledge about the basics of Managerial Economics.

C02: Examine the role of Economics in business

C03: Recognize the importance of economics in decision making

C04: Identify different cost and pricing strategy

C05: Application of the concepts in real life

Fundamentals of Marketing

Course Title: Fundamentals of marketing
Course Code: 15U2CRBBA4
Semester: Two

Course Outcomes

C01: Define the term marketing and explain its role and importance in an individual firm and the overall economy.

C02: Understand the importance of strategic marketing and know the basic outline for a marketing plan

C03: Describe the elements of the marketing mix

C04: Understand the finer nuances of a marketing a product

C05: Create and present the components of a working marketing plan

Environmental Studies

Course Title: Environmental studies
Course Code: 15U2ARENV
Semester: Two

Course Outcomes

C01: Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.

C02: Master core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.

C03: Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

C04: Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.

C05: Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world

Organizational Behaviour

Course Title: Organizational Behaviour
Course Code: 15U2CPBBA2
Semester: Two

Course Outcomes

C01: To help the students develop cognizance of the importance of human.

C02: To enable students to describe how people behave under different conditions

C03: To enable students to understand why people behave as they do

C04: To enable students to synthesize related information and evaluate options for the most logical and optimal solution

C05: To provide students to analyse specific strategic human resources demands for future action.

Business Statistics

Course Title: Business Statistics
Course Code: 15U2CPBBA5
Semester: Two

Course Outcomes

C01: To identify statistical tools needed to solve various business problems..

C02: To compute measures of location and dispersion

C03: To apply discrete and continuous probability distributions to various business problems

C04: To develop the skill of performing the calculations needed for various methods of analysis.

C05: To provide basic knowledge of quantitative mathematical tools and its application in business and management.

Cinema Studies

Course Title: Cinema Studies
Course Code: 15U2CRBBA6
Semester: Two

Course Outcomes

C01: To enable students to explore an influential global art form in its aesthetic cultural economic historical and technological dimensions..

C02: To form a critical approach to moving images

C03: To analyse and interpret the rich tradition and themes of world cinema.

C04: To provide students with a solid background in theoretical, critical and aesthetic aspects of the study of film.

C05: To enable them to analyse the history of cinema and how new media has changed both cinema itself and the study.

Financial Management

Course Title: Financial Management
Course Code: 15U3CRBBA7
Semester: Three

Course Outcomes

C01: Students would gain a thorough knowledge in Finance.

C02: The students will be familiar with Financial Management Practices

C03: The students will be able to meet financial requirements as and when they manage business risk

C04: The students will be able to assess financial performance and Evaluate business projects

C05: The students will be equipped to face challenges and meet the industry requirements in the area of finance.

Human Resource Management

Course Title: Human Resource Management
Course Code: 15U3CRBBA8
Semester: Three

Course Outcomes

C01: Apply the knowledge of management principles and practices to solve business problems.

C02: Apply communication techniques and tools to create an impact on customer perception and behavior.

C03: Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings

C04: Find out the societal needs and create innovative marketing strategies for the bottom of the pyramid

C05: Develop, analyse and evaluate strategic and tactical business plans, programs and assess their performance

Advertisement Management

Course Title: Advertisement Management
Course Code: 15U3CRBBA9
Semester: Three

Course Outcomes

C01: To harness the dynamics of global advertising for the betterment of academics and society.

C02: To aim students with a comprehensive understanding of the sciences of communication

C03: To enable them to analyse the art and craft of persuasive technology.

C04: To participate in the development of creative solutions to address advertising challenges.

C05: To harness the dynamics of global advertising for the betterment of academics and society

Ad Creative and Campaign planning

Course Title: Ad Creative and Campaign planning
Course Code: 15U3CRBBA10
Semester: Three

Course Outcomes

C01: Demonstrate an understanding of the overall role that advertising plays in the world.

C02: Demonstrate an understanding of ad strategies and different campaigns

C03: Identify and understand the various advertising media

C04: To conceptualize plan and design a campaign from scratch

Introduction to PR and Planning

Course Title: Introduction to PR and Planning
Course Code: 15U3CRBBA3
Semester: Three

Course Outcomes

- C01:** Understand history, models of PR.
- C02:** Understand role of PR/CC professional in a corporate environment
- C03:** Comprehend strategies, tactics and techniques of PR and communications programme
- C04:** Develop understanding of various tasks for specific audiences and purpose
- C05:** Analyse the importance of PR and corporate communication in business arena

Introduction to Event Management

Course Title: Introduction to Event Management
Course Code: 15U3CRBBA11
Semester: Three

Course Outcomes

- C01:** Understand the Event Industry.
- C02:** Understand the shifts in specific categories in service industry
- C03:** Understand the the role of event in community and employment
- C04:** Understand the use of technology in generating event experiences
- C05:** Understand the Types of customer experiences in event industry management

Introduction to Brand and Business

Course Title: Introduction to brand and business
Course Code: 15U4CRBBA12
Semester: Four

Course Outcomes

- C01:** To understanding the roles from product assistant to group product manager.
- C02:** To make aware of how branding is helpful for the business
- C03:** To educate the students about the new trends in branding
- C04:** To make them learn about how to conduct analysis and make decisions that face product manager in industry
- C05:** This provides knowledge of why branding is important in this competitive world.

Mass Media- Its Forms and Effects

Course Title: Mass media- it's forms and effects
Course Code: 15U4CRBBA13
Semester: Four

Course Outcomes

- C01:** To provide students with a firm grounding in communication skills.
- C02:** To educate them about the origins of media, their roles in marketing communication
- C03:** To understand the concepts of media planning, mass media
- C04:** To educate the students about the pros and cons of media.
- C05:** To make them aware of recent thinking in media

Engagement Planning and New Media

Course Title: Engagement planning and new media
Course Code: 15U4CRBBA14
Semester: Four

Course Outcomes

C01: This subject aims at aware the students about where and how one should position new media in contemporary academic and business.

C02: It educate the students about how one should conceptualise the relationship between new media and society

C03: This will give the students a critical introduction to the main aspects surrounding the relationship between new media.

C04: To educate the students about the new trends in media

C05: To make them aware about how to choose a media

Understanding psychology and market research

Course Title: Understanding psychology and market
research
Course Code: 15U4CRBBA15
Semester: Four

Course Outcomes

C01: This will make the students to understand about the consumer behaviour.

C02: The factor influencing the consumer behaviour

C03: This provides knowledge about the consumer psychology

C04: To make them aware about changing consumer trends and new consumption patterns of consumers

C05: To teach the students about the importance of marketing research in the organisation

Integrated marketing communication

Course Title: Integrated marketing communication
Course Code: 15U4CRBBA16
Semester: Four

Course Outcomes

C01: To familiarise the students with concepts and practices in marketing communication.

C02: To make them learn about various communication tools and it's effectiveness

C03: To educate them about importance of marketing communication in this era

C04: About the role marketing manager

C05: To provide knowledge about marketing strategies.

Media Planning And Buying

Course Title: Media Planning And Buying
Course Code: 15U4CRBBA17
Semester: Four

Course Outcomes

- C01:** To develop knowledge of major media characteristics.
- C02:** To make the students aware about the importance of media planning
- C03:** To educate them about the role of media planner
- C04:** This enables the students about the challenges faced in media planning
- C05:** It helps the students to understand how to select suitable media opinions.

Introduction to Photography

Course Title: Introduction to Photography
Course Code: 15U5CRBBA18
Semester: Five

Course Outcomes

C01: Students will be exposed to a variety of analog and digital photographic techniques..

C02: Students will understand the relationship between digital and film based photographic practice and be able to move freely throughout the medium.

C03: Students will understand how to operate a camera, use a darkroom, and edit their images digitally

C04: Students will engage in the theoretical debates about the differences between film and digital practices.

C05: Students will be introduced to contemporary and historic photographers and their images.

Print Media & Broadcast

Course Title: Print Media & Broadcast
Course Code: 15U5CRBBA19
Semester: Five

Course Outcomes

C01: To enable students to understand theoretical concepts related to social media as a form of communication..

C02: To enable students to gain an analytical insight into research framework in Social Media

C03: To enable students to understand audiences and usage patterns of social media in communication studies.

Television Production & Planning

Course Title: Television Production & Planning
Course Code: 15U5CRBBA20
Semester: Five

Course Outcomes

- C01:** Define terms required for television production.
- C02:** Demonstrate lighting principles that meet technical and aesthetically creative purposes
- C03:** Direct multi-camera studio productions
- C04:** Show an understanding of television production techniques
- C05:** Perform competently using control room equipment
- C06:** Produce basic talk-shows, demonstrations, and news stories for television
- C07:** Execute the duties of individual production crew positions

Radio Production & Planning

Course Title: Radio Production & Planning
Course Code: 15U5CRBBA21
Semester: Five

Course Outcomes

- C01:** The difference and similarities between print and broadcast journalism.
- C02:** radio news production; know it's definition and contribution to local broadcast journalism
- C03:** know how to use remote equipment, especially the audio tape recorder
- C04:** know the technique of mixing audio sources
- C05:** know the techniques of audio tape editing, especially for use in radio news.

Journalism

Course Title: Journalism
Course Code: 15U5CRBBA22
Semester: Five

Course Outcomes

C01: To produce competent professionals who demonstrate a thorough knowledge of the theory and practice of journalism and communications..

C02: To foster original scholarly work in the discipline of journalism

C03: To increase awareness of the breadth of scholarship and practice encompassed by journalism and the media.

C04: To enrich the understanding and discussion of journalism and the

Multimedia

Course Title: Multimedia
Course Code: 15U6CRBBA24
Semester: Six

Course Outcomes

C01: Understanding the multimedia communications systems, application and basic principles,

C02: Analysis of the multimedia streaming,

C03: Performing and establishing multimedia communication terminals,

C04: Presentation of multimedia communications

Digital Marketing

Course Title: Digital Marketing
Course Code: 15U6CRBBA25
Semester: Six

Course Outcomes

- C01:** Exploring the emerging tools offered by the internet.
- C02:** Access the realm of social media
- C03:** Understand and estimate the mindset of the online consumer.
- C04:** Design tools to enhance online consumer experiences.
- C05:** Monitor, evaluate and iterate traffic-building activities for marketers.

Customer Relationship Management

Course Title: Customer Relationship Management
Course Code: 15U6CRBBA26
Semester: Six

Course Outcomes

C01: An understanding of ways the firms can create and enhance the sources of value to the customer through value explorations and CRM value proposition.

C02: An understanding of the strategic framework of CRM

C03: An understanding of CRM strategies in Sales, Marketing and Customer Support and familiarize with different CRM technology solutions.

C04: Impact of CRM on customer experience, satisfaction and loyalty.

C05: Using Customer Lifetime Value to Make Marketing Decisions.

C06: Develop an understanding of recent developments in CRM usage in the social media

Business Law

Course Title: Business Law
Course Code: 15U6CRBBA27
Semester: Six

Course Outcomes

C01: To provide the participants basic framework of Laws applicable to Business.

C02: To provide basic insights into provisions of business law

Entrepreneurship & Project Management

Course Title: Entrepreneurship & Project Management
Course Code: 15U6CRBBA28
Semester: Six

Course Outcomes

C01: To provide the participants a basic understanding about the role of small business in an economy.

C02: To impart necessary knowledge and skills for project formulation and project management relevant for business

Project

Course Title: Project
Course Code: 15U6CRBBA29
Semester: Six

Course Outcomes

C01: Apply fundamental and disciplinary concepts and methods in ways appropriate to their principal areas of study.

C02: Demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study

C03: Use effectively oral, written and visual communication.

C04: Identify, analyze, and solve problems creatively through sustained critical investigation

C05: Integrate information from multiple sources.

C06: Demonstrate an awareness and application of appropriate personal, societal, and professional ethical standards.

C07: Practice the skills, diligence, and commitment to excellence needed to engage in lifelong learning.

BCA (Mobile Application and Cloud Technology) (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Apply the theoretical foundations of computer science in modelling and developing solutions to complex and real-world problems.

PSO2

Comprehend, explore and build computer programs and applications in allied areas like Algorithms, Multimedia, Web Design and Android; efficiently designing computer-based systems that meet the needs of industry and society.

PSO3

Develop skills in Android and cloud technology development so as to employment or self-employment in the global technical market.

PSO4

Apply knowledge of layered network models, protocols, technologies, topologies and security policies for building network and internet-based applications

Computer Fundamentals & Organization

Course Title: Computer Fundamentals & Organization
Course Code: 19U1CRBCA1
Semester: One

Course Outcomes

C01: Understand the basics of computer hardware and how software interacts with computer hardware.

C02: Analyze and evaluate computer performance

C03: Understand how computers represent and manipulate data

C04: Understand computer arithmetic and convert between different number systems.

C05: Understand a computer with hardware design including data format, instruction format, instruction set, addressing modes

Programming In C

Course Title: Programming In C
Course Code: 19U1CRBCA2
Semester: One

Course Outcomes

- C01:** Identify real life problems and convert it to computational problems.
- C02:** Solve problems and Produce algorithms, pseudocodes and flowcharts for it.
- C03:** Discuss and memorize different C programming constructs
- C04:** Apply programming concepts to develop programs for problems
- C05:** Analyze and Compare approaches to model efficient and standard programs
- C06:** Evaluate, compile, run and debug programs

Introduction To Linux

Course Title: Introduction To Linux
Course Code: 19U1CRBCA3
Semester: One

Course Outcomes

C01: Understand about the different basic commands of Unix.

C02: Ability to perform system administration tasks

C03: Explore the flavors of Linux Operating system

C04: Understand the concepts of Unix file system

C05: Ability to develop and execute shell script

Operating System

Course Title: Operating System
Course Code: 19U2CRBCA4
Semester: Two

Course Outcomes

- C01:** Understand the services provided by and the design of an operating system..
- C02:** Understand the structure and organization of the file system.
- C03:** Understand what a process is and how processes are synchronized and scheduled
- C04:** Understand different approaches to memory management.
- C05:** Implement system calls for managing processes, memory and the file system.

Oops With C++

Course Title: Oops With C++
Course Code: 19U2CRBCA5
Semester: Two

Course Outcomes

C01: Understand how C++ improves C with object-oriented features.

C02: Implement copy constructors and class member functions.

C03: Design C++ classes for code reuse.

C04: Implement inheritance and virtual functions implement dynamic binding with polymorphism.

C05: Design and implement generic classes with C++ templates.

Data Structures Using C

Course Title: Data Structures Using C
Course Code: 19U2CRBCA6
Semester: Two

Course Outcomes

- C01:** Analyse and design programming problem statements..
- C02:** Choose appropriate data structures and algorithms, understand the ADT/libraries, and use it to design algorithms for a specific problem.
- C03:** Understand the necessary mathematical abstraction to solve problems.
- C04:** Analyse the efficiency and proofs of correctness
- C05:** Comprehend and select algorithm design approaches in a problem specific manner

Software Engineering

Course Title: Software Engineering
Course Code: 19U3CRBCA8
Semester: Three

Course Outcomes

C01: Perform background research and a feasibility study prior to embarking on a development project.

C02: Apply the software development life cycle model to a development project.

C03: Know how and when to adapt or replace the lifecycle model by other alternatives

C04: Analyze the user requirements

C05: Identify and apply appropriate software architectures and patterns to carry out high level design of a system.

RDBMS

Course Title: RDBMS
Course Code: 19U3CRBCA9
Semester: Three

Course Outcomes

C01: Understand the different issues involved in the design and implementation of a database system..

C02: Study the physical and logical database designs, database modelling, relational, hierarchical, and network models

C03: Understand and use data manipulation language to query, update, and manage a database

C04: Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency

Computer Networks

Course Title: Computer Networks
Course Code: 19U3CRBCA10
Semester: Three

Course Outcomes

- C01:** Independently understand basic computer network technology.
- C02:** Identify the different types of network topologies and protocols
- C03:** Enumerate the layers of TCP/IP and explain the functions of each layer
- C04:** Identify the different types of network devices and their functions within a network
- C05:** Network Troubleshooting

Programming In Java

Course Title: Programming In Java
Course Code: 19U3CRBCA10
Semester: Three

Course Outcomes

C01: Understand the basic concepts of Java Programming.

C02: Develop understanding about object oriented programming in Java, including defining classes, invoking methods,using libraries.

C03: Design, implement, test and debug graphical user interfaces in Java

C04: Understand Java Swings for designing GUI applications

Web Technologies

Course Title: Web Technologies
Course Code: 19U4CRBCA12
Semester: Four

Course Outcomes

C01: Introduce the fundamental concepts of Internet..

C02: Understand the HTML Tags and its uses.

C03: Understand the various steps in designing a creative and dynamic website using CSS.

C04: Gain knowledge on Java Script HTML DOM, jQuery, Basics of JSON, Introduction to AJAX.

C05: Gain the knowledge of HTML forms.

C06: CO6: Understand PHP MySQL, its Queries and the ability to establish the connection.

Introduction To Cloud Technology

Course Title: Introduction To Cloud Technology
Course Code: 19U4VCBCA1
Semester: Four

Course Outcomes

- C01:** Understand the basics of cloud computing.
- C02:** Know the Key concepts of Cloud Infrastructure Mechanisms
- C03:** Understand different Cloud Computing Architecture
- C04:** Understand the fundamentals of Cloud security
- C05:** Understand about cloud providers and case studies

Fundamentals Of Data Center

Course Title: Fundamentals Of Data Center
Course Code: 19U4VCBCA2
Semester: Four

Course Outcomes

- C01:** Apply the fundamental concepts in data centers.
- C02:** Discuss about Virtualization and its role in enabling the cloud computing system
- C03:** Understand the tradeoffs in power, efficiency and cost.
- C04:** Understand about different cloud data center networking topologies
- C05:** Understand about storage networks and storage defined networking

Basic Android

Course Title: Basic Android
Course Code: 19U4CRBCA13
Semester: Four

Course Outcomes

C01: Ability to describe Android Architecture, Android SDK, Android versions, Application components, Intent and Intent filters.

C02: Design user interface using views, layouts, fragments in Android platform

C03: Ability to use shared preferences, Internal storage, external storage, SQLite database, Content Providers.

C04: Equip to use Media API, Video, Audio and Camera, Sensors, Bluetooth in Android applications

C05: Ability to use maps and location based services

C06: Equip students with the basics of testing android applications

Mobile Device And Network Architecture

Course Title: Mobile Device And Network Architecture
Course Code: 19U4CRBCA14
Semester: Four

Course Outcomes

- C01:** Understand the basic wireless communication principles and the wireless networks.
- C02:** Explain the basic concepts of cellular networks
- C03:** Explain the concepts of mobile handover with in the cellular network.
- C04:** Illustrate the concepts of GSM, 2G, mobile IP and UMTS
- C05:** Explain the features of a mobile device
- C06:** Illustrate the hardware components of mobile devices

Principles Of Virtualization

Course Title: Principles Of Virtualization
Course Code: 19U5VCBCA3
Semester: Five

Course Outcomes

C01: Understand the basics of Virtualization.

C02: Explore the deploying and managing an Enterprise Desktop Virtualization Environment and presentation virtualization Environment

C03: Understand the hypervisor and types of hypervisor

C04: Installation and implementation of Remote Desktop Services

C05: Understand the Virtualization software

Server Operating System

Course Title: Server Operating System
Course Code: 19U5VCBCA4
Semester: Five

Course Outcomes

- C01:** Demonstrate the Installing and Configuring Windows Server 2008.
- C02:** Differentiate between the IPv4 and IPv6 addressing
- C03:** Configure DHCP, DNS and firewall for implementing network services
- C04:** Describe the Configuration of Active Directory Domain Services in windows server 2008
- C05:** Describe the Group Policy in Active Directory Domain Services
- C06:** Demonstrate Server services DNS, DHCP, TELNET, Web service, NIS, NFS

IT and Environment

Course Title: IT and Environment
Course Code: 19U5CRBCA15
Semester: Five

Course Outcomes

C01: Familiar with the main legislative provisions affecting the environmental impact of human activities.

C02: Understand the need for a holistic approach in assessing environmental impact and be able to Incorporate environmental considerations into a cost/benefit analysis

C03: Understand the environmental impact of information systems and be able to draw up realistic plans for reducing this impact.

C04: Familiar with a range of applications of information technology that enable the environmental impact of human activity and natural changes to be monitored and possibly reduced.

C05: Be able to assess the potential for using information technology to reduce the environmental impact of specific activities.

Advanced Android

Course Title: Advanced Android
Course Code: 19U5CRBCA16
Semester: Five

Course Outcomes

C01: Define the callback methods to start the service and bind the service, implement IBinder object and Remote Bound Service.

C02: Describe IPC using Messenger, Handler and AIDL.

C03: Explain the various ways to create and manage different types of notifications and role of Notification Manager, use Embedded application

C04: Describe the features of Canvas and OpenGL in rendering Graphics, define the fields and elements of different animation, define and instantiate a Drawable

C05: Define the methods used at each stage of process life cycle, tasks, describe the worker thread and UI thread, lifecycle of a thread.

C06: Describe the steps to add web view, demonstrate XML and JSON parsing, purpose of using SOAP web services and security aspects

Introduction To Mobile UI And UX

Course Title: Introduction To Mobile Ui And UX
Course Code: 19U6CRBCA17
Semester: Six

Course Outcomes

- C01:** Improve individual and collaborative skills in design problem solving.
- C02:** Learn and appreciate the skills as a process for user experience design
- C03:** Understand the difference between usability and user experience

Fundamentals Of Storage

Course Title: Fundamentals Of Storage
Course Code: 19U6VCBCA5
Semester: Six

Course Outcomes

C01: Understand the fundamentals of storage centric and server centric systems.

C02: Describe how data centre's maintain the data

C03: Understand the different data storage technologies

C04: Understand the different data storage and data access methods

C05: Understand data storage management methods and apply the design and architect data storage solution for an organization

Web Technology And Value Added Services In Mobile

Course Title: Web Technology And Value Added Services In
Mobile
Course Code: 19U6CRBCA18
Semester: Six

Course Outcomes

C01: Ability to describe characteristics and requirement of mobile value added services.

C02: Ability to explain mobile TV, video and OTT services, call waiting, call holding, voice mail box facilities in VAS

C03: Ability to use operators, variables, arrays, control structures, functions and objects in JavaScript.

C04: Implement client-side interfaces through the use of the DOM

C05: Ability to event handling, browser and media management in JavaScript

Mobile Testing

Course Title: Mobile Testing
Course Code: 19U6CRBCA19
Semester: Six

Course Outcomes

C01: Ability to identify activities associated with software development cycle and types of testing.

C02: Ability to write test case, test suite, test runners

C03: Ability to examine the use of Junit framework of Android, various class of JUnit

C04: Equip students with mobile application testing landscape, compatibility testing and methods

C05: Ability to test with mobile app testing environment and identify the differences that is there while testing the physical devices, cloud devices and emulators

C06: Equip students with the Basics of MonkeytalkTool for Mobile Application Testing

C07: Familiarise the students how to use Robotium in mobile testing

B. Com Computer Application (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Fulfil the manpower requirements in various commerce subjects catering to the needs of trade, industry and commerce.

PSO2

Imbibe ethical values, the capacity for sustainable team work, professional communication and leadership skill sets.

PSO3

Practice entrepreneurship and sustain their ventures through environmentally friendly practices.

PSO4

Assimilate knowledge, skill and attitudes leading to the creation of responsible citizenry.

PSO5

Understand their prospects of employability or for higher education from a global perspective

PSO6

Demonstrate the ability to create websites, automate office activities, computerise accounting process and create databases.

B. Com Finance and Taxation (Aided)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Fulfil the manpower requirements in various avenues of commerce, catering to the needs of trade, industry and commerce.

PSO2

Demonstrate ethical values, capacity for sustainable team work and professional communication and leadership skills.

PSO3

Practice entrepreneurship and sustain their ventures through environmentally friendly practices.

PSO4

Assimilate the knowledge, skills and attitudes required for the formation of a responsible citizenry.

PSO5

Understand their prospects of employability or for higher education from a global perspective.

B. Com Finance and Taxation (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Fulfil the manpower requirements in various commerce subjects catering to the needs of trade, industry and commerce.

PSO2

Imbibe ethical values, the capacity for sustainable team work, professional communication and leadership skill sets.

PSO3

Practice entrepreneurship and sustain their ventures through environmentally friendly practices.

PSO4

Assimilate knowledge, skill and attitudes leading to the creation of responsible citizenry.

PSO5

Understand their prospects of employability or for higher education from a global perspective

B. Com Travel and Tourism (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Fulfil the manpower requirements in various commerce subjects catering to the needs of trade, industry and commerce.

PSO2

Imbibe ethical values, the capacity for sustainable team work, professional communication and leadership skill sets.

PSO3

Practice entrepreneurship and sustain their ventures through environmentally friendly practices.

PSO4

Assimilate knowledge, skill and attitudes leading to the creation of responsible citizenry.

PSO5

Understand their prospects of employability or for higher education from a global perspective.

PSO6

Acquire knowledge and skill in the field of travel and tourism.

PSO7

Demonstrate an aptitude for tourism marketing and for encouraging responsible tourism activities.

Business Environment

Course Title:	Business Environment
Course Code:	19U1COCOM1
Semester:	One

Course Outcomes

- CO1:** Provide an exposure to students about the various business environmental factors
- CO2:** Gain substantial knowledge in the spheres of business, industry and commerce
- CO3:** Familiarize students on the various elements of business environment along with the concepts of business ethics, CSR and corporate governance
- CO4:** Provide a thorough understanding on economic environment vis-à-vis various of business environmental policies
- CO5:** Understand about foreign investments, BRICS and WTO
- CO6:** Equip students on legal environment such as insolvency, bankruptcy code, IPR and consumer protection Act
- CO7:** Create awareness about impact of business on natural environment and to take corrective measures in the modern world

Digital Electronics And Microprocessor

Course Title:	Digital Electronics And Microprocessor
Course Code:	19U1CRCAP1
Semester:	One

Course Outcomes

C01: Understand the number system and perform arithmetic operations

C02: Implementing the boolean expression using boolean algebra

C03: Design and implement the logic gates

C04: Analyse and design combinational and sequential circuit

C05: Understand the addressing methods and instruction sequencing and execution

C06: Understand the concept of 8086 microprocessor

Programming In Python

Course Title:	Programming In Python
Course Code:	19U1CRCAP2
Semester:	One

Course Outcomes

C01: Write algorithms and to draw flowcharts for solving problems.

C02: Install and run the Python interpreter

C03: Dictionaries and operators in Python.

C04: Apply different Decision Making statements and loops.

C05: Understand and summarize different File handling operations and packages.

Business Statistics

Course Title:	Business Statistics
Course Code:	19U1RCOM1
Semester:	One

Course Outcomes

C01: Explain the features, characteristics, functions and limitations of statistics.

C02: Apply the measures of central tendency in business situations

C03: Differentiate measures of dispersion and compute it

C04: Evaluate the relevance and application of co-efficient of variation in business situations

C05: Focus and distinguish the types of index numbers

C06: Evaluate the methods of trend determination and its scope in business

Financial Accounting

Course Title:	Financial Accounting
Course Code:	19U1RCOM2
Semester:	One

Course Outcomes

CO1: Critical Thinking and differentiation of accounting of non- profit organization and profit making organisations

CO2: Accounting of non-profit organisation leads to effective citizenship

CO3:Royalty of different natural resources and its treatment in the books of Lessee and lessor leads to discussions and understanding in environment related issues

CO4:Branch and Consignment Accounting helps in developing global perspective in the era of MNC's

Business Regulatory Framework

Course Title:	Business Regulatory Framework
Course Code:	19U1CRCOM3
Semester:	One

Course Outcomes

C01: Ability to apply knowledge of Indian Contract Act, Sale of Goods Act, Partnership Act and LLP

C02: Ability to identify, and solve legal issues in connection with business.

C03: Ability to understand the method and style of legal proceedings for legal practice.

C04: On completion of this course, learners will be able to: appreciate the relevance of business law to individuals and businesses and the role of law in an economic, political and social context.

C05: Identify the fundamental legal principles behind contractual agreements.

C06: Acquire problem solving techniques and to be able to present coherent, concise legal argument.

Business Communication And Management **Information System**

Course Title:	Business Communication And Management Information System
Course Code:	19U2COCOM2
Semester:	Two

Course Outcomes

C01: Understand and appreciate the need, importance and urgency of good business communication

C02: To enable students gain effective communication skills

C03: Learn preparation of business communication documents apart from formal letters, CV, bio data, quotations and enquiry letters

C04: To hone presentation skills and related soft skills of students

C05: To familiarize MIS and data base systems apart from enumerating its present day relevance and importance

C06: Help to overcome barriers in effective communication

Quantitative Techniques For Business Research

Course Title:	Quantitative Techniques For Business Research
Course Code:	19U2CRCOM4
Semester:	Two

Course Outcomes

- C01:** Understand research, research methodology, types and its importance in business.
- C02:** Analyse the steps in research process.
- C03:**Apply the Diagrammatic and Graphic Presentation of data and its significance.
- C04:**Check the significance of Correlation analysis and its methods (types Correlation-methods- Karl Pearson's Co-efficient of correlation-Spearman's Rank correlation co-efficient)
- C05:**Evaluate the significance of Regression analysis in business
- C06:**Understand the basic concepts of Probability theory
- C07:**Compute Permutation and combination of probability, the Theorems of Probability (Addition theorem & Multiplication theorem.)
- C08:**Explain research Report writing, types of report, characteristics of a good report and contents of a report.

Corporate Regulations

Course Title:	Corporate Regulations
Course Code:	19U2CRCOM5
Semester:	Two

Course Outcomes

C01: Know about the concept of company and shares.

C02: Know about the application of company law in India.

C03: Understand the use of the memorandum of association and article of association in a company, they also learn from this course.

C04: Use of various documents and forms in a company.

C05: Understand the relationship between company and its stakeholders.

C06: Identify the legal compliances of the Company.

E-Commerce & General Informatics

Course Title:	E-Commerce & General Informatics
Course Code:	19U3COCOM3
Semester:	Three

Course Outcomes

C01: Familiarize the fundamental concepts, terms and the main activities of E-Commerce.

C02: Understand about the various components of E-Commerce, its models, strategies, Ecommerce security

C03:Logically observe and experience online shopping and dealings in the Electronic market.

C04:Learn about how to develop an E-commerce website

C05:Identify the usage of different electronic payment systems.

Marketing Management

Course Title:	Marketing Management
Course Code:	19U3RCOM6
Semester:	Three

Course Outcomes

C01: Understand the Meaning and need of marketing in business/trade

C02: To comprehend the elements of marketing mix and its strategies

C03: To understand the pricing policies in the industry and the pricing strategies

C04: To understand the changes in the marketing environment.

Corporate Accounting

Course Title:	Corporate Accounting
Course Code:	19U3RCOM7
Semester:	Three

Course Outcomes

C01: Understand the process of issue ,reissue and forfeiture of shares and apply in business situation

C02: Understand the format of final accounts of Company's and prepare final accounts as per Company's act 2013

C03:Determination of purchase consideration in the event of amalgamation and to prepare consolidated financial statements and apply in practical situation of merger and acquisition

C04:Understand the process of alteration and reduction of share capital

C05:Understand the process of liquidation and prepare liquidators final statement of accounts

C06:Study of Farm Accounting and Accounting of Hospital will contribute towards sustainable development

Business Management

Course Title:	Business Management
Course Code:	19U3RCOM8
Semester:	Three

Course Outcomes

CO1: To ensure students' knowledge enhancement on business management and relevant management concepts

CO2: Understand and comprehend Fayol and Tawlor's contributions

CO3: understand various management functions, concepts of MBO, MBE and CSR.

CO4:ToMake students familiar with the topics of motivation , leadership and relevant related theories

CO5:Appreciate Human Resource Management and related concepts apart from learning performance appraisal and its techniques

CO6:Evoke interest in pursuing higher studies in management field

Information Technology For Business

Course Title:	Information Technology For Business
Course Code:	19U3OPCCA1
Semester:	Three

Course Outcomes

C01: Recall the details they studied about information technology.

C02: Understand ICT in detail.

C03: Understand the scope of E- world.

C04: Create websites of their own.

C05: Analyse internet in detail.

Financial Management

Course Title:	Financial Management
Course Code:	19U3OPCFT1
Semester:	Three

Course Outcomes

- C01:** Familiarize the fundamental concepts and goals of financial management
- C02:** Understand the importance of, financing, investment and dividend decisions
- C03:** Evaluate the various alternatives available before arriving at a particular decision
- C04:** Analyze the profitability of various alternatives for financing
- C05:** Familiarize the theories and approaches related to the topics in financial management
- C06:** Equip the students to solve the financial problems related to an enterprise

Fundamentals Of Tourism

Course Title:	Fundamentals Of Tourism
Course Code:	19U3OPCTT1
Semester:	Three

Course Outcomes

C01: Explain the evolution and growth of tourism in India

C02: Describe the basic concepts of tourism

C03: Analyse the types of tourism in India and its significance

C04: Evaluate each types of tourism based on their characteristics, their advantages and disadvantages.

C05: Describe Tourism products of Kerala and India

C06: Focus and distinguish types planning for tourism development

C07: Outline the tourism planning process

C08: Evaluate the significance and the Adversities of tourism.

C09: Evaluate the alternative tourism initiatives and the laws enacted by Government of India for the protection of tourism resources.

Entrepreneurship Development And Project Management

Course Title:	Entrepreneurship Development And Project Management
Course Code:	19U4COCOM4
Semester:	Four

Course Outcomes

C01: Encourage students to take up entrepreneurship

C02: Create awareness on the setting up of an enterprise

C03: Familiarise students on the various schemes provided for entrepreneurs

C04: Familiarise the students on the organisations that provide financial and non financial assistance for entrepreneurs.

C05: Equip students with the basic ideas of preparation of project report.

C06: Evaluate the problems in entrepreneurship based on case study and take adequate precautions.

Capital Market

Course Title:	Capital Market
Course Code:	19U4RCOM9
Semester:	Four

Course Outcomes

C01: To familiarise students with the capital market and money market

C02: To enable students with the fundamentals of trading, IPO and dematerialisation

C03: To help students to understand more about SEBI and its contribution to Indian Capital Market

C04: To appreciate the emergence of various methods of share floatation and about various Indian Stock Market indices

C05: To learn briefly about various international stock markets

C06: To understand various capital market concepts like futures, forwards, swaps apart from appraising about the latest trends in Stock Markets

Special Accounting

Course Title:	Special Accounting
Course Code:	19U4RCOM10
Semester:	Four

Course Outcomes

C01: Understand the final accounts of Banking Companies and apply in business situations

C02: Understand final accounts of Insurance Companies. and apply in practical situations

C03: Understand investment accounts and take suitable investment decisions

C04: Calculate the amount of Claims by understanding the loss of stock and loss of profit policy

C05: Prepare farm accounts and identify expenses and incomes of hospitals

Financial Services

Course Title:	Financial Services
Course Code:	19U4RCOM11
Semester:	Four

Course Outcomes

C01: Understand the different types of financial services offered by a service provider

C02: Familiarize with the advantages and disadvantages of each financial service

C03: Understand the legal and tax implications of each of these financial services.

C04: Examine and evaluate the case studies related to these issues

C05: Examine the effect of financial services on the market value of a firm.

C06: Examine the effect of financial services on the stake holders of a firm

Information Technology For Office

Course Title:	Information Technology For Office
Course Code:	19U4OPCCA2
Semester:	Four

Course Outcomes

C01: Understand the basics of computer.

C02: Create document in Msword.

C03: Create Brochure in page maker.

C04: Create documents, accounts and statements in Ms Excel.

C05: Create Power Point presentations.

C06: Analysing the advanced features of excel.

Goods And Service Tax

Course Title:	Goods And Service Tax
Course Code:	19U40PCFT2
Semester:	Four

Course Outcomes

C01: Understand the concepts of indirect tax

C02: Evaluate the structure of GST from pre GST period to post GST period.

C03: Familiarise with the practical applications of GST

C04: Identify the different types of e-filing of returns

C05: Comprehend the principles of taxation, objectives of taxes and its impact in the market oriented economy.

C06: Enable the student as a tax consultant in preparing the tax planning, tax management, payment of tax, and filing of tax returns.

Marketing Of Tourism

Course Title:	Marketing Of Tourism
Course Code:	19U4OPCTT2
Semester:	Four

Course Outcomes

C01: Understand the basic concepts of marketing and its importance in tourism perspective

C02: Analyse the process of market segmentation, its methods and its importance in tourism industry.

C03: Analyse the product life cycle model in the perspective of tourism products and destination life cycle using Butler's model.

C04: Check the usefulness of the methods of demand measurement used in tourism industry, its determinants and its types

C05: Evaluate the elements of tourism marketing environment

C06: Critically judge the seven p's of marketing namely product, price, place, promotion, people, process and physical evidence and its significance in tourism marketing

C07: Understand the consumer buying behavior and its determining factors.

C08: Analyse the role of government and non-government agencies in the protection of consumer interest.

Cost Accounting

Course Title:	Cost Accounting
Course Code:	19U5RCOM12
Semester:	Five

Course Outcomes

C01: Understand the various cost concepts, methods and techniques of cost accounting

C02: Understand the accounting and control of material cost

C03: Understand the accounting and control of labour cost

C04: Understand accounting for overheads, primary and secondary distribution and absorption of overheads and control overhead cost

C05: Understand format of cost sheet and prepare cost sheet

C06: Understand the reason for difference between cost accounts and financial accounts

C07: Apply cost accounting practices

C08: To know the application of cost control techniques

C09: Apply costing for decision making in business areas

Banking And Insurance

Course Title:	Banking And Insurance
Course Code:	19U5RCOM13
Semester:	Five

Course Outcomes

C01: Demonstrate a comprehension of the principles of banking law and its relationship to banks and customers.

C02: Demonstrate an awareness of law and practice in a banking context.

C03: Engage in critical analysis of the practice of banking law from a range of perspectives.

C04: Organize information as it relates to the regulation of banking products and services

Environment Management

Course Title:	Environment Management
Course Code:	19U5RCOM14
Semester:	Five

Course Outcomes

C01: Create environment consciousness among the educated youth.

C02: Evaluate all decisions and policies taking into consideration its effect on the environment

C03:Inculcate a habit of preserving and protecting the natural resources.

C04:Implement and propagate the environmental consciousness in the surroundings

C05:Participate in organisations that promote environmental consciousness.

C06:Create a group of responsible citizens contributing towards sustainable growth and development.

Fundamentals Of Accounting

Course Title:	Fundamentals Of Accounting
Course Code:	19U5OCCOM1
Semester:	Five

Course Outcomes

CO1: Familiarize the student from various disciplines with the meaning of basic accounting terms and principles

CO2: Students practices how to maintain accounts and get an idea about practical application of accounting

CO3:Understanding the basic accounting terms, Journal, Ledger, and Trial Balance preparation, and how to prepare final accounts of a sole trading business

CO4:After the successful completion of the course the students are expected to understand and manage accounts in a real-life situation

Computerised Accounting

Course Title:	Computerised Accounting
Course Code:	19U5OPCCA3
Semester:	Five

Course Outcomes

C01: Recall the basics of Accounting.

C02: Differentiate between Manual and Computerised Accounting.

C03: Apply accounting with the help of Tally software.

C04: Create automated financial statements and reports.

C05: Create employee statements(Payroll).

C06: Analyse the scope of Tally.

Principles Of Business Decisions

Course Title:	Principles Of Business Decisions
Course Code:	19U6CPCOM2
Semester:	Six

Course Outcomes

C01: Understand the economic concepts and theories applied in decision making

C02: Familiarise the standards with the law of demand and its effects in the market

C03: Explain the methods of forecasting the demand for a new product in the market

C04: Explain the loss of the production and its influencing factors

C05: Understand the concept of cost and its determinants

C06: Analyse the relationship between cost and output and optimum firm

C07: Understand the concept of pricing and price mechanism under various market situations

C08: Apply the economic theories in different business situations

Applied Cost Accounting

Course Title:	Applied Cost Accounting
Course Code:	19U6CRCOM15
Semester:	Six

Course Outcomes

C01 : Understand the process costing concepts so that logical decision can be taken and apply process costing concepts in business situations

C02 : Understand the accounting procedures of job ,batch and contract costing and apply in practical situations

C03 : Identify the role of CVP Analysis and apply the marginal costing principles in decision making situations of businesses

C04 : Understand the concept of various budget and apply budgetary control in business situation.

C05 : To know the application of cost control techniques

C06 : Apply costing for decision making in business areas

Practical Auditing

Course Title:	Practical Auditing
Course Code:	19U6CRCOM16
Semester:	Six

Course Outcomes

CO1: Understand the practical application of auditing

CO2: Familiarize with the different types of audit in-depth.

CO3:Examine and to tackle the frauds and manipulations happening in accounts through auditing

CO4:Equip the students with the theory and methodology of auditing, audit reporting, generally accepted auditing standards & other basic concepts.

CO5:Explain the legal framework under which a company audits are conducted and apply the professions code of conduct.

CO6:Demonstrate the ability to undertake research on significant auditing issues and to keep up -to-date with developments in auditing theory and practice.

Accounting For Managerial Decision

Course Title:	Accounting For Managerial Decision
Course Code:	19U6CRCOM17
Semester:	Six

Course Outcomes

C01: Use business finance terms and concepts when discussing.

C02: Explain the financial concepts used in making accounting management decision

C03:Use effective communication skills to promote respect and relationship for financial deals.

C04:Utilize information by applying a variety of business and industry software and hardware to major financial function.

C05:Demonstrate a basic understanding of management accounting

C06:Enable the students to have a thorough knowledge on the management accounting techniques in business decision making.

Database Management System

Course Title:	Database Management System
Course Code:	19U6OPCCA4
Semester:	Six

Course Outcomes

- C01:** Recall the basics of Database.
- C02:** Create Tables with referencing integrity.
- C03:** Create Database using Ms Access.
- C04:** Create Queries and Forms in Ms Access.
- C05:** Create Final Reports.
- C06:** Analysing types of Queries and Forms.

Income Tax Assessment & Procedure

Course Title:	Income Tax Assessment & Procedure
Course Code:	19U6OPCFT4)
Semester:	Six

Course Outcomes

C01: To Understand and compute from the head Income from other sources

C02: To learn how to club income and the provisions of Set off and Carry forward of losses for different class of assessee.

C03:To learn the provisions of deductions in Income tax and calculate the income of an assessee.

C04:To understand the powers of Income tax authorities and learn the assessment procedures.

Hospitality Management

Course Title:	Hospitality Management
Course Code:	19U6OPCTT4
Semester:	Six

Course Outcomes

C01: Understand the evolution and growth of Hospitality industry.

C02: Analyse the organization structure and functions of departments in a Hotel.

C03: Explain the role of accommodation in tourism and the types of accommodation.

C04: Analyse the Managerial issues in hospitality industry

C05: Explain the domestic and international hotel chains in India.

C06: Analyse the importance of training in hotel industry.

C07: Check the emerging trends in hospitality management and the role of Government in development of hotel industry.

B.Sc. Botany

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand the functional and theoretical concepts of the biological world and their relative roles in the sustainability of natural habitats and biodiversity.

PSO2

Possess knowledge of the evolutionary relationships among plants.

PSO3

Understand the applications of plant biology in various disciplines.

PSO4

Understand the issues of environmental contexts and sustainable development.

PSO5

Perform laboratory procedures as per ethics and following standard protocols.

PSO6

Synthesize the scientific character of observation, reasoning and apply the knowledge in designing experiments.

Microbiology And Phycology

Course Title: Microbiology And Phycology

Course Code: 19U1CRBOT1

Semester: One

Course Outcomes

- C01** Understand the world of microbial diversity

- C02** Understand the reproductive behaviour in Algae and microbes

- C03** Understand ecological significance of the lower groups of plants and protists

- C04** Understand economic significance of the lower groups of plants and protists

- C05** Collect various algal forms and classify them in the laboratory

- C06** Compare various algal forms and on the basis of their thallus structure

Micology, Lichenology And Plant Pathology

Course Title: Micology, Lichenology And Plant Pathology
Course Code: 19U2CRBOT2
Semester: Two

Course Outcomes

- C01** Understand the diversity of fungi and Lichens
- C02** Understand the reproductive behaviour in fungi and lichen
- C03** Understand the biotechnological application of fungi
- C04** Understand ecological significance of fungi and lichens
- C05** Know the economic significance of the fungal world
- C06** Carry out the mushroom cultivation in at a small scale industry level
- C07** Identify the plant diseases and it's control measures

Bryology, Pteridology, Gymnosperms And Palaeobotany

Bryology, Pteridology, Gymnosperms And
Course Title: Palaeobotany
Course Code: 19U3CRBOT3
Semester: Three

Course Outcomes

- C01** Understand the morphological diversity of bryophytes, pteridophyte, and gymnosperms
- C02** Understand the reproductive behaviour in bryophytes, pteridophyte, and gymnosperms
- C03** Know the evolutionary trends in bryophytes, pteridophyte, and gymnosperms
- C04** Understand ecological significance of bryophytes, pteridophyte, and gymnosperms
- C05** Know the economic significance of bryophytes, pteridophyte, and gymnosperms
- C06** Understand the habitat variation in bryophytes, pteridophyte, and gymnosperms
- C07** Understand the diversity and distributions of prehistoric flora

Anatomy, Microtechnique And **Angiosperm Morphology**

Anatomy, Microtechnique And Angiosperm

Course Title: Morphology
Course Code: 19U4CRBOT4
Semester: Four

Course Outcomes

- C01** Understand the plant cell structure in a detailed manner
- C02** Understand the tissue level organization in plant system
- C03** Understand the morphological features of angiosperms
- C04** Know and carry out the plant anatomical specimen preparations
- C05** Understand the details of wood anatomy
- C06** Understand different inflorescence and fruit types in plant kingdom

Angiosperm Systematics And **Economic Botany**

Course Title: Angiosperm Systematics And Economic Botany

Course Code: 19U5CRBOT5

Semester: Five

Course Outcomes

- C01** Know about the natural order in plant kingdom
- C02** Understand the various classification systems and its scope in plant systematics
- C03** Understand the morphological and molecular features of angiosperms in a systematic way
- C04** Gain knowledge about various plants and plant products
- C05** Understand the role of plants in human welfare
- C06** Know about field exploration and plant specimen handling in botanical studies

Environmental Science And **Ecotourism**

Course Title: Environmental Science And Ecotourism
Course Code: 19U5CRBOT6
Semester: Five

Course Outcomes

- C01** Know about the significance of environmental science
- C02** Create responsible citizens on conservation of nature and natural resources
- C03** Design novel mechanism for the sustainable utilization of natural resources
- C04** Understand the ecological interactions in various ecosystems
- C05** Understand various environmental laws in India
- C06** Understand the current environmental issues and its global impacts
- C07** Analyze various ecosystems for its impact in human life

Genetics And Plant Breeding

Course Title: Genetics And Plant Breeding
Course Code: 19U5CRBOT7
Semester: Five

Course Outcomes

- C01** Understand the science of plant breeding and genetics
- C02** Understand the branch of plant breeding for the survival and success of human civilizations
- C03** Understand the techniques for the production of new superior crop varieties
- C04** Understand the modern strategies applied in genetics and plant breeding for human welfare
- C05** Understand the inheritance and variation of genetic characters
- C06** Understand the background of genetic disorders
- C07** Analyze and predict the occurrence of genetic traits and its impact in human life

Cell Molecular Biology And **Evolution**

Course Title: Cell Molecular Biology And Evolution

Course Code: 19U5CRBOT8

Semester: Five

Course Outcomes

- C01** Understand the molecular biology of a cell and its implications
- C02** Differentiate the ultrastructure of prokaryotic and a eukaryotic cell
- C03** Understand the chromosomes and the aberrations in its number and structure
- C04** Understand the stages of cell cycle and carry out mitosis and meiosis
- C05** Understand the genetic variation due to mutation and its significance
- C06** Understand the molecular structure of nucleic acids
- C07** Know about the gene expression and its control
- C09** Know the genetic basis of cancer
- C08** Understand the concept of evolution as the basis of biodiversity

Agribased Microenterprises

Course Title: Agribased Microenterprises
Course Code: BO5D01U
Semester: Five

Course Outcomes

- C01** Know the plausibleness of entrepreneurial aspects in plant science
- C02** Know about the basics of organic farming in agriculture
- C03** Compare sustainable agricultural practices
- C04** Know the importance of floriculture and cut flower industry
- C05** Understand the nursery management and it's industrial significance
- C06** Design the mushroom cultivation techniques
- C07** Understand the basics of plant tissue culture

Plant Physiology And **Biochemistry**

Course Title: Plant Physiology And Biochemistry
Course Code: 19U6CRBOT9
Semester: Six

Course Outcomes

- C01** Understand the relationship of plant with its habitat
- C02** Differentiate mineral nutrition and mechanism of absorption
- C03** Understand the mechanism of photosynthesis
- C04** Know the transport mechanism happening in plant system
- C05** Understand the respiration mechanism in plants
- C06** Know the plant responses to environment
- C07** Understand the physiology of growth and development in plants
- C08** Understand the biochemical nature of plant cell
- C09** Know the chemical nature of biomolecules
- C010** Understand the general features of enzymes
- C011** Identify the osmotic pressure, stomatal index, and pigmentations in plant system

Perspectives Of Science, Methodology And General Informatics

Perspectives Of Science, Methodology And

Course Title: General Informatics

Course Code: 19U6CRBOT10

Semester: Six

Course Outcomes

- C01** Introduce the perspective of science
- C02** Understands the steps in scientific methods
- C03** Understand the steps in research methodology in plant science
- C04** Understand the uses and applications of general informatics
- C05** Understand the basis of computer in education
- C06** Understand and perform chromatography and other techniques in botany
- C07** Understand the statistical terms and its relevance in plant science

Biotechnology And **Bioinformatics**

Course Title: Biotechnology And Bioinformatics
Course Code: 19U6CRBOT11
Semester: Six

Course Outcomes

- C01** Know about all the basic aspects of plant tissue culture
- C02** Understands the fundamentals of recombinant DNA technology, gene cloning strategies
- C03** Know the social and ethical issues in the field of biotechnology
- C04** Understand the scope and relevance of genome, transcriptome and proteome
- C05** Check the usefulness of biological databases
- C06** Understand the genome sequencing and sequence assembly
- C07** Know about the protein sequencing method and basics of protein structure prediction and modeling
- C08** Know the molecular phylogeny and phylogenetic trees
- C09** Outline the molecular visualization tool in proteomics

Horticulture, Nursery Management, Embryology And **Reproductive Biology**

Horticulture, Nursery Management, Embryology
Course Title: And Reproductive Biology
Course Code: 19U6CRBOT12
Semester: One

Course Outcomes

- C01** Understand the basics of horticulture and nursery management
- C02** Understand and execute propagation of horticultural plants
- C03** Understand to set a classical outdoor garden
- C04** Understand the structure and development of reproductive structures in Plant
- C05** Know about organic farming and composting techniques
- C06** Understand the aspects of organic manures and fertilizers
- C07** Understand the prospects and problems of floriculture
- C08** Awareness on self employment opportunities in horticulture

Phytochemistry And Pharmacognosy

Course Title: Phytochemistry And Pharmacognosy

Course Code: 19U6CRBOT13

Semester: Six

Course Outcomes

- C01** Understand the morphological, organoleptic, microscopic approach to study drug and aromatic plants
- C02** Understand the extraction and characterization techniques in studying the secondary metabolites in plants
- C03** Identify the occurrence, structure, classification, functions and pharmacological uses of plant derived drugs
- C04** Identify the Phytochemical properties of common plant of Kerala
- C05** Understand the volatile oil extraction methods for aromatic plants
- C06** Know the methods in pharmacognosy
- C07** Understand the traditional plant medicines and its scope in modern drug discovery

Cryptogams, Gymnosperms And **Plant Pathology**

Cryptogams, Gymnosperms And Plant

Course Title: Pathology
Course Code: 19U1CPBOT1
Semester: One

Course Outcomes

- C01** Understand the diversity of cryptogams and gymnosperms
- C02** Understand the reproductive behavior in algae, fungi, bryophytes, pteridophytes and gymnosperms
- C03** Understand ecological significance and economic importance of cryptogams and gymnosperms
- C04** Know the evolutionary trends in cryptogams and gymnosperms
- C05** Identify the plant diseases and its control measures

Complementary Course II :Plant **Physiology**

Course Title: Complementary Course II :Plant Physiology

Course Code: 19U2CPBOT2

Semester: Two

Course Outcomes

- C01** Know about basic mechanisms of various physiological processes related to plant life
- C02** Understand the vital plant physiological functions such as photosynthesis and respiration in plants
- C03** Know the functions of various plant growth regulators
- C04** Know the water relation of plants and its significance.
- C05** Understand and carry out experiments related to plant physiology

Angiosperm Taxonomy And **Economic Botany**

Course Title: Angiosperm Taxonomy and Economic Botany
Course Code: 19U3CPBOT3
Semester: Three

Course Outcomes

- C01** Understand the morphology of angiosperms
- C02** Understand the interdisciplinary aspects of taxonomy
- C03** Understand botanical nomenclature
- C04** Understand and apply the classification of angiosperms based on their floral features
- C05** Understand and prepare standard herbarium sheets
- C06** Understand the economic importance of angiosperms

Anatomy And Applied Botany

Course Title: Anatomy And Applied Botany

Course Code: 15U4CPBOT4

Semester: Four

Course Outcomes

- C01** Understand the plant cell structure in a detailed manner
- C02** Understand the tissue level organization in plant system
- C03** Know and carry out the plant anatomical specimen preparations
- C04** Understand the details of wood anatomy
- C05** Understand the anomalous anatomical features in plant system
- C06** Understand and apply the morphological and anatomical adaptations of plants to different habitats
- C07** Understand various techniques and procedures in crop improvement
- C08** Understand and carry out emasculation, layering, budding and grafting

B.Sc. Chemistry

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand the basic concepts of chemistry and solve problems in inorganic, organic, theoretical and physical chemistry.

PSO2

Understand the applicability of chemistry in solving problems related to industry, agriculture, medicine, environment and day to day life.

PSO3

Experiment, analyse and draw conclusions from qualitative, quantitative and synthetic laboratory exercises in chemistry.

PSO4

Design research projects in inorganic, organic, theoretical and physical chemistry that help develop research aptitude.

Theoretical And Inorganic Chemistry-I

Course Title: Theoretical And Inorganic Chemistry-I
Course Code: 19U1CRCHE1
Semester: One

Course Outcomes

C01: Remember the evolution of chemistry as a discipline of science

C02: Understand the basics concepts of chemistry and fundamental principles of analytical chemistry.

C03: Analyse the features and limitations of various models of atomic structure.

C04: Apply the principles of quantum mechanics to describe atomic structure.

Theoretical And Inorganic Chemistry-I

Course Title: Theoretical And Inorganic Chemistry-I
Course Code: 19U2CRCHE1
Semester: Two

Course Outcomes

C01: Understand the periodic properties of elements

C02: Understand theories of chemical bonding and compare and differentiate different types of bonds

C03: Analyze the properties of acids, bases and non-aqueous solvents.

C04: Understand the principles of gravimetry and separation and purification techniques

Volumetric Analysis

Course Title: Volumetric Analysis
Course Code: 19U2PRCHE1
Semester: One and Two

Course Outcomes

C01: Estimate the amount of substance in a given solution by acidimetry, alkalimetry, complexometry, permanganometry, dichrometry, iodimetry and iodometry.

C02: Apply microscale procedures like two-burette titration in acidimetry and alkalimetry.

Organic Chemistry - I

Course Title: Organic Chemistry - I
Course Code: 19U3RCHE3
Semester: Three

Course Outcomes

- C01:** Understand the classification and nomenclature of organic compounds.
- C02:** Describe aromaticity and stereochemistry of organic compounds
- C03:** Understand the fundamentals of organic reaction mechanisms.
- C04:** Compare aspects of substitution and elimination reactions
- C05:** Describe various emerging areas of organic chemistry and its applications.

Organic Chemistry - Ii

Course Title: Organic Chemistry - Ii
Course Code: 19U4RCHE4
Semester: Four

Course Outcomes

- C01:** Understand the chemistry of alcohols and phenols.
- C02:** Describe ethers and epoxides.
- C03:** Enumerate carbonyl compounds.
- C04:** Illustrate the structure and chemical properties of carboxylic acids and sulphonic acids.
- C05:** Understand and explain organic reaction mechanisms.

Qualitative Organic Analysis

Course Title: Qualitative Organic Analysis
Course Code: 19U4PRCHE2
Semester: Three and Four

Course Outcomes

- C01:** Identify and distinguish various organic compounds.
- C02:** Prepare derivatives of organic compounds
- C03:** Determine the physical constants of organic compounds.

Environmental Studies

Course Title: Environmental Studies
Course Code: 19U5CRCHE5
Semester: Five

Course Outcomes

C01: Understand the multidisciplinary nature of environmental studies.

C02: Describe ecosystems and environmental pollution.

C03: Analyze social issues related to the environment.

C04: Explain the basic principles of green chemistry.

C05: Explain the environmental aspects of nuclear chemistry and nano chemistry.

Organic Chemistry – Iii

Course Title: Organic Chemistry – Iii
Course Code: 19U5CRCHE6
Semester: Five

Course Outcomes

- C01:** Explain the chemistry of organic compounds containing nitrogen.
- C02:** Understand the basics of organic photochemical reactions.
- C03:** Explain the chemistry and applications of dyes, organic polymers, important aliphatic hydrocarbons, soaps, detergents and organic reagents of analytical and synthetic importance.
- C04:** Explain the applications of chemotherapy.
- C05:** Identify organic compound using UV, IR and PMR spectroscopic techniques.

Physical Chemistry - I

Course Title: Physical Chemistry - I
Course Code: 19U5CRCHE7
Semester: Five

Course Outcomes

C01: Understand the basics of thermodynamics.

C02: Explain the laws of thermodynamics.

C03: Understand the applicability of the laws of thermodynamics to various physical and chemical processes.

C04: Describe the phase diagrams of one- and two-component systems.

C05: Understand the basic principles of chemical kinetics.

C06: Know the kinetics of various chemical reactions.

Physical Chemistry - Ii

Course Title: Physical Chemistry - Ii
Course Code: 19U5CRCHE8
Semester: Five

Course Outcomes

C01: Understand the basics of spectroscopy.

C02: Explain the fundamental principles of rotational, vibrational, Raman, electronic, NMR and mass spectroscopic techniques.

C03: Compare the aspects of rotational and vibrational spectroscopy.

C04: Discuss the first order spectra of simple organic molecules.

C05: Describe the fundamentals of photochemistry and optical properties.

C06: Understand the mechanism of photochemical reactions and its application in everyday life.

Chemistry In Everyday Life

Course Title: Chemistry In Everyday Life
Course Code: 19U50CCHE1
Semester: Five

Course Outcomes

- C01:** Know the importance of chemistry in everyday life.
- C02:** Understand the chemistry of food additives and flavours and its effect on human health.
- C03:** Understand the chemistry of soaps, synthetic detergents and their environmental effects.
- C04:** Understand the chemistry of cosmetics and the effect on health.
- C05:** Understand the chemistry of plastics, paper and dyes.
- C06:** Understand the hazards of plastics and other synthetic materials on human health and environment and acquaint the methods for its reduction.
- C07:** Understand the chemistry of and drugs; their action and possible side effects
- C08:** Explain the application of chemistry in agriculture and need of green methods

Inorganic Chemistry

Course Title: Inorganic Chemistry
Course Code: 19U6CRCHE9
Semester: Six

Course Outcomes

- C01:** Explain the chemistry of s and p block elements.
- C02:** Explain the chemistry of d and f block elements.
- C03:** Describe the properties and applications of coordination compounds.
- C04:** Discuss the structure and related properties of inorganic solids.

Organic Chemistry - Iv

Course Title: Organic Chemistry - Iv
Course Code: 19U6CRCHE10
Semester: Six

Course Outcomes

C01: Understand the source, structure and functions of natural products terpenoids, alkaloids, vitamins and lipids.

C02: Know the structure and chemical properties of carbohydrates, amino acids, proteins, enzymes and steroids.

C03: Understand the chemical properties and syntheses of heterocyclic compounds.

Physical Chemistry - Iii

Course Title: Physical Chemistry - Iii
Course Code: 19U6CRCHE11
Semester: Six

Course Outcomes

- C01:** Describe the properties of solid, liquid and gaseous states.
- C02:** Understand the fundamentals of symmetry and point groups of molecules.
- C03:** Explain the theories and applications of adsorption.

Physical Chemistry - Iv

Course Title: Physical Chemistry - Iv
Course Code: 19U6CRCHE12
Semester: Six

Course Outcomes

- C01:** Understand concept of acids, bases and pH of solutions.
- C02:** Explain the properties of solutions.
- C03:** Understand the theory of electrical conductance and its applications.
- C04:** Explain electromotive force, different electrochemical cells and its applications.

Applied Inorganic Chemistry

Course Title: Applied Inorganic Chemistry
Course Code: 19U6CRCHE13EL
Semester: Six

Course Outcomes

C01: Describe the process of metallurgy.

C02: Explain the structure and properties of organometallic compounds, metal carbonyls metal clusters and inorganic polymers.

C03: Understand the fundamentals of modern analytical techniques.

C04: Explain the importance of bioinorganic chemistry.

Qualitative Inorganic Analysis

Course Title: Qualitative Inorganic Analysis
Course Code: 19U6PRCHE03
Semester: Five and Six

Course Outcomes

C01: Explain the reactions of various cations and anions in a mixture.

C02: Acquire expertise in the separation of inorganic salt mixtures.

Preparation And Basic Laboratory Skills

Course Title: Preparation And Basic Laboratory Skills
Course Code: 19U6PCHE04
Semester: Five and Six

Course Outcomes

C01: Set up organic reactions leading to the synthesis of compounds in the laboratory.

C02: Understand various separation techniques like solvent extraction, distillation and crystallization.

C03: Carry out thin layer chromatography.

Physical Chemistry Practicals

Course Title: Physical Chemistry Practicals
Course Code: 19U6PCHE05
Semester: Five and Six

Course Outcomes

C01: Understand the principles of physical chemistry through experiments.

C02: Acquire expertise in conductometry, Potentiometry, calorimetry, viscometry etc.

Gravimetric Analysis

Course Title: Gravimetric Analysis
Course Code: 19U6PCHE06
Semester: Five and Six

Course Outcomes

C01: Estimate the amount of a substance by gravimetric analysis.

C02: Acquire expertise in precipitation, filtration, incineration and drying.

B.Sc. Computer Applications (Self – Financing)

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Pursue a successful professional career in the software industry, government, academia, research, or other areas where computer applications are deployed.

PSO2

Demonstrate proficiency in areas of Computer science such as, networking, web development, database queries, cyber security and software engineering.

PSO3

Develop programming skills, networking skills, learn applications, packages, programming languages and modern techniques of IT.

PSO4

Apply theoretical concepts to design and develop programs and develop industry-focused skills for a successful career.

PSO5

Acquire an understanding in advanced areas of mathematics and statistics.

Digital Electronics And Microprocessor

Course Title: Digital Electronics And Microprocessor
Course Code: 19U1CRCAP1
Semester: One

Course Outcomes

- C01:** Understand the number system and perform arithmetic operations
- C02:** Implementing the boolean expression using boolean algebra
- C03:** Design and implement the logic gates
- C04:** Analyse and design combinational and sequential circuit
- C05:** Understand the addressing methods and instruction sequencing and execution
- C06:** Understand the concept of 8086 microprocessor

Programming In Python

Course Title: Programming In Python
Course Code: 19U1CRCAP2
Semester: One

Course Outcomes

C01: Write algorithms and to draw flowcharts for solving problems.

C02: Install and run the Python interpreter.

C03: Understand the Numbers, Math functions, Strings, List, Tuples, Dictionaries and operators in Python.

C04: Apply different Decision Making statements and loops.

C05: Understand and summarize different File handling operations and packages.

Operating System

Course Title: Operating System
Course Code: 19U2CRCAP3
Semester: Two

Course Outcomes

C01: The course will allow students to understand the fundamental principles for the analysis, design, and development of operating systems measured by examinations

C02: Student will be able to identify the major components parts of an OS and able to develop a design schema or architecture

C03: Students will be able to evaluate or validate the OS principles via simulations and/or realistic

C04: Students will be able to integrate OS and programming language concepts to solve theoretical problems such as interrupts or similar mechanisms for synchronization, process management and resource scheduling

Data Structures Using 'C'

Course Title: Data Structures Using 'C'
Course Code: 19U2CRCAP4
Semester: Two

Course Outcomes

C01: Understand a variety of techniques for designing algorithms.

C02: Understand a wide variety of data structures and should be able to use them appropriately to solve problems

C03: Understand some fundamental algorithms.

Data Communication And Computer Networks

Course Title: Data Communication And Computer Networks
Course Code: 19U3CRCAP5
Semester: Three

Course Outcomes

C01: Understand the concepts of data communication, types of communication, topology, categories of network, protocols & standards, transmission modes, ISO-OSI and TCP/IP model.

C02: Discuss about analog and digital signals, transmission impairment, transmission modes, transmission media and types of switching.

C03: Discuss different types of error detection and correction methods, types of framing, flow control protocols and random access protocols in data link layer.

C04: Distinguish different types of connecting devices, wired and wireless LAN in network layer.

C05: Discuss about the concepts of mobile computing, cloud computing and IoT.

C06: Discuss about the cyphers used in cryptography.

Object Oriented Programming In C++

Course Title: Object Oriented Programming In C++
Course Code: 19U3CRCAP6
Semester: Three

Course Outcomes

- C01:** Know the principles of object-oriented problem solving and programming.
- C02:** Outline the essential features and elements of the C++ programming language.
- C03:** Explain programming fundamentals, including statement and control flow and recursion.
- C04:** Apply the concepts of class, method, constructor, data abstraction, function abstraction, inheritance, overloading, and polymorphism.

Advanced Web Technology

Course Title: Advanced Web Technology
Course Code: 19U3CRCAP7
Semester: Three

Course Outcomes

C01: Introduce the fundamental concepts of Internet.

C02: Understand the HTML Tags and its uses.

C03: Understand the various steps in designing a creative and dynamic website using CSS.

C04: Gain knowledge on Java Script HTML DOM, jQuery, Basics of JSON, Introduction to AJAX

C05: Gain the knowledge of HTML forms.

C06: Understand PHP MySQL, its Queries and the ability to establish the connection.

Database Management System

Course Title: Database Management System
Course Code: 19U4CRCAP8
Semester: Four

Course Outcomes

C01: Identify and define the information that is needed to design a database management system

C02: Build a database management system that satisfies relational theory with queries, forms, and reports.

C03: Understand the core terms, concepts and tools of relational database management systems

C04: Design entity-relationship diagrams to represent simple database application scenarios

Programming In Java

Course Title: Programming In Java
Course Code: 19U5CRCAP9
Semester: Five

Course Outcomes

- C01:** Explain OOP Principles, OOP programming concepts and Java special features.
- C02:** Understand the concepts of classes and Objects, constructors, method overloading, method overriding and inheritance
- C03:** Discuss about the array concepts, multiple inheritance using package and interface, exception handling and multithreading.
- C04:** Understand the concepts of event handling, swing architecture, swing components and layout managers.
- C05:** Discuss about applet life cycle, working with graphics, JDBC connection

Software Engineering And Environmental Studies

Course Title: Software Engineering And Environmental Studies
Course Code: 19U5CRCAP10
Semester: Five

Course Outcomes

C01: Apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.

C02: An ability to work in one or more significant application domains

C03: Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.

C04: Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle

C05: Demonstrate an ability to use the techniques and tools necessary for engineering practice.

C06: Understand the knowledge about renewable and non-renewable resources, environment and human rights

Internet, Web Designing And Cyber Laws

Course Title: Internet, Web Designing And Cyber Laws
Course Code: 19U50CCAP1
Semester: Five

Course Outcomes

C01: Understand the basic concepts related to internet and its standard protocols.

C02: Design web pages using HTML

C03: Understand the basic concepts of internet services

C04: Understand about E-commerce and business

C05: Understand key terms and concepts in cyber crimes

Computer Graphics

Course Title: Computer Graphics
Course Code: 19U6CRCAP11
Semester: Six

Course Outcomes

C01: Understand the basic concepts used in computer graphics

C02: Implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping

C03: Describe the importance of viewing and projections.

C04: Define the fundamentals of animation, virtual reality and its related technologies.

C05: Understand a typical graphics pipeline.

C06: Design an application with the principles of virtual reality.

Artificial Intelligence (Elective)

Course Title: Artificial Intelligence (Elective)
Course Code: 19U6CRCAP12EL
Semester: Six

Course Outcomes

C01: Understand both the achievements of AI and the theory underlying those achievements.

C02: Discuss the engineering issues underlying the design of AI systems

C03: Understand the basic issues of knowledge representation and blind and heuristic search, as well as an understanding of other topics such as minimax, resolution, etc. that play an important role in AI programs.

C04: Understand some of the more advanced topics of AI such as learning, agents and robotics, expert systems, and planning

Linux Operating System

Course Title: Linux Operating System
Course Code: 19U6CRCAP13EL
Semester: Six

Course Outcomes

- C01:** Understand the file processing utilities.
- C02:** Understand the system status utilities.
- C03:** Discuss about the miscellaneous utilities.
- C04:** Describe programming utilities available in Linux.
- C05:** Examine the role and importance of operating system software.
- C06:** Describe the basic functionalities of the DOS, Linux and Windows Operating Systems.
- C07:** Describe how the operating system handles resources and files.

B.A. Economics

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand the functions and behaviour of economic agents at Micro and Macro Economic levels.

PSO2

Understand the areas where market mechanism is supplemented, modified, corrected and supplanted by government.

PSO3

Understand the economic relationship between countries of the world.

PSO4

Understand the interaction between economy and environment and the need to obtain a balance between them.

Methodology and Historical Perspectives of Economics

Course Title: Methodology and Historical Perspectives of Economics
Course Code: 19U1CRECO 1
Semester: One

Course Outcomes

- C01:** Understand the broad contours of Economics, its methodologies, tools and analysis procedures.
- C02:** Knowledge of the basic concepts and terminology of Economics
- C03:** Gains knowledge to apply the methods and theories of social sciences to contemporary issues
- C04:** Understand the basic postulates of various schools of economic thought
- C05:** Describe the roots of economic thought and practices in the modern economic world.
- C06:** Understanding the theoretical background of various economic concepts and theories
- C07:** Discuss the economic thoughts of Kautilya, Naoroji, Gandhiji and Amartya Sen.
- C08:** Acquiring the basic knowledge of research methodology

Principles of Micro Economics

Course Title: Principles of Micro Economics
Course Code: 19U2CRECO2
Semester: Two

Course Outcomes

C01: understands micro economic concepts

C02: Analyses pricing strategies in the market

C03: Develops understanding regarding various aspects of demand and supply

C04: Evaluates various factors aspects of elasticity

C05: Understands the theory of consumer behaviour

C06: Understands the behavior of economic agents

C07: Understands the theory of production

C08: Understands the Traditional & Modern theories of Cost

Micro Economic Analysis

Course Title: Micro Economic Analysis
Course Code: 19U3CRECO3
Semester: Three

Course Outcomes

- C01:** Understands the general idea about perfect and imperfect markets
- C02:** Understands the structure of firms and markets
- C03:** Examines various types of markets and the strategies related to the same
- C04:** Understands the price and output determination in various markets
- C05:** Understands the problems and strategies under oligopoly
- C06:** Understands factor pricing and distribution in the economy
- C07:** Understands the welfare issues of the economy
- C08:** Develops an understanding of various aspects to be taken in social and economic decisions

Economics of Growth and Development

Course Title: Economics of Growth and Development
Course Code: 19U3CRECO4
Semester: Three

Course Outcomes

- C01:** Demonstrate familiarity with some central themes and issues of economic development
- C02:** Evaluate the structural changes in the development pattern of less developed countries.
- C03:** Demonstrate the difference between economic growth and development and the major growth theories.
- C04:** Assess the potential effectiveness of various policies in combating economic development.
- C05:** Gains knowledge of the interactions between the environment and the economy and the physical constraints that limits the interaction.
- C06:** Develops knowledge of relevant economic theories in understanding and addressing environmental or natural resource issues.
- C07:** Becomes familiar with economic techniques to assess environmental problems and to analyse environmental policies.
- C08:** Understand the market failure for environment goods and its impact on the economy.

Principles of Macroeconomics

Course Title: Principles of Macroeconomics
Course Code: 19U4CRECO5
Semester: Four

Course Outcomes

C01: Students should be able to compare and contrast micro and macro economics and understand the basics, the importance and applications of macro economics

C02: understand the different economic variables and the forces that determining economic variables

C03: students should be able to explain the concept of national income, different methods of calculating it , merits and demerits of each method and they should be able describe the method of calculation of national income in india and explore modern methods in the national income calculation

C04: demonstrate the circular flow model and understand the importance of each sectors of the economy in the income and output generation

C05: Understand the contributions made by the classical economists in macro economics and its relevance

C06: Understand the principles of Keynesian economics and its emergence

C07: Demonstrate the Keynesian model of income determination

C08: understand the concept of IS LM model of income determination

Public Economics

Course Title: Public Economics
Course Code: 19U4CRECO6
Semester: Four

Course Outcomes

- C01:** Identifies areas of market failures and need for government intervention
- C02:** Understands the fiscal functions of the government and goals of government
- C03:** Develops understanding regarding different types of taxes the effects and incidence of taxes
- C04:** Understands the principles and effects of public expenditure
- C05:** Understands the types, burden and effects of public debt and methods of debt redemption
- C06:** Evaluates the problems a of federal system of government and identifies solutions
- C07:** Evaluates the role of panchayati raj institutions
- C08:** Examines the working of union and state finance commissions

Quantitative Techniques for Economic Analysis

Course Title: Quantitative Techniques for Economic Analysis
Course Code: 19U5CRECO7
Semester: Five

Course Outcomes

C01: Helps understand the role of statistics in economic analysis

C02: Students will be able to identify, explain, and use economic concepts, theories, models, and data-analytic techniques.

C03: Students will acquire the knowledge of economics, mathematics, statistics, and computing flexibly in a variety of contexts thereby providing the foundation for success in their studies and careers.

C04: Students will develop the skills to measure and analyze statistical data in order to draw conclusions about various economic problems.

C05: Students will develop the necessary investigative skills for conducting original economic research and participating effectively in project teams

C06: Students will acquire the skills to deliver effective presentations in which they combine visual communication design with oral arguments and/or the written word.

Macroeconomic Analysis

Course Title: Macroeconomic Analysis
Course Code: 19U5CRECO8
Semester: Five

Course Outcomes

- C01:** understand the consumption function and its numerical illustration
- C02:** understand the relevance of different consumption theories
- C03:** understand the concept of investment ,its determinants ,investment theories and its relative importance
- C04:** understand the determination of general price level in an economy according to classical and keynesian economists
- C05:** understand the concept of inflation , its types and different theories
- C06:** evaluate the inflation levels of various countries and its impact on the respective economies
- C07:** Analyze fiscal and monetary policy decisions to counter business cycle swings by using macro-economic models
- C08:** Understand the contributions made by post Keynesian economists

Environmental Economics

Course Title: Environmental Economics
Course Code: 19U5CRECO9
Semester: Five

Course Outcomes

- C01:** Understands the discipline of Environmental Studies, its inter disciplinary nature and scope.
- C02:** Understands the resource base of the world- Types, nature, limited availability and need for sustainable use
- C03:** Understands the structure functions characteristics and threats to various eco systems
- C04:** Understands the meaning, importance, and threats to biodiversity, and the need for conservation of nature and biodiversity
- C05:** Develops knowledge about various Social issues and possible initiatives related to environment, environmental ethics and legislation
- C06:** Understands the Environment-economy linkage, need for sustainability and global efforts to bring balance between Economy and environment
- C07:** Understands the evaluation of environmental benefits and costs.
- C08:** Understands the problem of human rights in India
- C09:** Understands Relationship between environment and human rights.

Introductory Econometrics

Course Title: Introductory Econometrics
Course Code: 19U5CRECO10
Semester: Five

Course Outcomes

- C01:** Understands the meaning and methodology of econometrics
- C02:** Understands the importance of random variable in economic data analysis
- C03:** Understands the concept of Ordinary Least Square estimators and its various assumptions
- C04:** Understands the consequences of relaxing the assumptions of OLS estimation
- C05:** Develops the skills to build predictive models that help in decision making
- C06:** Understands the various econometric tools that enable to make valid inferences

Quantitative Methods for Economic Analysis

Course Title: Quantitative Methods for Economic Analysis
Course Code: 19U6CRECO11
Semester: Six

Course Outcomes

C01: Helps understand the role of statistics in economic analysis

C02: Students will be able to identify, explain, and use economic concepts, theories, models, and data-analytic techniques.

C03: Students will acquire the knowledge of economics, mathematics, statistics, and computing flexibly in a variety of contexts thereby providing the foundation for success in their studies and careers.

C04: Students will develop the skills to measure and analyze statistical data in order to draw conclusions about various economic problems.

C05: Students will develop the necessary investigative skills for conducting original economic research and participating effectively in project teams

C06: Students will acquire the skills to deliver effective presentations in which they combine visual communication design with oral arguments and/or the written word.

International Economics

Course Title: International Economics
Course Code: 15U1CRECO12
Semester: Six

Course Outcomes

- C01:** Understands the basic concepts and tools of international economics
- C02:** Understands the basic factors lying behind international trade
- C03:** Understands the balance of payments accounting and concepts related to it
- C04:** Understands the structure and working of foreign exchange markets
- C05:** Evaluates the theories of exchange rate determination
- C06:** Develops basic knowledge about currency derivatives
- C07:** Evaluates the role and importance of commercial policy
- C08:** Develops understanding regarding international monetary system and international monetary organisations

Money and Financial System

Course Title: Money and Financial System
Course Code: 15U1CRECO13
Semester: Six

Course Outcomes

- C01:** Gains knowledge on the basics of Indian financial system
- C02:** Understand the functioning of Indian capital market and money market.
- C03:** Understand functions and forms of money
- C04:** Understand the importance of the financial system in directing the use of scarce capital.
- C05:** Describe the components of the financial system
- C06:** Understand the major instruments of money market and capital market
- C07:** Familiar with internet based trade and transactions
- C08:** Develops knowledge on the derivative segment of the capital market.

Indian Economy

Course Title: Indian Economy
Course Code: 19U6CRECO14
Semester: Six

Course Outcomes

- C01:** Understands the economy of India before independence
- C02:** Understands the economy of India during the colonial rule
- C03:** Understands the achievements and issues of the economy
- C04:** Understands the nature of Indian economy as an emerging economic power
- C05:** Develops the skills to connect the economy of India with economic theories
- C06:** Develops an analytical approach to the problems of Indian Economy

Economics for Everyday Life

Course Title: Economics for Everyday Life
Course Code: 19U50CEC01
Semester: Five

Course Outcomes

- C01:** Understands basic concepts and tools used in the discipline of economics
- C02:** Understand the revenue expenditure and budgetary activities of the government
- C03:** Understands the role of government and monetary authority in stabilizing the market economy
- C04:** Understand the banking products, procedures and means of fund transfer in modern times
- C05:** Understands the various types of financial instruments.
- C06:** Familiarises the student with financial markets, activities in the financial markets, instruments traded and stock market indices
- C07:** Understands the international relationships between nations and concepts like BOT, BOP, TOT etc
- C08:** Understands means of financial adjustments in a federal set up

Modern Banking

Course Title: Modern Banking
Course Code: 19U6ELEC01
Semester: Six

Course Outcomes

C01: Understands different systems of banking and the historical context of their development

C02: Understands how banks manage their portfolios to strike a balance between liquidity profitability and security

C03: Understands the structure and functioning of Indian banking system

C04: Understands different systems and operations of central banking

C05: Appraises the strength and weaknesses of Indian banking system and identifies areas of banking sector reforms

C06: Develops understanding and ability to use IT based banking services

C07: Develops basic knowledge about practical and legal aspects of banker- customer relationship

C08: Develops basic knowledge about negotiable instruments and their uses

C09: Understands the modes of creating charge by banks to secure loans

Human Resource Management

Course Title: Human Resource Management
Course Code: 19U6ELEC02
Semester: Six

Course Outcomes

- C01:** Understand the meanings of the terminology and tools used in managing employees effectively
- C02:** Analyse the role of recruitment and selection in relation to the organization's business and HRM objectives.
- C03:** Administer and contribute to the design and evaluation of the performance management program.
- C04:** Develop, implement, and evaluate employee orientation, training, and development programs.
- C05:** Gains skills to conduct research, produce reports, and recommend changes in human resources practices.
- C06:** Understand the characteristics of human capital and its effective utilisation.
- C07:** Facilitate and support effective employee and labour relations in both non-union and union environments.
- C08:** Become familiar with the human resources component of the organization's business plan.

Business Economics

Course Title: Business Economics
Course Code: 19U6ELEC04
Semester: Six

Course Outcomes

- C01:** Understand the role of economic principles in business decision making
- C02:** Understand the conceptual framework of economics applicable to decision making
- C03:** Understands the determinants of demand for products and services sold in the market
- C04:** Estimates future demand on the basis of present and past demand patterns
- C05:** Understands various cost concepts relevant to business decisions
- C06:** Understands the various goals of a firm and how it affects its market strategy
- C07:** Understands the theories of profit and pricing strategies of the firm
- C08:** Understands how the firm plans its long term investment strategies

B.A. English Language and Literature (Model-II Vocational) Copy Editor

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Demonstrate knowledge about the socio-historical and cultural context of literary works in English and demonstrate in-depth knowledge about select texts.

PSO2

Identify and describe the thematic and literary features of select works in English and align them with the socio-political and cultural milieu.

PSO3

Articulate knowledge through oral, written or performative means, using appropriate style and register.

PSO4

Edit text, set the layout, create illustrations and publish articles, journals and books.

PSO5

Demonstrate an understanding of various critical theories and reading strategies and engage with texts - literary, performance, visual etc, – from the point of view of various critical approaches and draw from them the dynamics of the relationship between nature and culture.

PSO6

Conduct independent research in the area of literary and cultural studies and produce new and critical knowledge.

Homo Loquens: Effective Listening and Speaking

Course Title: Homo Loquens: Effective Listening and Speaking
Course Code: 19U1CCENG1
Semester: One

Course Outcomes

C01: Understand the mechanics of English language and comprehend the plain meaning of simple narrations, announcements and instructions

C02: Make inferences about the implications of statements from stress and tone recognise the various registers of speech.

C03: Listen to formal presentations and prepare lecture notes using the appropriate format.

C04: Use English language for a variety of speaking contexts including conversations, presentations, speeches, discussions and negotiations.

C05: Critically evaluate presentations, narrations, speeches and analyse and evaluate their content and respond to them appropriately.

C06: Creatively respond to one's surroundings in the form of dramatic works, poetry, narrations, and songs, and perform them before an audience.

C07: Understand the mechanics of English language and comprehend the plain meaning of simple narrations, announcements and instructions

Pearls from the Deep

Course Title: Pearls from the Deep
Course Code: 19U1CCENG2
Semester: One

Course Outcomes

C01: Explain the nuances of English Language through literature

C02: Compare the Varied parameters of English language

C03: Discover comprehensive ability

C04: Connect the efficiency of the students with realities of life

C05: Evaluate the beauty of literary expression

Introduction to the Study of English Literature

Course Title: Introduction to the Study of English Literature
Course Code: 19U1CRENG01
Semester: One

Course Outcomes

- C01:** Understand what constitutes literature as a discipline.
- C02:** Familiarise with the main writers, various genres and movements of English literature.
- C03:** Outline major literary trends and theoretical developments.
- C04:** Appreciate different forms of literary writing.
- C05:** Evaluate literary texts in relation to their genres and periods.
- C06:** Illustrate ideas with relevant examples.

English for Copy Editing-1

Course Title: English for Copy Editing-1
Course Code: 19U1CPENG01
Semester: One

Course Outcomes

- C01:** Understand the salient aspects of essay development
- C02:** Apply effectively various English grammar rules in different language compositions.
- C03:** Develop essays employing different patterns of essay writing
- C04:** Demonstrate skill to express ideas clearly in oral and written expressions
- C05:** Edit prose passages to make them worthy of publication
- C06:** Distinguish between various levels of linguistic competence

Information Technology and Computer Applications

Information Technology and Computer
Course Title: Applications
Course Code: 19U1VCENG01
Semester: One

Course Outcomes

C01: Understand the history of computing and internet

C02: Be familiar with emerging trends and technologies in computing such as 3D printing, virtual reality and artificial intelligence.

C03: Identify, evaluate and utilize online information sources.

C04: Demonstrate the awareness of emerging web technologies and applications.

C05: Demonstrate proficiency in day-to-day computing skills including the use of software such as web browsers, word processors and media players and editors.

C06: Use information technology in creative applications such as blogging, online book reviews and constructive use of social networking.

Text and Context: A Guide to Effective Reading and Writing

Course Title: Text and Context: A Guide to Effective Reading
and Writing
Course Code: 19U2CCENG03
Semester: Two

Course Outcomes

- C01:** Demonstrate an understanding of the different registers of language.
- C02:** Demonstrate an understanding of the implicit and explicit meaning of written materials
- C03:** Perform different reading strategies such as skimming and scanning.
- C04:** Analyse the use of various writing strategies used by writers through close reading and critically evaluate them.
- C05:** Create original texts for various purposes and for various contexts.
- C06:** Demonstrate an understanding of the different registers of language.

Savouring the Classics

Course Title: Savouring the Classics
Course Code: 19U1CCENG04
Semester: Two

Course Outcomes

- C01:** Develop an ability to understand and appreciate classics
- C02:** Demonstrate an understanding of literary genres and their universality
- C03:** Demonstrate adequate ability to compare works across cultures, nationalities and genres.
- C04:** Improve the use of language as a means of subjective expression.
- C05:** Sensitize students regarding the aesthetic, cultural and social aspects of literature.
- C06:** Appreciate the subtle nuances of literary expression.

Methodology of Humanities and Literature

Course Title: Methodology of Humanities and Literature
Course Code: 19U2CRENG02
Semester: Two

Course Outcomes

- C01:** Familiarize with the methodology of humanities in general and literature in particular.
- C02:** Analyse the main pre-occupations of literature, its subject matter, and the artifices of representation.
- C03:** Illustrate major issues of literary studies drawing on textual excerpts.
- C04:** Familiarise with the major theoretical approaches to literature.
- C05:** Examine larger questions such as culture, gender, marginality etc.
- C06:** Interpret literary texts from various theoretical perspectives

English for Copy Editing-2

Course Title: English for Copy Editing-2
Course Code: 19U2CPENG02
Semester: Two

Course Outcomes

C01: Understand the basics of English grammar

C02: Apply punctuation marks promptly

C03: Create different sentence structures in English

C04: Edit amateur prose pieces

C05: Develop standard oral and written communication

C06: Evaluate various levels of language proficiency

Computer Applications and DTP

Course Title: Computer Applications and DTP
Course Code: 19U2VCENG02
Semester: Two

Course Outcomes

- C01:** Demonstrate a comprehensive understanding of printing and publishing technology.
- C02:** Apply the methods and procedures of online publication.
- C03:** Operate desktop printing applications such as CorelDraw, Photoshop and InDesign.
- C04:** Be able to successfully complete simple typesetting works.
- C05:** Acquire proficiency in graphic design and image manipulation.
- C06:** Gain experience in editing, typesetting and publishing a student newsletter and magazine.

Readings on Indian Polity, Secularism and Sustainability

Course Title: Readings on Indian Polity, Secularism and Sustainability
Course Code: 19U3CCENG05
Semester: Three

Course Outcomes

- C01:** Communicate effectively in English.
- C02:** Understand the vital aspects of Indian polity viz. democracy, federalism and secularism.
- C03:** Respond critically to the questions of sustainable development.
- C04:** Assimilate and creatively respond to Gandhian thoughts.
- C05:** Compare and contrast scholarly texts (both content and style).
- C06:** Appreciate the literary and the aesthetic dimensions of select texts.
- C07:** Critique the challenges and opportunities that citizens are bound to encounter.

Literature and Informatics

Course Title: Literature and Informatics
Course Code: 19U3CRENG03
Semester: Three

Course Outcomes

C01: Understand the relationship between technology and literature

C02: Analyze how technology is transforming important aspects of life

C03: Examine the various activities of life from the point of view of the long term implications of technology

C04: Explore the possibilities of information technology in enriching human activities.

C05: Use technology ethically

C06: Apply the concepts learnt from the course in evaluating in critiquing literary and cultural texts.

Reading Prose

Course Title: Reading Prose
Course Code: 19U3CRENG04
Semester: Three

Course Outcomes

- C01:** Explore the evolution of English prose writing.
- C02:** Understand the range and variety of prose writings across literature.
- C03:** Explore various global literary themes that appear in prose writings.
- C04:** Compare and contrast the issues, conflicts and preoccupations of writers across the globe.
- C05:** Evaluate and analyse historical contexts of various ideologies across the world.
- C06:** Critically engage with the complex nature of writing around the world.
- C07:** Critically appreciate the diversity prose in the light of a rational and logical temperament.

English Literature in Context: A Historical Overview

English Literature in Context: A Historical
Course Title: Overview
Course Code: 19U3CPENG03
Semester: Three

Course Outcomes

C01: Recall key historical and cultural contexts of English literature from the Medieval period to the Romantic Age.

C02: Assimilate social, political and literary trends, movements and concepts.

C03: Interpret representative texts and movements of a specific age.

C04: Compare individual authors and their significant literary contributions.

C05: Evaluate critically the inter connections between texts and contexts.

C06: Recall key historical and cultural contexts of English literature from the Medieval period to the Romantic Age.

Copy Editing: An Overview

Course Title: Copy Editing: An Overview
Course Code: 19U3VCENG03
Semester: Three

Course Outcomes

C01: Develop a comprehensive understanding of the theoretical and practical aspects of copy editing.

C02: Develop an awareness of the roles and functions of copy editors.

C03: Understand the legal and ethical issues confronting copy editors.

C04: Familiarize himself with the invention and evolution of printing

C05: Master the technical terminologies used in copy editing.

C06: Demonstrate practical skills of editing different genres of literary and non literary works.

C07: Edit and proof read a text to get into print.

Illuminations

Course Title: Illuminations
Course Code: 19U4CCENG06
Semester: Four

Course Outcomes

C01: Appreciate inspirational literatures of various literary genres across cultures

C02: Critically engage with literary texts written in different languages and later translated into English.

C03: Critically engage with biographical sketch of the authors and familiarize their personality, oeuvre and style.

C04: Develop a creative and insightful perspective towards life

C05: Apply the unfathomable power of literatures in their writings and creative endeavors.

Reading Poetry

Course Title: Reading Poetry
Course Code: 19U4CRENG05
Semester: Four

Course Outcomes

C01: Demonstrate knowledge and understanding of individual literary works as representatives of their genre and period, and the relationships between them.

C02: Demonstrate an understanding of the ways in which cultural values are expressed in literature.

C03: Identify the significance of the context in which a work is written and received

C04: Analyse language, structure, techniques and style and evaluate their effects on the reader as well as the connections between style and meaning.

C05: Engage in independent literary criticism on both familiar and unfamiliar literary texts.

C06: Write a sustained literary commentary using an effective choice of register and style using the terminology and concepts appropriate to the study of literature

Reading Fiction

Course Title: Reading Fiction
Course Code: 19U4CRENG06
Semester: Four

Course Outcomes

- C01:** Understand the depth and diversity of Literature across the globe.
- C02:** Explore various global literary themes that appear in short stories and novels.
- C03:** Compare and contrast the issues, conflicts and preoccupations of writers across the globe
- C04:** Evaluate the awareness of the historical contexts of literary production and reception
- C05:** Critically engage with the complex nature of writing across fiction around the world.
- C06:** Critically appreciate the diversity of fiction in the light of regional variations in climate, cultural traits and economic priorities.

English Literature in Context: A Literary Overview

English Literature in Context: A Literary
Course Title: Overview
Course Code: 19U4CPENG04
Semester: Four

Course Outcomes

C01: Define the major historical processes, literary concepts and cultural movements from the Victorian age to the emergence of New Literatures.

C02: Understand the interconnections between history and literature.

C03: Interpret select texts and authors by contextualizing them

C04: Analyse texts to establish the processes of the textual construction of history

C05: Critique the evolution of ideas and their potential import on subsequent ages

C06: Define the major historical processes, literary concepts and cultural movements from the Victorian age to the emergence of New Literatures.

The Technique of Copy Editing

Course Title: The Technique of Copy Editing
Course Code: 19U4VCENG04
Semester: Four

Course Outcomes

- C01:** Develop a comprehensive understanding of the theoretical and practical aspects of different techniques of copy editing
- C02:** Develop an awareness of the roles and functions of copy editors while producing varieties of books including the text books.
- C03:** Understand the legal and ethical issues related to copy editing.
- C04:** Familiarize contemporary practices of techniques in copy editing.
- C05:** Master the technical terminologies and apply those terms in the practice of copy editing.
- C06:** Demonstrate different techniques of copy editing while editing different kinds of books.
- C07:** Copy edit a book before it goes to the final print.

Reading Drama

Course Title: Reading Drama
Course Code: 19U5CRENG07
Semester: Five

Course Outcomes

- C01:** Identify the aspects and features of theatre
- C02:** Describe the development of dramatic techniques in different drama traditions
- C03:** Demonstrate familiarity with the plays of master dramatists
- C04:** Analyse dramatic texts on the basis of structure, characterisation, staging etc.
- C05:** Apply a variety of dramatic techniques in performing one act plays
- C06:** Critique theatrical productions and evaluate directorial styles and acting
- C07:** Write and perform short plays

Language and Linguistics

Course Title: Language and Linguistics
Course Code: 19U5CRENG08
Semester: Five

Course Outcomes

- C01:** Understand the origin, nature and evolution of language.
- C02:** Analyze the key concepts of linguistics.
- C03:** Recognize the structure and various parts of language.
- C04:** Apply various phonetic rules.
- C05:** Examine English language at phonemic, morphemic and syntactic levels.
- C06:** Distinguish various dialectal aspects of English.

Literary Criticism: Theory and Practice

Course Title: Literary Criticism: Theory and Practice
Course Code: 19U5CRENG09
Semester: Five

Course Outcomes

C01: Understand the fundamental literary and critical concepts and underlying distinctions among them.

C02: Understand the theoretical and critical concepts in their contexts

C03: Explore the various writing strategies and techniques of textual analysis.

C04: Apply the various theoretical framework and concepts to literary and cultural texts.

C05: Develop a coherent, synoptic view of the discipline of criticism.

Environmental Science and Human Rights

Course Title: Environmental Science and Human Rights
Course Code: 19U5CRENG10
Semester: Five

Course Outcomes

C01: Understand how our decisions and actions affect the environment.

C02: Develop the sense of awareness about the environment issues.

C03: Create an awareness of the inter-relationship between man and environment.

C04: Develop a constructive attitude about environment.

C05: Build knowledge and skills necessary to address complex environmental issues.

English for Careers

Course Title: English for Careers
Course Code: 19U50CENG01
Semester: Five

Course Outcomes

C01: Demonstrate confidence and decorum in formal communication showing adequate domain knowledge, appropriate body language and communication skills.

C02: Attain proficiency in oral and written communication to enhance academic and professional use of language.

C03: Communicate effectively at different levels of social and receptive domains.

C04: Prepare formal reports using tables and graphic modes of presentation.

C05: Use appropriate register and style for effective business communication.

C06: Make effective presentations.

English for Careers

Course Title: English for Careers
Course Code: 19U50CENG01
Semester: Five

Course Outcomes

C01: Demonstrate confidence and decorum in formal communication showing adequate domain knowledge, appropriate body language and communication skills.

C02: Attain proficiency in oral and written communication to enhance academic and professional use of language.

C03: Communicate effectively at different levels of social and receptive domains.

C04: Prepare formal reports using tables and graphic modes of presentation.

C05: Use appropriate register and style for effective business communication.

C06: Make effective presentations.

Post Colonial Literatures

Course Title: Post Colonial Literatures
Course Code: 19U6CRENG11
Semester: Six

Course Outcomes

C01: Understand the social-historical-political-economic contexts of colonialism and post colonialism in India and other countries affected by colonial rule.

C02: 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.

C03: 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.

C04: Appreciate and analyze the growing spectres of inequality arising out of colonial occupation and the role played by postcolonial literatures to resist it in India and similar locations.

C05: Critically engage with issues of racism and imperialism during and after colonial occupation.

Women's Literatures

Course Title: Women's Literatures
Course Code: 19U6CRENG12
Semester: Six

Course Outcomes

- C01:** Understand and appreciate the representation of the experience of woman in literature.
- C02:** Understand the theoretical concepts of feminism in British, American and Indian contexts.
- C03:** Familiarise with the rich repertoire of the literary creativity of women.
- C04:** Link the status of woman to social discrimination and social change
- C05:** Recognise and redefine the gender based constructs in one's own social and cultural milieu.
- C06:** Imbibe the values of gender justice and mutual respect.
- C07:** Stimulate the potential for creative and critical analysis.

Indian Writing in English

Course Title: Indian Writing in English
Course Code: 19U6CRENG13
Semester: Six

Course Outcomes

C01: Appreciate the historical trajectory of various genres of Indian English Literature from colonial times till present.

C02: Critically engage with Indian literary texts written in English in terms of colonialism/postcolonialism, regionalism, and nationalism.

C03: Critically appreciate the creative use of the English language in Indian English Literature.

C04: Approach Indian English Literature from multiple positions based on historical and social locations.

Regional Literatures in Translation

Course Title: Regional Literatures in Translation
Course Code: 19U6CRENGEL01
Semester: Six

Course Outcomes

C01: Get familiarized with the cultural heterogeneity and linguistic plurality of our country through its literature written in regional languages.

C02: Engage with various theoretical positions in translation.

C03: Assess, compare and review translations.

C04: Critically appreciate the process of translation.

C05: Reflect on the politics of translation.

C06: Translate literary and non-literary texts.

Comparative Literature

Course Title: Comparative Literature
Course Code: 19U6CRENGEL03
Semester: Six

Course Outcomes

- C01:** Inculcate the basic idea and method of comparative literary analysis
- C02:** Describe the various methods employed to identify shared features of various literatures
- C03:** Demonstrate an understanding of the various literary genres and their universality
- C04:** Recognise the various literary genres and how they function as unique forms of literary and artistic expressions
- C05:** Apply the learned theories in the comparative and contrastive analysis of literary texts
- C06:** Critique literary works across different periods, cultures, nationalities and genres

French Language And Communication Skills

Course Title: French Language And Communication Skills I
Course Code: 19U1CCFRN1A
Semester: Three

Course Outcomes

C01: Understand the basic concepts of French language including grammar, vocabulary and sentence structure.

C02: Understand the basic communication skills necessary for living in France and French speaking countries.

C03: Describe oneself and ones surroundings using a repertory of words and expressions in a simple and structured grammatical manner.

C04: Develop business communication skills.

C05: Express an issue of concern including topics like environmental, social or health issues, enumerate its causes and consequences and suggest solutions.

C06: Understand the mannerisms, culture and tradition of France and Francophone countries and compare it to one's own country and develop co-cultural feeling.

C07: Understand and appreciate the history of France and Francophone countries and compare it to one's own country

C08: Understand the special features of France including gastronomy, social institutions, policis, the present French scenario and compare it to one's own country.

Prose And Drama

Course Title: Prose And Drama
Course Code: 19U1CCHIN1A
Semester: One

Course Outcomes

- C01:** Understand Prose and Drama.
- C02:** Understand the ancient Indian culture.
- C03:** Understanding various trends in Hindi Drama ..
- C04:** Understand the socio-cultural changes in Literature.
- C05:** Understand the development of literature and aesthetics.

Communicative Hindi And One Act Plays

Course Title: Communicative Hindi And One Act Plays
Course Code: 19U1CCHIN1B
Semester: One

Course Outcomes

C01: Understand the basic concepts of Hindi language and Communication.

C02: Understand the importance of correspondence and communication in different fields like administration, media and business.

C03: Understand one act plays.

C04: Understanding translation as a cultural and communicative activity.

C05: Understand and get an awareness of Drama and one act plays.

One Act Plays And Short Stories BCOM

Course Title: One Act Plays And Short Stories BCOM
Course Code: 19U1CCHIN1C
Semester: One

Course Outcomes

C01: Understand one act plays.

C02: Understand various trends in Hindi Drama, One Act Plays .

C03: Understand various trends in Hindi Short Stories.

C04: Understand literature and aesthetics.

Malayalam (BA English)

Course Title: Malayalam
Course Code:
Semester: One

Course Outcomes

- C01:** കഥ നാടകം കവിത എന്നിവയെക്കുറിച്ച് മെച്ചപ്പെട്ട ധാരണ ഉണ്ടാക്കുക.
- C02:** ഭാഷാപഠനം സാഹിത്യാനുഭവത്തിലൂടെ ആവിഷ്കരിക്കുക.
- C03:** വായനാഭിരുചി വർദ്ധിപ്പിക്കുക .
- C04:** സാഹിത്യ പരിചയം ഉണ്ടാക്കുക.
- C05:** വ്യാവഹാരിക തലത്തിൽ മാതൃഭാഷാപ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക..
- C06:** നോവലിനെക്കുറിച്ച് അറിയുക.

Malayalam (B.Com)

Course Title: Malayalam
Course Code:
Semester:

Course Outcomes

C01: കഥാസാഹിത്യവും കവിതാസാഹിത്യവുമായി പരിചയപ്പെടുക.

C02: ഭാഷാപഠനം സാഹിത്യാനുഭവത്തിലൂടെ ആവിഷ്കരിക്കുക..

C03: വായനാഭിരുചി വർദ്ധിപ്പിക്കുക .

C04: സാഹിത്യ പരിചയം ഉണ്ടാക്കുക.

C05: വ്യാവഹാരിക തലത്തിൽ മാതൃഭാഷാപ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക..

C06: ഭാഷ സുഗമമായി പ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക

Malayalam (BA/BSc)

Course Title: BA BSc
Course Code:
Semester:

Course Outcomes

C01: കഥ നോവൽ എന്നിവയെക്കുറിച്ച് മെച്ചപ്പെട്ട ധാരണ ഉണ്ടാക്കുക.

C02: കവിതയെക്കുറിച്ച് മെച്ചപ്പെട്ട ധാരണ ഉണ്ടാക്കുക.

C03: രൂപത്തിലും ഉള്ളടക്കത്തിലുമുണ്ടാകുന്ന കവിതയുടെ മാറ്റങ്ങൾ മനസിലാക്കുക.

C04: ദൃശ്യ കലാപാരമ്പര്യം അറിയുക.

C05: മലയാള നാടകത്തെ സ്വാധീനിച്ച ഭാരതീയ നാടക ചരിത്രത്തെ മനസിലാക്കുക

C06: കഥകളി ,ആട്ടക്കഥ സാഹിത്യം ഇവ മനസിലാക്കുക

C05: ചലച്ചിത്ര കലയിൽ സാമാന്യ അവബോധം ഉണ്ടാകുക

C06: വിവിധങ്ങളായ ഗദ്യ വ്യവഹാരങ്ങൾ പരിചയപ്പെടുക

B.Sc. Mathematics

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand the basic concepts and tools of mathematical logic, Set theory, Theory of Equations and Number Theory.

PSO2

Understand the concepts of Geometry, Trigonometry, Calculus and Analysis, Abstract structures, Algebra, Methods of proofs and Differential Equations.

PSO3

Translate real world problems into mathematical problems and find solutions for them.

PSO4

Understand the applications of mathematics in other sciences, engineering and discuss Human Rights and Mathematics for Environmental Studies.

Calculus

Course Title: Calculus
Course Code: 19U1CRMAT01
Semester: One

Course Outcomes

C01: Determine whether a given function is increasing or decreasing.

C02: Apply the concepts of maxima and minima of a function to real world problems

C03: Compute the Limits using L'Hopitals rule.

C04: Apply the proof (analytical and geometric) of Rolle's Theorem and the Mean Value theorem to real world problems.

C05: Compute the area and volume of solids using definite integrals to

C06: Understand the concepts of functions of more than one independent variable, partial derivatives, maxima and minima of such functions and the Lagrange Multiplier method for extremum problems.

Advanced Calculus and Trigonometry

Course Title: Advanced Calculus and Trigonometry
Course Code: 19U2CRMAT02
Semester: Two

Course Outcomes

- C01:** Compute higher order derivative by applying Leibnitz theorem
- C02:** Determine the Taylor and Maclaurin series expansions of given functions.
- C03:** Find curvature and related parameters of a given curve or curves.
- C04:** Calculate the arc length of a given curve and area enclosed by curves
- C05:** Find area and volume problems using multiple integrals
- C06:** Understand the concepts of Trigonometric functions, their properties and summation of trigonometric series.

Vector Calculus, Theory of Equations and Matrices

Vector Calculus, Theory of Equations and
Course Title: Matrices
Course Code: 19U3CRMAT03
Semester: Three

Course Outcomes

C01: Find the gradient of a Scalar Field, the Divergence and Curl of a Vector Point Function, and the directional derivative.

C02: Understand the applications of vector integration

C03: Determine the number of roots of polynomial equation of order at most four

C04: Compute inverses and powers of matrices using Cayley Hamilton theorem

Analytic Geometry, Numerical Methods and Number Theory

Course Title: Analytic Geometry, Numerical Methods and
Number Theory
Course Code: 19U4CRMAT04
Semester: Four

Course Outcomes

- C01:** Remember the standard equations of parabola, hyperbola, and ellipse
- C02:** Understand the parametric forms of parabola, hyperbola, and ellipse
- C03:** Classify the second order curves based on their equations.
- C04:** Find the equations of line segments and loci related to conic sections
- C05:** Solve polynomial equations using numerical methods.
- C06:** Understand Congruences, Fermat's Theorem, Eulers theorem and Wilson's Theorem.

Real Analysis - I

Course Title: Real Analysis - I
Course Code: 19U5CRMAT05
Semester: Five

Course Outcomes

C01: Find the limit points, interior points and closure of a set

C02: Verify the convergence of sequences and series

C03: Determine the limits of functions.

C04: Understand theorems on limits

Differential Equations

Course Title: Differential Equations
Course Code: 19U5CRMAT06
Semester: Five

Course Outcomes

C01: Understand the method for solving ordinary differential equations

C02: Understand linear differential equations and its solutions

C03: Compute the solutions of second order linear differential equations using power series method

C04: Understand partial differential equations and method of solving the same

Algebra

Course Title: Algebra
Course Code: 19U5CRMAT07
Semester: Five

Course Outcomes

- C01:** Understand concepts of binary operations and groups
- C02:** Understand the concepts of subgroups, cyclic group
- C03:** Understand Lagrange's theorem and its applications
- C04:** Understand the concepts of homomorphism and factor groups
- C05:** Compute factor groups
- C06:** Understand the concepts of Rings, Fields, Integral Domains
- C07:** Understand the concepts of prime and maximal Ideals

Human Rights and Mathematics for Environmental Studies

Human Rights and Mathematics for
Course Title: Environmental Studies
Course Code: 19U5CRMAT08
Semester: Five

Course Outcomes

- C01:** Understand the nature of environmental issues
- C02:** Understand the different types of natural resources and ecosystems
- C03:** Understand the various environmental pollutions and social issues.
- C04:** Understand the patterns in the nature through mathematics.
- C05:** Understand the concepts of Human Rights

Real Analysis - 2

Course Title: Real Analysis - 2
Course Code: 19U6CRMAT09
Semester: Six

Course Outcomes

C01: Understand the basic theorems relating continuity, derivability and integrability of functions.

C02: Understand the concept of Riemann integration

C03: Understand improper integrals, beta and gamma functions

C04: Understand the concepts of convergence of sequence and series of functions.

Complex Analysis

Course Title: Complex Analysis
Course Code: 19U6CRMAT10
Semester: Six

Course Outcomes

- C01:** Understand theorems on limit and continuity of functions of one complex variable.
- C02:** Understand the significance of the Cauchy Riemann equations.
- C03:** Understand the sufficient conditions for differentiability.
- C04:** Understand the relationship between analytic and harmonic functions.
- C05:** Understand the concepts of convergence of complex sequences and series
- C06:** Understand residue calculus and its applications

Linear Algebra and Graph Theory

Course Title: Linear Algebra and Graph Theory
Course Code: 19U6CRMAT11
Semester: Six

Course Outcomes

C01: Understand the concepts of vector space, subspace, linear independence, dimension and row space.

C02: Understand the concepts of linear transformation and matrix representation

C03: Understand the concepts of different types of graphs.

C04: Understand the concept of matching in a graph, the Marriage problem and various assignment problems..

Fourier Series, Laplace Transforms and Metric Spaces

Course Title: Fourier Series, Laplace Transforms and Metric Spaces
Course Code: 19U6CRMAT12
Semester: Six

Course Outcomes

C01: Find the Fourier transform of a given function.

C02: Find the Laplace transform of a given function.

C03: Understand the concepts of metric spaces, subspaces, open and closed sets

C04: Understand the concept of convergence, completeness and continuity in a metric space.

Applicable Mathematics

Course Title: Applicable Mathematics
Course Code: 19U50CMAT
Semester: Five

Course Outcomes

C01: Understand the concepts of quadratic equations, Logarithm, combinatorics

C02: Understand the concepts of probability and differential calculus

C03: Understand the concepts of LCM, HCF, Fractions, Ratio and Proportion and Percentage

C04: Understand the concept of simple interest, compound interest, and time and work and elementary algebra

Operations Research

Course Title: Operations Research
Course Code: 19U6CRMAT13
Semester: Six

Course Outcomes

C01: Translate the real world problems in to corresponding LPP

C02: Understand the concepts of duality in LPP

C03: Understand the concepts of transportation and assignment problem.

C04: Understand the concept of game theory

Basic Python Programming and Typesetting in LaTeX

Course Title: Basic Python Programming and Typesetting in LaTeX
Course Code: 19U6CRMAT14
Semester: Six

Course Outcomes

- C01:** Understand the concepts of python programming
- C02:** Solve mathematical problems using python programming
- C03:** Construct a basic document using LaTeX
- C04:** Construct a document including figures and tables using LaTeX

Numerical Analysis

Course Title: Numerical Analysis
Course Code: 19U6CRMAT15
Semester: Six

Course Outcomes

C01: Solve algebraic and transcendental equations using numerical methods

C02: Understand the concepts of interpolation

C03: Understand the concepts of DFT and IDFT

C04: Compute derivatives and antiderivatives using numerical methods

Calculus - I

Course Title: Calculus - I
Course Code: 19U1CPMAT01
Semester: One

Course Outcomes

- C01:** Finding the extrema of functions of a single variable
- C02:** Determine whether a given function is increasing or decreasing.
- C03:** Understand functions of more than one variable
- C04:** Find partial derivatives of functions of more than one variable.
- C05:** Find the extrema of functions of more than one variable.
- C06:** Compute the area using integrals

Calculus II and Numerical Analysis

Course Title: Calculus II and Numerical Analysis
Course Code: 19U2CPMAT02
Semester: Two

Course Outcomes

C01: Find the gradient of a Scalar Field, The Divergence of a Vector Point Function, and the directional derivative

C02: Understand the various properties of the gradient, the curl and divergence.

C03: Understand the applications of vector integration, in particular those of the Green's theorem, Stoke's theorem and divergence theorem.

C04: Understand finite differences and interpolation techniques.

C05: Use numerical methods to solve polynomial equations.

Differential Equations, Matrices and Trigonometry

Differential Equations, Matrices and
Course Title: Trigonometry
Course Code: 19U3CPMAT03
Semester: Three

Course Outcomes

C01: Understand the methods of solving important types of first order ordinary differential equations.

C02: Understand the origin of first order p.d.e's and their solution. .

C03: Understand different types of matrices and rank of a matrix

C04: Apply the concept of matrices in solving system of linear equations

C05: Find the eigen values and eigen vectors of a given matrix

C06: Understand the applications of Cayley Hamilton theorem

C07: Understand trigonometric functions, their expansions and summation of infinite series using the C+iS method

Fourier Series,Laplace Transforms, Fourier Transforms, and Groups.

Course Title: Fourier Series,Laplace Transforms, Fourier
Transforms, and Groups.
Course Code: 19U4CPMAT04
Semester: Four

Course Outcomes

- C01:** Find the Fourier series expansion of a given periodic function in a specified interval. .
- C02:** Find the Fourier transform of a given function. .
- C03:** Find the Laplace transform of a given function.
- C04:** Understand the concepts of groups, cyclic groups, permutation groups

B.Sc. Physics

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand concepts relating to properties of matter, thermodynamics, classical mechanics, relativity and energy and environmental physics, incorporating the contributions of relevant physicists in these fields.

PSO2

Apply and analyse the concepts of electricity, magnetism, electrodynamics, optics, spectroscopy and optoelectronics; with special emphasis on the contributions by eminent scientists in these fields.

PSO3

Apply and analyse the concepts of semiconductor physics, digital electronics and computational physics; with special emphasis on the contributions by eminent scientists in these fields.

PSO4

Apply and analyse the concepts of statistical mechanics, quantum mechanics, nuclear physics, particle physics, astrophysics, error analysis, superconductivity and condensed matter physics; with special emphasis on the contributions by eminent scientists in these fields.

Methodology And Perspectives Of Physics

Course Title: Methodology And Perspectives Of Physics
Course Code: 19U1CRPHY01
Semester: One

Course Outcomes

C01: Understand the development of physics in the last century and the birth of new scientific concepts with reference to scientific contributions of Galileo, Newton, Einstein, J J Thomson, Curies, Rayleigh, Max Plank, Heisenberg and Schrodinger (qualitative understanding). Contributions of Indian physicists -C V Raman, H J Babha, J C Bose, S N Bose, M Saha, S Chandrasekhar, Vikram Sarabhai

C02: Understand Number systems- Decimal, hexadecimal and Binary; Conversions, Binary arithmetic addition, subtraction and multiplication. 1's and 2's complement subtraction –signed binary numbers. Signed binary arithmetic, BCD code, ASCII code, Significance of binary number system in digital electronics, microprocessors and in computers.

C03: Apply vector algebra in Physics - Differential and integral vector calculus: – The operator - physical significance of Gradient, Divergence and Curl, Line integral, surface integral and volume integral of vectors
Co-ordinate systems: Cartesian Co-ordinate system, plane polar and spherical polar coordinates, cylindrical coordinates

C04: Apply basic measurement techniques in Physics and experimental data analysis :-
Experimental methods, least count of instruments, Instruments for measuring mass common balance, length-Vernier Calipers, Screw Gauge, Travelling microscope and SONAR, time-pendulum clock and atomic clock, angle-Spectrometer and Stellar Paralx, current-ammeter-Conversion of Galvanometer to ammeter, voltage-voltmeter Conversion of Galvanometer to Voltmeter. Fundamental units. Precision and accuracy of measurements, source of error in measurements, necessity of estimating errors , types of errors, reading error of instrument, calibration error, random error, systematic error, significant digits, order of magnitude and rounding of numbers, rounding error, absolute and relative errors, Errors of computation - addition, subtraction, multiplication, division, error in power and roots, Propagation of errors, analysis of data, standard deviation, calculation of mean value.

Mechanics And Properties Of Matter

Course Title: Mechanics And Properties Of Matter
Course Code: 19U2CRPHY02
Semester: Two

Course Outcomes

C01: Understand the general equation of wave motion, plane progressive harmonic wave, energy density, intensity of a wave, superposition of waves, beats, transverse waves in stretched strings, modes.

C02: Analyze periodic motion, simple harmonic motion and harmonic oscillator, energy of a harmonic oscillator, examples of harmonic oscillator – simple and compound pendulum. Theory of Damped harmonic oscillator. Theory of forced oscillator, resonance, applications.

C03: Understand angular velocity- angular acceleration- angular momentum- conservation- torque-moment of inertia- Parallel and perpendicular axes theorems - calculation of moment of inertia- (rod, ring, disc, cylinder, and sphere). Theory of flywheel. Basic ideas on elasticity – Young's modulus, bulk modulus, rigidity modulus, Poisson's ratio, relations connecting various elastic constants. Work done per unit strain. Bending of beams, bending moment, flexural rigidity. Young's modulus – uniform and non-uniform bending, cantilever. I –section girders. Determination of rigidity modulus using Static and Dynamic methods.

C04: Apply streamline and turbulent flows, coefficient of Viscosity – Determination of viscosity by Poiseuille's method. Equation of continuity, energy possessed by a liquid, Bernoulli's theorem. Surface tension, surface energy, excess pressure in a liquid drop and bubble, factors affecting surface tension, applications.

Optics, Laser And Fiber Optics

Course Title: Optics, Laser And Fiber Optics
Course Code: 19U3CRPHY03
Semester: Three

Course Outcomes

CO1: Understand review of basic ideas of interference, Coherent waves -Optical path and phase change-superposition of waves-theory of interference-intensity distribution. Young's double slit experiment, Coherence-Conditions for interference. Thin films-plane parallel film- interference due to reflected light-conditions for brightness and darkness-interference due to transmitted light-Haidinger fringes- interference in wedge shaped film-colours in thin films-Newton's rings-applications. Michelson interferometer-construction, working and just mention the applications.

CO2: Understand Fresnel Diffraction – Huygens- Fresnel theory –zone plate –Difference between zone plate and convex lens. Comparison between interference and diffraction – diffraction pattern due to a straight edge, single slit. Fraunhofer diffraction at a single slit, double slit, N slits, theory of plane transmission grating. Dispersive power and resolving power of grating.

CO3: Understand the concept of polarization – plane of polarization- Types of polarized light-production of plane polarized light by reflection -refraction. Malu's law-Polarization by double refraction-calcite crystal. Anisotropic crystals-optic axis-Double refraction-Huygens explanation of double refraction. Retarders - Quarter wave plate and Half wave plate. Production and Detection of plane, elliptically and circularly polarized light-Optical Activity- specific rotation.

CO4: Analyze absorption and emission of light-Absorption-spontaneous emission and stimulated emission, Einstein relations, Population inversion- Active medium- Pumping, different pumping methods, Resonators – plane mirror and confocal resonators – Metastable state, Three level and Four level Laser systems. Ruby Laser, He-Ne laser, Semiconductor Laser, Laser beam Characteristics, coherence. Applications of Laser, Holography (qualitative study only). Propagation of light in a fiber -acceptance angle, numerical aperture, V-number, single mode and multimode step index fiber –graded index fiber- attenuation- application of fiber-optical fiber communication – advantages

Semiconductor Physics

Course Title: Semiconductor Physics
Course Code: 19U4CRPHY04
Semester: Four

Course Outcomes

CO1: Apply concepts in PN Junction, Depletion layer, Barrier potential, Biasing- forward and reverse, Reverse breakdown, Junction capacitance and diffusion capacitance- PN Junction diode – V-I characteristics–Diode parameters, Diode current Equation, Diode testing, Ideal diode. Zener diode and its reverse characteristics. Thermistors. Rectification - Half wave, Full wave, Centre tapped, Bridge rectifier circuits - Nature of rectified output, Efficiency & Ripple factor- Filter circuits – Inductor Filter, Capacitor Filter, LC Filter, π Filter-Regulated Power supplies - Zener diode voltage regulator- Voltage multipliers – Doubler & Tripler- Wave shaping circuits – Clipper-Positive, negative and biased – Clampers- Positive, negative and biased.

CO2: Understanding Bipolar junction transistors, Transistor biasing, CB, CC, CE configurations and their characteristics- Active, saturation and cut-off regions. Current gain α , β , γ and their relationships. Leakage currents- Thermal runaway. DC operating point and AC and DC Load line, Q-Point. Basic principles of feedback, positive & negative feedback, Advantages of negative feedback, negative feedback circuits – voltage series & shunt, current series & shunt

CO3: Understanding the need for biasing-Stabilization- Voltage divider bias. Single stage transistor Amplifiers-CE amplifier - amplification factors. Decibel system, Variations in Amplifier gain with frequency. Oscillatory Circuits, LC oscillators – Hartley Oscillator, Colpit's Oscillator, RC oscillators - Phase shift Oscillator. Astable and monostable multivibrator (basic idea only)

CO4: Understanding FET -characteristics, FET- Parameters. Comparison between FET and BJT. MOSFET (basic idea only) OP-amp- Symbol and terminals. Characteristics of ideal OP-amp, CMRR, Applications - inverting, Non-inverting, Unity follower and Summing amplifiers. Types of modulation – AM, FM, Pulse modulation and Phase modulation (qualitative study only). Amplitude modulation- modulation index - Analysis of AM wave – Sidebands –bandwidth- AM Demodulation. step index fiber –graded index fiber- attenuation- application of fiber-optical fiber communication – advantages.

Electricity And Electrodynamics

Course Title: Electricity And Electrodynamics
Course Code: 19U5CRPHY05
Semester: Five

Course Outcomes

CO1: Analyze EMF induced in a coil rotating in a magnetic field - AC applied to resistive, inductive and capacitance circuits - AC applied to LR and RC circuits - LCR series circuits - LCR parallel resonant circuit – comparison - Power in ac circuits – Wattless current - choke coil - transformer on no load- skin effect. Ideal voltage source and current source - Superposition theorem - Reciprocity theorem - Thevenin's theorem - Norton's theorem - Maximum power transfer theorem.

CO2: Analyze growth and decay of current in an LR circuit- Charging and discharging of a capacitor through a resistor - Growth and decay of charge in an LCR circuit. Seebeck effect - Laws of thermo emf - Peltier effect- Thomson effect- Thermoelectric diagrams -Thermocouple (qualitative study) - Explanation of thermoelectric effects based on electron theory.

CO3: Understanding Fundamental theorems of divergence and curl (physical concepts) - Electric field - Continuous charge distribution- Divergence and curl of electrostatic field- Gauss's law and applications: solid sphere, infinite wire, infinite plane sheet - Electric potential – Poisson's and Laplace's equations - Potential of a localized charge distribution – Electrostatic boundary conditions- work and energy in electrostatics – The work done to move a charge – Energy of a point charge distribution and continuous charge distribution-Basic properties a conductor . Lorentz Force law- Biot- Savart law- Divergence and curl of B- Applications of Amperes' law: long straight wire, infinite plane, solenoid – Comparison of electrostatics and magnetostatics- Magnetic vector potential – Magnetostatics boundary conditions
Electromagnetic induction- Faraday's law

CO4: Understanding Maxwell's equations - Boundary conditions for free space - Continuity equations- Poynting's theorem Wave equations (general idea on reflection at boundary and polarization) - Electromagnetic wave in vacuum - Wave equation for E and B – Monochromatic plane waves- Energy of electromagnetic waves

Classical And Quantum Mechanics

Course Title: Classical And Quantum Mechanics
Course Code: 19U5CRPHY06
Semester: Five

Course Outcomes

C01: Understanding the constraints, degrees of freedom, generalized co-ordinates, principle of virtual work, D'Alembert's principle, Lagrange's equations(no derivation required), Application of Lagrangian (Linear Harmonic oscillator, Planetary motion and Simple Pendulum only), Hamilton's Canonical equations of motion, Advantages of Hamilton's method, Applications of Hamilton's method (Linear Harmonic oscillator and Simple pendulum only). Hamilton's Principle of Least Action. Derivation of Lagrange's equation from Hamilton's Principle.

C02: Understanding the failure of classical physics- Black Body radiation-Planck's radiation law, Photoelectric effect-Einstein's explanation, Compton effect, Bohr's correspondence principle- Wave particle Dualism, Dual nature of matter- De Broglie hypothesis, Davisson- Germer Experiment, De Broglie waves, Wave packet, Group and phase velocities.

C03: Understand linear vector space- Hilbert space - Orthogonality- Linear operator-Eigen functions and eigen values- Hermitian operator- Postulates of Quantum Mechanics- wave function, Operators, Expectation value, Eigen value, Time development- Simultaneous measurability- General uncertainty relation

C04: Understand time dependent Schrödinger equation- interpretation of wave function, Probability density, Probability current density, Ehrenfest theorem- Extension to three dimensions- Time independent Schrödinger equation- Stationary states- Admissibility conditions of wave function-general properties of one dimensional Schrödinger equation, particle in a box, one dimensional barrier problem- square potential barrier.

Digital Electronics And Programming

Course Title: Digital Electronics And Programming
Course Code: 19U5CRPHY07
Semester: Five

Course Outcomes

CO1: Analyzing Basic gates NOT, OR, AND. Universal Logic Gates- NOR, NAND. XOR and XNOR Gates. Rules and Laws of Boolean algebra. Duality theorem -De Morgan's Theorems. Simplification of logic circuits. Boolean equation and truth table - SOP and POS. Minterms and Maxterms. Standard SOP and Standard POS- Conversion between Standard SOP & Standard POS. Karnaugh Map (up to four variables). K map SOP minimization.

CO2: Understand Half Adder and Full Adder, Half and Full subtractor, 4-bit parallel Adder/Subtractor. Multiplexer, De-multiplexer, Encoder & Decoder. Flip-flops, RS, Clocked RS, Master Slave JK FF, DFF, T Flip-flop, Buffer registers- Shift register-SISO and SIPO, Counters- Binary ripple counter. D/A converters (Ladder type), A/D Converter (Counter type).

CO3: Applying Basic C++ program structure -comments-data types-variable types-constants-operators(arithmetic, relational, logical and assignment operators)- if, if-else and else if, do while - case - loops(while, do-while, and for)-nested loops- arrays(Defining Arrays, Accessing Array Elements, Initializing Arrays)- basic ideas of functions(qualitative idea), object and classes. Programs using loops.

Energy And Environmental Physics

Course Title: Energy And Environmental Physics
Course Code: 19U5CRPHY8
Semester: Five

Course Outcomes

CO1: Understand Multidisciplinary nature of environmental studies- Definition, scope and importance Need for public awareness. Renewable and non-renewable resources: Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification Role of individual in conservation of natural resources. Equitable use of resources for sustainable life styles.

CO2: Understanding concept of an ecosystem, structure and function of an ecosystem - Producers, consumers and decomposers Energy flow in the ecosystem Ecological succession Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the given ecosystem:- Forest ecosystem

CO3: Understanding biogeographical classification of India Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. India as a mega-diversity nation Hot-spots of biodiversity Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts Endangered and endemic species of India. Definition, Causes, effects and control measures of: - Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards. Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution Pollution case studies
Disaster management: floods, earthquake, cyclone and landslides.

CO4: Understanding Urban problems related to energy Water conservation, rain water harvesting, watershed management Resettlement and rehabilitation of people: its problems and concerns, Case studies Environmental ethics: Issues and possible solutions Climate change, global warming, acid rain, ozone layer depletion , nuclear accidents and holocaust, Case studies Consumerism and waste products Environment Protection Act: Air (Prevention and Control of Pollution) Act Water (Prevention and control of Pollution) Act Wildlife Protection Act Forest Conservation Act Issues involved in enforcement of environmental legislation Public awareness. Non-renewable energy sources:-Coal, Oil, Natural gas; Nuclear fission energy; Merits and demerits of non-renewable energy. Renewable energy sources: Biomass energy- Biogas plant - Fixed dome type and moving dome type; Wind energy; Wave energy; Tidal energy; Hydroelectricity; Geothermal energy conversion; Ocean thermal energy conversion; Fusion energy; Hydrogen energy- Production (electrolysis) and storage; Merits and demerits of each renewable energy sources; Storage of intermittently generated renewable energy (qualitative); Fuel cell.

C05: Understanding sun as a source of energy- Solar radiation, Solar Constant, Spectral distribution; Solar pond - Convective and salt gradient types; Flat plate collector; Solar water heater - Direct and indirect systems- Passive and active systems; Optical concentrator - Parabolic trough reflector - Mirror strip reflector - Fresnel lens collector; Applying solar desalination; Solar dryer - Direct and indirect type; Solar cooker; Solar heating of buildings; Solar green houses; Need and characteristics of photovoltaic (PV) systems; Solar cells - Principle, Equivalent circuits, V-I characteristics, fill factor, conversion efficiency; PV Sun tracking systems; Merits and demerits of solar energy.

Understanding basic Ideas of environmental impact assessment – environmental laws and constitutional provisions to control pollution in India: Air Act, Water Act & Environmental Protection Acts. Introduction to energy audit (basic ideas only): power in electrical circuits, consumption by home appliances and assessment of home power consumption.

Physics In Daily Life (Open Course)

Course Title: Physics In Daily Life (Open Course)
Course Code: 19U50CPHY01
Semester: Five

Course Outcomes

C01: Understanding fundamental and derived quantities. Units and dimensions, dimensional analysis, order of magnitude, significant figures, errors. Reflection, refraction, diffraction, interference, scattering (elementary ideas only) – examples from daily life – apparent depth, blue color of sky, twinkling of stars. Total internal reflection, mirage, sparkling of diamond, primary and secondary rainbow – optical fibers. Concave and convex mirrors, lenses – focal length, power of a lens, refractive index, prism, dispersion. Human eye, defects of the eye – myopia, hypermetropia, presbyopia and astigmatism and their correction by lens.

C02: Understanding Velocity, acceleration, momentum, Idea of inertia, force - laws of motion. Newton's law of gravitation, acceleration due to gravity, mass and weight, apparent weight, weightlessness. Rotational motion, Moment of inertia, torque, centripetal and centrifugal acceleration - examples - banking of curves, centrifugal pump, roller coasters. Voltage and current, ohms law. Electric energy, electric power, calculation of energy requirement of electric appliances – transformer, generator, hydroelectric power generation – wind power – solar power – nuclear power

C03: Understanding different phases of matter, fluids - surface tension, viscosity - capillary rise, Bernoulli's theorem and applications. Heat energy, temperature, different temperature scales – degree Celsius, Fahrenheit and Kelvin. Waves – transverse and longitudinal waves, sound waves, Doppler Effect. Lasers, fluorescence, phosphorescence, electromagnetic waves – applications microwave oven, radar, super conductivity.

C04: Understanding Planets, – solar system, moon - faces of moon, lunar and solar eclipses, constellations, Different types of stars, Galaxies, black hole. Satellites, Artificial satellites, Global positioning system. Geo stationary satellite.

Thermal And Statistical Physics

Course Title: Thermal And Statistical Physics
Course Code: 19U6CRPHY09
Semester: Six

Course Outcomes

CO1: Understanding Equation of an ideal gas, behavior of real gases, Andrew's experiment on carbon dioxide, critical state, two phase region, intermolecular forces, van der Waals equation of state, van der Waals isotherms, critical constants, limitation of van der Waals equation. Thermodynamic system, surroundings, variables, thermal equilibrium: zeroth law, thermodynamic equilibrium, thermodynamic processes, reversible and irreversible processes, equation of state, expansivity and compressibility. Internal energy, heat, work, cyclic processes, first law, heat capacity, energy equation and difference of specific heat capacities, indicator diagram work done in reversible isothermal expansion of ideal gas, work done in reversible adiabatic expansion of ideal gas. Second law statements, heat engine, efficiency, Carnot's ideal heat engine, work done by the engine per cycle, reversibility, Carnot refrigerator, heat pump, Carnot theorem, absolute scale of temperature, Clausius- Clapeyron latent heat equation.

CO2: Understanding Definition of entropy, principle of increase of entropy, entropy and unavailable energy, change in entropy in heat conduction, change in entropy in reversible and irreversible process, efficiency of Carnot cycle from TS diagram, entropy of an ideal gas, entropy and disorder. Maxwell's thermodynamic relations, TdS equations, energy equation, heat capacity equations, thermodynamic functions, third law of thermodynamics. Conduction and radiation. Conduction, thermal conductivity, thermal conductivity of bad conductor Lee's disc experiment -thermal resistance, thermal radiation and its properties, fundamental definitions of energy flux, intensity and radiant emittance, Stefan's law, Stefan- Boltzmann law.

CO3: Understanding Microstates and macrostates, Phase space, density of states, mu space and Gamma space, principle of equal a priori probability, ergodic hypothesis, statistical equilibrium, ensemble, ensemble formulation of statistical mechanics, microcanonical, canonical and grand canonical ensemble, partition function, average energy of particle, equipartition theorem. Maxwell Boltzmann, Fermi-Dirac and Bose-Einstein statistics, distribution laws, Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein distribution.

Relativity And Spectroscopy

Course Title: Relativity And Spectroscopy
Course Code: 19U6CRPHY10
Semester: Six

Course Outcomes

CO1: Understanding Inertial and non inertial frames of reference- Galilean transformation, Significance of Michelson-Morley experiment, Postulates of Special Theory of Relativity, Lorentz transformation, Spatial contraction, Time dilation, composition of velocities, mass of moving particle, Equivalence of mass and energy. Introductory concept of general theory of relativity.

CO2: Understanding electrostatic spectrum. Types of spectra. Absorption and emission of light by atoms, quantum theory, early atom models – Bohr model, electron spin and magnetic moment, Exclusion principle, Stern- Gerlach experiment, Vector atom model, quantum numbers associated with vector atom models, Total angular momentum and LS coupling, fine structure of Sodium D lines, Zeeman effect, quantum mechanical explanation for anomalous Zeeman effect, Paschen-Back effect.

CO3: Understanding molecular energy levels. Electronic, rotational and vibrational energies, rotational spectra, explanation in terms of rigid rotator model, vibrational energy levels, explanation in terms of harmonic oscillator. Electronic energy levels of atoms, Fluorescence and phosphorescence, Raman effect – experimental arrangement and result, classical theory and its failure, quantum theory of Raman effect. IR and Microwave spectrometers. NMR Spectroscopy- Basic principles and instrumentation- Medical applications of NMR. ESR Spectroscopy- Basic principles and instrumentation.

Nuclear, Particle Physics And Astrophysics

Course Title: Nuclear, Particle Physics And Astrophysics
Course Code: 19U6CRPHY11
Semester: Six

Course Outcomes

CO1: Understanding Nuclear composition – Discovery of neutron – Nuclear electrons - Nuclear properties: Nuclear radii – Spin and magnetic moment - Stable nuclei - Binding energy- Binding energy curve, Liquid drop model - Semi empirical binding energy formula with correction factors - Shell model - Nuclear forces- Meson theory of nuclear forces – Discovery of pion – Virtual Photons

CO2: Understanding Interactions between energetic particles and matter (basic concepts only) – Ionization chamber - Solid state detectors - Proportional counter - Geiger-Muller counter – The Wilson cloud chamber - Bubble chamber - Scintillation counters - Van de Graaff generator - Linear accelerator - Cyclotron – Betatron

CO3: Understanding Radioactive decay – Radiation hazards – Half life – Radiometric dating – Radioactive series - Alpha decay, tunnel theory of alpha decay, derivation for alpha decay constant - Beta decay, positron emission, electron capture, inverse beta decay – Gamma decay - The concept of interaction cross section, reaction rate – Nuclear reactions, Resonance, Center of mass coordinate system, Q value of nuclear reaction – Nuclear fission – Nuclear reactors – Breeder reactors - Nuclear fusion in stars – Formation of heavier elements – Fusion reactors – Confinement methods Latitude effect – Azimuth effect – Altitude effect - Primary cosmic rays – Secondary cosmic rays – Cosmic ray showers – Discovery of Positron – Mesons Van Allen belts – Origin of cosmic rays

CO4: Understanding Interactions and Particles – Leptons – Neutrinos and Antineutrinos, other leptons – Hadrons – Resonance particles – Elementary particle quantum numbers – Basic concepts of symmetries and conservation principles – Basic concepts of Quarks – color, flavor, Quark confinement – Higgs boson Classification of stars – Hertzsprung - Russel diagram – Luminosity of a star – Stellar evolution - White Dwarfs - Chandrasekhar limit - Neutron stars - Black holes - Supernova explosion – Photon diffusion time.

Solid State Physics

Course Title: Solid State Physics
Course Code: 19U6CRPHY12
Semester: Six

Course Outcomes

C01: Understanding Solid state, crystalline, polycrystalline and amorphous materials, crystal lattice, periodicity, translation vectors, unit cell, basis, symmetry operations, bravais lattice in two and three dimensions, miller indices, interplanar spacing, simple crystal structures-hcp, fcc, bcc and simple cubic, Structures of NaCl, Diamond and ZnS, X-ray diffraction from crystals- Bragg's law, powder method, reciprocal lattice -properties, reciprocal lattice to sc, bcc and fcc, Bragg's law in reciprocal lattice.

C02: Understanding Inter-atomic forces, ionic bonding, bond dissociation and cohesive energy, madelung energy, covalent bonding, metallic bonding, hydrogen bonding, van derwaals bonding (basic ideas only). Free electron gas in one dimension, three dimension, electronic specific heat, band theory, Bloch theorem, Kronig-Penney model (derivation not expected), energy-wave vector relations, different zone schemes, velocity and effective mass of electron, distinction between metals, insulators and semiconductors. Intrinsic and extrinsic semiconductors, drift velocity, mobility and conductivity of intrinsic semiconductors, carrier concentration and Fermi level for intrinsic semiconductor, carrier concentration, conductivity and Fermi level for extrinsic semiconductor. Hall Effect, Direct and Indirect band gap, Principles of LED and Photodiodes.

C03: Understanding Polarization and susceptibility, local field, dielectric constant and polarizability, sources of polarizability, Clausius-Mossoti relation, piezoelectricity. Response of materials to magnetic field, classification of magnetic materials, Langevin's classical theory of diamagnetism and paramagnetism, ferromagnetism, Weiss theory, domain theory, antiferromagnetism and ferrimagnetism. Origin of superconductivity, response of magnetic field, Meissner effect, super current and penetration depth, critical field and critical temperature, type-I and type -II superconductors, thermodynamic and optical properties, isotope effect, Josephson effect and tunneling- SQUID BCS theory-Cooper pairs-Existence of bandgap.

Computational Physics

Course Title: Computational Physics
Course Code: 19U6CRPHY13
Semester: Six

Course Outcomes

CO1: Understanding Bisection Method - Newton Raphson method (two equation solution) – Regula-Falsi Method, Secant method - Fixed point iteration method - Rate of convergence and comparisons of these Methods. Gauss elimination method with pivoting strategies-Gauss-Jordan method-LU Factorization, Iterative methods (Jacobi method, Gauss-Seidel method).

CO2: Applying Least squares Regression- fitting a straight line, parabola, polynomial and exponential curve Finite difference operators-forward differences, divided difference; shift, average and differential operators- Newton's forward difference interpolation formulae- Lagrange interpolation polynomial- Newton's divided difference interpolation polynomial

CO3: Applying Numerical Differentiation formulae - Maxima and minima of a tabulated function- Newton-Cote general quadrature formula - Trapezoidal, Simpson's 1/3, 3/8 rule – Solution of ordinary differential equations Taylor Series Method, Picard's method-Euler's and modified Euler's method – Heun's method- Runge Kutta methods for 1st and 2nd order

Material Science

Course Title: Material Science
Course Code: 19U6CRPHY13
Semester: Six

Course Outcomes

C01: Understanding classification of materials- Advance materials- Level of structures, Microstructure and Macrostructure, Structure-Property relationships, Physical properties of materials- Imperfections in solids- Point defects, imperfections, dislocations- interfacial and bulk defects. Diffusion Mechanisms- Fick's first and second laws. Mechanical Properties- Stress strain relationship, Basic ideas of anelasticity, plastic deformation, tensile properties, ductility, malleability, brittleness, toughness, resilience, hardness, stiffness, endurance, creep and impact strength- Basic Thermal properties, Thermal cracking- Electrical and Magnetic properties- Dielectric strength and dielectric constant- Basic ideas of Chemical properties

C02: Understanding Absorption processes- Fundamental absorption -Exciton absorption- Free-carrier absorption- Photoconductivity- Photoelectric effect- Photovoltaic effect- Photoluminescence-colour centres-Generation of colour centres. Display devices- active and passive-Liquid crystals- Types of Liquid crystals- Nematic liquid crystals-Cholesteric liquid crystals- Smectic liquid crystals-General features of liquid crystals- Numeric display using LCD Metallic glasses; Shape memory alloy; lead free solders.

C03: Understanding Metal nanoclusters-magic numbers, theoretical modelling, geometric and electronic structure, magnetic clusters; Semiconducting nano particles- Rare gas and molecular clusters- carbon nanostructures- Carbon clusters, CNT preparation, properties and applications; Quantum wells, wires and dots – preparation, Size and dimensionality effects, applications.

Properties Of Matter & Error Analysis

Course Title: Properties Of Matter & Error Analysis
Course Code: 19U1CPPHY01
Semester: One

Course Outcomes

C01: Applying Stress- strain- Hooke's law- Elastic moduli- Poisson's ratio- twisting couple- determination of rigidity modulus- static and dynamic methods- static torsion- torsion pendulum, bending of beams- cantilever, uniform and non-uniform bending, I section girder.

C02: Understanding Molecular theory of surface tension - surface energy - excess pressure in a liquid drop, factors affecting surface tension - applications. Streamline and turbulent flow - critical velocity - Coefficient of viscosity - Derivation of Poiseuille's equation, Stokes equation- Determination of viscosity by Poiseuille's method - Brownian motion - Viscosity of gases - Bernoulli's theorem.

C03: Applying Basic ideas - uncertainties of measurement - importance of estimating errors - dominant errors - random errors - systematic errors - rejection of spurious measurements. Estimating and reporting errors - errors with reading scales, errors of digital instruments - number of significant digits - absolute and relative errors - standard deviation. Propagation of errors - sum and differences - products and quotients - multiplying by constants - powers

Mechanics And Astrophysics

Course Title: Mechanics And Astrophysics
Course Code: 19U2CPPHY03
Semester: Two

Course Outcomes

C01: Understanding Velocity- acceleration- force – acceleration due to gravity - compound pendulum (symmetric and asymmetric) radius of gyration – Kater's Pendulum- centripetal acceleration and force - centrifugal force. Angular velocity- angular momentum- torque- conservation of angular momentum- angular acceleration- moment of inertia- parallel and perpendicular axes theorems- moment of inertia of rod, ring, disc, cylinder and sphere- flywheel

C02: Understanding Periodic and oscillatory motion- simple harmonic motion- differential equation, expression for displacement, velocity and acceleration- graphical representation- energy of a particle executing simple harmonic motion - damped oscillation - forced oscillation and resonance. Waves-classifications- progressive wave- energy of progressive wave- superposition of waves-theory of beats- Doppler Effect.

C03: Understanding Temperature and color of a star- elements present in a stellar atmosphere- mass of star-life time of a star- main sequence stars-HR diagram- evolution of stars- white dwarf-supernova explosion- neutron star- black hole- (all topics to be treated qualitatively)

Modern Physics And Electronics

Course Title: Modern Physics And Electronics
Course Code: 19U3CPPHY05
Semester: Three

Course Outcomes

C01: Understanding Basic features of Bohr atom model-formula for energy- vector atom model-various quantum numbers-coupling schemes – LS & JJ-Pauli's exclusion principle- magnetic moments of orbital electrons Atomic nucleus-classification-basic properties of nucleus-charge, mass, spin, magnetic moment binding energy and packing fraction-nuclear forces-salient features Radioactivity- properties of alpha, beta and gamma-Soddy Fajan's displacement law, law of radioactive disintegration-decay constant -half life and mean life-radioactive equilibrium - measurement of radioactivity-radio carbon dating

C02: Understanding Inadequacies of classical physics-experimental evidences-evidences for quantum theory- Planck's hypothesis-foundation of quantum mechanics-wave function & probability density- Schrödinger equation-time dependent and time independent particle in a potential box. Optical spectra- spectral terms, selection rules, hyperfine structure; molecular spectra- rotational, vibrational and electronic spectra; Raman effect- experimental study, quantum theory; fluorescence and phosphorescence; comparison of Raman, fluorescence and IR spectra; NMR

C03: Understanding Current-voltage characteristics of a diode -forward and reverse bias-breakdown mechanism of p-n junction diode-Zener diode and its characteristics-half wave and full wave rectifiers- bridge rectifier-ripple factor, efficiency. Bipolar junction transistor- Construction and operation. Different number systems – decimal, binary, octal, hexa decimal number systems- conversion between different number systems- binary mathematics – addition, subtraction (1's compliment and 2's compliment methods) - basic theorems of Boolean algebra- de Morgan's theorems – Simplification of Boolean equations - AND, OR, NOT, NAND, NOR, XOR gates- truth tables- half adder- full adder

Optics & Electricity

Course Title: Optics & Electricity
Course Code: 19U4CPPHY07
Semester: Four

Course Outcomes

CO1: Understanding Light waves- phase difference and coherence, optical path and phase change, principle of superposition, Analytical treatment of interference-young's double slit experiment, conditions for interference, bandwidth - Interference in thin films- reflected system-colour of thin films-fringes of equal inclination and equal thickness. Newton's rings- reflected system -measurement of wavelength. Fresnel and Fraunhofer diffractions. Fresnel's theory of approximate rectilinear propagation of light-. Fraunhofer diffraction. Theory of Plane transmission grating- determination of wavelength-dispersive power of grating. Prism and grating spectra, resolving power, Rayleigh criterion, resolving power of grating, Polarization, types of polarization, Brewster's law, dichroism, birefringence – e ray and o-ray, polarizer and analyser, Malu's law, optical activity

CO2: Understanding Principle of operation of laser-population inversion, metastable states, optical resonator- components of laser- active medium, pump, optical resonant cavity- principal pumping schemes- three level and four level- laser beam characteristics applications of lasers. Light propagation in optical fibers, acceptance angle, numerical aperture-step index fiber - graded index fiber. Dielectrics- polar and non-polar dielectrics- polarization- sources of polarization-Gauss's law in dielectrics- permittivity- dielectric displacement vector- dielectric constant- susceptibility- ferro-electricity.

CO3: Understanding Transient currents – Growth and decay of current in an inductive circuit – charging and discharging of a capacitor through a resistance - Peak, mean, rms and effective values of a.c, Ac circuits-AC through RC, LC, LR and LCR series circuits resonance- sharpness of resonance-power factor.

Properties Of Matter And Thermodynamics

Course Title: Properties Of Matter And Thermodynamics
Course Code: 19U1CPPHY02
Semester: One

Course Outcomes

C01: Applying Stress- strain- Hooke's law- Elastic moduli- Poisson's ratio- twisting couple- determination of rigidity modulus- static and dynamic methods- static torsion- torsion pendulum, bending of beams- cantilever, uniform and non- uniform bending, I section girder.

C02: Understanding Molecular theory of surface tension - surface energy - excess pressure in a liquid drop, factors affecting surface tension – applications. Streamline and turbulent flow - critical velocity - Coefficient of viscosity - Derivation of Poiseuille's equation, Stokes equation- Determination of viscosity by Poiseuille's method - Brownian motion – Viscosity of gases- Bernoulli's theorem.

C03: Understanding Thermodynamic systems- thermodynamic equilibrium- thermodynamic processes- isothermal process- adiabatic process- zeroth law of thermodynamics, first law of thermodynamics- heat engine- the Carnot engine- refrigerator, concept of entropy- second law of thermodynamics- third law of thermodynamics- Maxwell's thermodynamic relations

Mechanics And Superconductivity

Course Title: Mechanics And Superconductivity
Course Code: 19U2CPPHY04
Semester: Two

Course Outcomes

C01: Understanding Velocity- acceleration- force – acceleration due to gravity - compound pendulum

(symmetric and asymmetric) radius of gyration –centripetal acceleration and force - centrifugal force. Angular velocity- angular momentum- torque- conservation of angular momentum-

angular acceleration- moment of inertia- parallel and perpendicular axes theorems- moment of inertia of rod, ring, disc, cylinder and sphere- flywheel

C02: Understanding Periodic and oscillatory motion- simple harmonic motion- differential equation, expression for displacement, velocity and acceleration- graphical representation- energy of a particle executing simple harmonic motion damped oscillation- forced oscillation and resonance. Waves-classifications- progressive wave- energy of progressive wave- superposition of waves-theory of beats- Doppler effect.

C03: Understanding Super conducting phenomenon- Occurrence- BCS theory (qualitative) Meissner Effect- Type I and Type II superconductors- Josephson effects (qualitative) - High temperature superconductors- Applications of Superconductivity

Modern Physics And Magnetism

Course Title: Modern Physics And Magnetism
Course Code: 19U3CPPHY06
Semester: Three

Course Outcomes

C01: Understanding Basic features of Bohr atom model-formula for energy- vector atom model- various quantum numbers- Coupling schemes-LS and JJ coupling-Pauli's exclusion principle-magnetic moment of orbital electrons, Atomic nucleus classification-basic properties of nucleus-charge, mass, spin, magnetic moment binding energy and packing fraction-nuclear forces-salient features Radioactivity- properties of alpha, beta and gamma- Soddy Fajan's displacement law, law of radioactive disintegration -decay constant-half life and mean life-radioactive equilibrium - measurement of radioactivity-.Radio carbon dating

C02: Understanding Inadequacies of classical physics-experimental evidences-evidences for quantum theory- Planck's hypothesis-foundation of quantum mechanics-wave function & probability density- Schrödinger equation-time dependent and time independent particle in a potential box. Optical spectra- spectral terms, selection rules, hyperfine structure; molecular spectra- rotational, vibrational and electronic spectra; Raman effect- experimental study, quantum theory; fluorescence and phosphorescence; comparison of Raman, fluorescence and IR spectra; NMR .

C03: Understanding Current-voltage characteristics of a diode -forward and reverse bias-breakdown mechanism of p-n junction diode-Zener diode and its characteristics-half wave and full wave rectifiers- bridge rectifier-ripple factor, efficiency. Construction and operation of a bipolar junction transistor Properties of magnetic materials, Paramagnetism, Diamagnetism, Ferromagnetism, Hysteresis, Ferrites, Magnetostriction, Earth's magnetism-elements of earth's magnetism-dip, declination, horizontal and vertical components-magnetic maps-magnetographs-cause of earth's magnetism

Optics And Solid State Physics

Course Title: Optics And Solid State Physics
Course Code: 19U4CPPHY08
Semester: Four

Course Outcomes

CO1: Understanding Light waves- phase difference and coherence, optical path and phase change, principle of superposition, Analytical treatment of interference-- young's double slit experiment, conditions for interference, bandwidth Interference in thin films-reflected system- colour of thin films-fringes of equal inclination and equal thickness. Newton's rings-reflected system-measurement of wavelength Fresnel and Fraunhofer diffractions. Fresnel's theory of approximate rectilinear propagation of light. Fraunhofer diffraction. Theory of Plane transmission grating- determination of wavelength- dispersive power of grating. Prism and grating spectra, resolving power, Rayleigh criterion, resolving power of grating, Polarization, types of polarization, Brewster's law, dichroism, birefringence – e ray and o-ray, polarizer and analyzer, Malu's law, optical activity

CO2: Understanding Principle of operation of laser-population inversion, metastable states, optical resonator- components of laser- active medium, pump, optical resonant cavity- principal pumping schemes- three level and four level- laser beam characteristics, applications of lasers. Light propagation in optical fibers, acceptance angle, numerical aperture-step index fiber - graded index fiber. Dielectrics- polar and non-polar dielectrics- polarization- sources of polarization- Gauss's law in dielectrics- permittivity- dielectric displacement vector- dielectric constant-susceptibility- ferro- electricity. Peak, mean, rms and effective values of A.C

CO3: Understanding Crystal structure-crystal lattice and translation vectors- unit cell-types of lattices- Miller indices- lattice directions and planes interplanar spacing-simple crystal structures- sc, fcc, bcc, hcp close packed structures- - sodium chloride structure. X-ray crystallography-diffraction of x-rays-Bragg's law

Drama, Poetry and Alankara

Course Title: Drama, Poetry And Alankara
Course Code: 19U1CCSAN1A
Semester: One

Course Outcomes

C01: An awareness of Sanskrit literature as a poetic tradition through Kalidasa's Kumarasambhava

C02: Students can understand the poetic style with special reference to classical literature

C03: Students get an awareness about Indian classical poetic tradition

Communication Skill In Sanskrit Language

Course Title: Communication Skill In Sanskrit Language
Course Code: 15U3CCSAN3A
Semester: Two

Course Outcomes

C01: Developing the basic knowledge in Sanskrit

C02: Students can understand the poetic style with special reference to classical literature.

C03: Students familiarize the figures of speech and their usage

Translation And Communication

Course Title: Translation And Communication
Course Code: 15U3CCSAN3A
Semester: Three

Course Outcomes

C01: Learning the art of translation

C02: Understanding translation as a Linguistic activity

C03: Familiarising the technology of Translation.

Historical Survey Of Sanskrit Literature And Kerala Culture

Course Title: Historical Survey Of Sanskrit Literature And Kerala
Course Code: 15U4CCSAN4A
Semester: Four

Course Outcomes

- C01:** Students familiarise the Culture and Civilization
- C02:** Students understand the influence of Epic in Indian Literature
- C03:** Students get an awareness about Indian classical poetic tradition
- C04:** Students understand the socio- ecological aspects of Drama
- C05:** Students get an awareness about Indian Philosophers and renovators in Kerala
- C06:** Students identify the values and philosophy in Sanskrit literature

B.A. Sociology

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand functional and theoretical concepts of the social world and incorporate it in real-life situations.

PSO2

Understand the subject pedagogy and its multidimensional interface.

PSO3

Understand the implications of learning Sociology and its interdisciplinary link with various disciplines.

PSO4

Perform field work and engage in Outreach Programmes and Internships

PSO5

Synthesize the scientific character of observation, experimentation and analysis and attain training in the same.

Fundamentals Of Sociology

Course Title: Fundamentals Of Sociology
Course Code: 19U1CR SOC01
Semester: One

Course Outcomes

C01: Understand the world of Sociology

C02: Understand the conceptual orientation of Sociology

C03: Demonstrate the relevance of Sociology as a social science

C04: Acquire basic sociological skills and familiarizing with major perspectives and dimensions

Basic Concepts In Sociology

Course Title: Basic Concepts In Sociology
Course Code: 19U2CRSOC02
Semester: Two

Course Outcomes

C01: Understand the preliminary aspects of the subject

C02: Develop an organic connection between Individual and Society

C03: Acquire a grasp of the core ideas of the discipline

C04: Developing an understanding about the evolution of Sociology

C05: Know different perspectives generated by sociologists to understand the functioning of society

Foundations Of Sociological Thought

Course Title: Foundations Of Sociological Thought
Course Code: 19U3CR SOC03
Semester: Three

Course Outcomes

C01: Understand the Intellectual roots of Sociological theorizing

C02: Familiarizing students with the ongoing debates in Sociological theory

C03: Establishing the organic link between theory building and Research

C04: Acquiring the capacity to perceive contemporary social reality by infusing sociological insights

C05: Facilitate and promote the skill and ability to surpass the conventional bases of knowledge and its application

Social Research Methods

Course Title: Social Research Methods
Course Code: 19U3CR SOC04
Semester: Three

Course Outcomes

- C01:** Understand the basic concepts and terms related to research methodology
- C02:** Developing an understanding about Research process in social sciences
- C03:** Know the emerging trends in Sociological Research
- C04:** Acquire a research oriented bend of mind in students by problematizing social reality
- C05:** Demonstrate the techniques and tool of data collection and impart practical training for the same

Indian Social Structure And Sociological Perspectives

Course Title: Indian Social Structure And Sociological Perspectives
Course Code: 19U4CR SOC05
Semester: Four

Course Outcomes

- C01:** Understand various sociological concepts on Indian society
- C02:** Familiarizing students with the Historical, Colonial and Post-Colonial dimensions of Indian Society
- C03:** Developing an understanding of the contemporary Structural changes experienced by Indian Society on account of various socio, economic and political forces
- C04:** Gain knowledge about various approaches to Indian Society
- C05:** Assess the Sociological implications of changes in the Neo-Liberal Era

Environment And Society

Course Title: Environment And Society
Course Code: 19U4C RSOC06
Semester: Four

Course Outcomes

C01: Understand the sociological concepts related to environment

C02: Understand the sociological discourses on environment

C03: Developing a basic awareness of major environmental issues and concerns affecting mankind

C04: Know the emerging trends in Environmental sociology

C05: Identify the major socio-environmental movements and action - plans

Modern Sociological Theories

Course Title: Modern Sociological Theories
Course Code: 19U5CR SOC07
Semester: Five

Course Outcomes

- C01:** Familiarizing with the distinction between Modern and conventional domains of Sociological theory and with the emerging currents of Social theory
- C02:** Developing an understanding on structural functional and conflict perspectives in sociological theory
- C03:** Familiarizing the need of approaches, paradigms and perspectives in understanding the societal functioning
- C04:** Trace down the historical development of Sociological approaches and of the discipline
- C05:** Acquire an understanding of the structural – functional and Indological perspectives on Indian society
- C06:** To familiarize with the Dialectical and Subaltern perspectives on Indian society
- C07:** Acquire an understanding on attempts to Indigenize Sociological approaches

Elements Of Social Psychology

Course Title: Elements Of Social Psychology
Course Code: 19U5CR SOC08
Semester: Five

Course Outcomes

C01: Understand the concepts, terms and approaches in psychology

C02: Demonstrate the factors and attributes responsible for the development of human personality

C03: Identify the undercurrents of human behaviour

C04: Enable to understand the difference between individual behaviour and crowd behaviour

C05: To develop a healthy personality

Sociology Of Work And Industry

Course Title: Sociology Of Work And Industry
Course Code: 19U5CR SOC09
Semester: Five

Course Outcomes

C01: Understand the basic terms, theories and emerging themes in Industry and work

C02: Knowing all major approaches in studying Industry and work

C03: Acquire a grasp of Symbolic Interactionism and Exchange perspectives in Sociology

C04: Understand the emerging trends in Sociological theories

Life Skill Education

Course Title: Life Skill Education
Course Code: 19U5CR SOC10
Semester: Five

Course Outcomes

- C01:** Know the basic concepts and terms related to life skills
- C02:** Demonstrating the need for career building and systematically imparting training for the same
- C03:** Developing Communication Skills and self-management skills on a continuous and sustained basis
- C04:** Know the importance of Emotional Intelligence and its application
- C05:** Acquire creative writing ability and learning skills

Elements Of Social Psychology -Open Course

Course Title: Elements Of Social Psychology -Open Course
Course Code:
Semester: Five

Course Outcomes

C01: Understand the concepts, terms and approaches in psychology

C02: Demonstrate the factors and attributes responsible for the development of human personality

C03: Identify the undercurrents of human behaviour

C04: Enable to understand the difference between individual behaviour and crowd behaviour

C05: To develop a healthy personality

Sociology Of The Marginalised Sections

Course Title: Sociology Of The Marginalised Sections
Course Code: 19U6CR SOC11
Semester: Six

Course Outcomes

- C01:** Understand the historical and contemporary dimensions of marginalization
- C02:** Develop the ability to place marginalization within the context of socially excluded categories
- C03:** Identify the occurrence, structure, classification, functions of marginalization
- C04:** Identify the historical forces resulting in marginalization in society
- C05:** Understand the way in which social institutions like caste and gender are promoting marginalization

Sociology Of Development

Course Title: Sociology Of Development
Course Code: 19U6CR SOC12
Semester: Six

Course Outcomes

C01: Understand the historical and contemporary dimensions of marginalization

C02: Develop the ability to place marginalization within the context of socially excluded categories

C03: Identify the occurrence, structure, classification, functions of marginalization

C04: Identify the historical forces resulting in marginalization in society

C05: Understand the way in which social institutions like caste and gender are promoting marginalization

Social Pathology

Course Title: Social Pathology
Course Code: 19U6CR SOC13
Semester: Six

Course Outcomes

C01: Introduce the Basic concepts of Social Pathology

C02: Demonstrate the pathological problems faced by vulnerable sections

C03: Understand the need to study and understand the impact of substance abuse ,terrorism, organized crime

C04: Developing a balanced and apathetic approach to social issues

C05: Understand the basis of need to study criminality as a social stigma

Urban Sociology

Course Title: Urban Sociology
Course Code: 19U6CR SOC14
Semester: Six

Course Outcomes

- C01:** To introduce Urban sociology as a major branch of Sociology
- C02:** Identify the different life setting between urban and rural areas
- C03:** Assess the ongiong processes of urbanisation
- C04:** Study major urban problems and social disorganisation

Media And Society

Course Title: Media And Society
Course Code: 19U6CR SOC15
Semester: Six

Course Outcomes

- C01:** Know about all the basic aspects of Media
- C02:** Understands the fundamentals and jargons used in media education
- C03:** Know the social and ethical issues in the field of media
- C04:** Demonstrate various approaches and perspectives to the study of media
- C05:** Inculcating media consciousness, media literacy and digital know-how

B.Sc. Zoology

Programme Specific Outcomes (PSOs)

At the end of the programme a student should be able to:

PSO1

Understand faunal diversity through scientific classification and appreciate the complex interactions among animals and the environment in conjunction with their role in sustainable environment.

PSO2

Understand the principles of aquaculture, sericulture, apiculture, vermiculture, poultry and cattle farming for the economic prosperity of the society.

PSO3

Understand the concepts and principles of biochemistry, animal physiology, cell biology, molecular biology, genetics, biotechnology, general informatics and bioinformatics, endocrinology, developmental biology, evolution, zoogeography, ethology, ecology, disaster management, toxicology, microbiology, immunology, nutrition, community health, sanitation, ecotourism, biostatistics and research methodology and their applications in day-to-day life.

PSO4

Perform laboratory procedures in the areas of morphology, anatomy, taxonomy, applied zoology, biochemistry, animal physiology, cell biology, molecular biology, genetics, biotechnology, general informatics and bioinformatics, endocrinology, developmental biology, evolution, zoogeography, ethology, ecology, microbiology and immunology.

Biochemistry, Human Physiology And **Endocrinology**

Course Title: Biochemistry, Human Physiology And
Endocrinology
Course Code: 15U5CRZO008
Semester: Five

Course Outcomes

C01: Understand the structure, biological importance and metabolism of important carbohydrates, protein and lipids.

C02: Understand the mechanism of enzyme action and role of enzymes in metabolism.

C03: Understand the importance of balanced diet, role of vitamins and minerals in diet and nutritional disorders

C04: Understand the functional aspects of respiration and respiratory disorders

C05: Understand the functional aspects of cardiovascular circulation, disorders related to it and the clinical aspects

C06: Understand the structure and function of human nitrogenous excretory organs and renal disorders

C07: Understand structure and functional facets of neuro muscular system and physiological features of sports and exercise

C08: Understand the functional aspects of endocrine glands and the disorders associated with it

Cell And Molecular Biology

Course Title: Cell And Molecular Biology
Course Code: 15U5CRZ0005
Semester: Five

Course Outcomes

C01: Understand the history and scope of cell and molecular biology, cell theory, prokaryotes, eukaryotes, Actinomycetes, Mycoplasmas, virus, virion and viroids and prions.

C02: Understand plasma membrane, the various models of plasma membrane and its modifications, cell permeability and functions

C03: Understand the ultrastructure of the cytoplasm and the various cell organelles and their functions

C04: Understand the structure and functions of the nucleus and a basic understanding of chromosomes and its structure

C05: Understand cell division both mitosis and meiosis and the various cell signalling mechanisms

C06: Understand the basic nature of the genetic material, DNA structure, types, replication, modern concept of gene, prokaryotic and eukaryotic genome

C07: Understand the central dogma of molecular biology, genetic code and protein synthesis in prokaryotes and eukaryotes

C08: Understand gene regulatory mechanisms, operon concept both lac operon and typtophan operon

Cell Biology And Molecular Biology

Course Title: Cell Biology And Molecular Biology
Course Code: 15U5PRZ005
Semester: Five

Course Outcomes

- C01:** Examine and evaluate the mitotic stages of onion root tip.
- C02:** Apply scientific principles and analyse the polytene chromosome of Chironomous larva
- C03:** Analyse the slides of various tissues and distinguish them on the basis of various cellular features
- C04:** Examine, draw and identify the meiotic stages
- C05:** Identify and analyse cell organelles
- C06:** Analyze the structure of DNA, RNA and DNA replication models
- C07:** Apply the staining techniques to prepare temporary and permanent whole mounts of specimens
- C08:** Analyze the human blood cell configuration and structurally differentiate the leucocytes

Environmental Biology, Toxicology And Disaster Management

Course Title: Environmental Biology, Toxicology And
Disaster Management
Course Code: 19U5CRZ006
Semester: Five

Course Outcomes

C01: Understand the history, development, branches and scopes of Environmental Biology, Toxicology and Disaster Management.

C02: Understand the basics of ecosystems and the classification of ecosystems

C03: Understand the structure and functioning of different types of ecosystems

C04: Understand the conservational aspects of wetlands

C05: Understand the importance of natural resources for the survival of humankind and evaluate the environmental issues caused by the misuse or overexploitation of these resources

C06: Understand the changes in the environment, their consequences and mitigation efforts by UN

C07: Understand the harmful effects of waste materials, toxic materials, chemicals and minerals to the organisms and human health

C08: Understand the nature of possible natural and anthropogenic disasters, hazard preparedness and mitigation of disaster consequences

Evolution, Zoogeography And Ethology

Course Title: Evolution, Zoogeography And Ethology
Course Code: 15U5CRZ0007
Semester: Five

Course Outcomes

C01: Understand origin of life on earth - origin of universe, chemical evolution, Miller-Urey experiment & Haldane and Oparin theory.

C02:

C03: Differentiate various theories of organic evolution – Lamarckism, Weisman's germplasm theory, Mutation theory, Modern Synthetic theory (Neo Darwinism) and Neutral theory of molecular evolution

C04:

C05: Understand the concepts of population genetics and evolution - Genetic basis of variation, Hardy Weinberg equilibrium and gene frequencies

C06: Understand the basics of evolution above species level including adaptive radiation, microevolution, macroevolution, evolution of horse, mega evolution, punctuated equilibrium, speciation and evolution of horse & geological time scale

C07: Understand the basic concepts of origin of oceans and continents, zoogeographical realms, insular fauna, biogeography of India with special reference to Western Ghats and the types, means and barriers of animal distribution

C08: Understand the definition, history and scope of Ethology

C09: Differentiate different types of learning

C010: Understand the basic concepts of sociobiology and evolution of human behavior, primates and human socio groups & human pheromones

Human Genetics, Nutrition, Community Health And Sanitation

Course Title: Human Genetics, Nutrition, Community
Health And Sanitation
Course Code: 15U50CZ001
Semester: Five

Course Outcomes

C01: Understand the basic principles of human genetics, the disorders associated with it and awareness on pre natal diagnosis.

C02: Understand the genetic principle of blood group inheritance, importance of blood donation, causes of infertility, DNA fingerprinting and its applications

C03: Understand psychoneuroimmunology of physical activity, exercise, yoga and programmes related to community health promotion

C04: Understand the importance of balanced diet, and awareness on nutritional disorders

C05: Understand the principles of accident prevention and first aid

C06: Understand the pathology of water borne diseases and their prevention; waste water and solid waste management

C07: Understand the microbiology of food borne diseases and their prevention

C08: Understand the pathology and control measures of emerging diseases, vector borne and life style diseases

Applied Zoology

Course Title: Applied Zoology
Course Code: 15U4CRZO004
Semester: Four

Course Outcomes

C01: Understanding of traditional methods of aquaculture and different cultivable fishes of Kerala and management practices for developing entrepreneurial skills..

C02: Understanding of fish culture techniques, fish diseases, fish preservation and processing aquarium fish management practices for developing entrepreneurial skills.

C03:Understanding of prawn culture, mussel culture and pearl culture

C04:Understanding of sericulture, species of silkworms, life history of silkworms, diseases and pests and management practices for developing entrepreneurial skills.

C05:Understanding of vermiculture and various species of earthworms

C06:Understanding of vermicomposting

C07:Understanding of Honey bee species, apiary, bee keeping methods, bee pasturage

C08:Understanding of diseases and pests of honey bees and apiculture management

Applied Zoology

Course Title: Applied Zoology
Course Code: 15U4PRZ005
Semester: Four

Course Outcomes

C01: Analyse, identify and examine the culturable species of fishes.

C02: Analyse, identify and examine culturable species of earthworms, castes of honey bees and silkworm

C03: Analyse the bee keeping equipments and chandrike and develop entrepreneurial skills

C04: Examine the products and by-products of apiculture, sericulture and vermicomposting

C05: Analyse and study the different types of fish diseases and fish parasites

C06: Analysis of the gut content of fish and determine its feeding habits

C07: Hands on training in maintenance of aquarium, aquaculture farms, apiary, sericulture, poultry farms

Human Physiology And Immunology

Course Title: Human Physiology And Immunology
Course Code: 19U4PCZ002
Semester: Four

Course Outcomes

C01: Analyse human blood cell configuration.

C02: Analyse chemical nature of biological fluids.

C03: Application of role of salivary amylase on starch

C04: Analysis of haemoglobin content in human blood.

C05: Analyse different types of blood groups and Rh factor

C06: Application of Sphygmomanometer and stethoscope.

Applied Zoology

Course Title: Applied Zoology
Course Code: 15U4CRZO004
Semester: Four

Course Outcomes

C01: Understanding of traditional methods of aquaculture and different cultivable fishes of Kerala and management practices for developing entrepreneurial skills..

C02: Understanding of fish culture techniques, fish diseases, fish preservation and processing aquarium fish management practices for developing entrepreneurial skills.

C03:Understanding of prawn culture, mussel culture and pearl culture

C04:Understanding of sericulture, species of silkworms, life history of silkworms, diseases and pests and management practices for developing entrepreneurial skills.

C05:Understanding of vermiculture and various species of earthworms

C06:Understanding of vermicomposting

C07:Understanding of Honey bee species, apiary, bee keeping methods, bee pasturage

C08:Understanding of diseases and pests of honey bees and apiculture management

Applied Zoology

Course Title: Applied Zoology
Course Code: 15U4CPZ004
Semester: Four

Course Outcomes

- C01:** Application of aquaculture management practices for developing entrepreneurial skills..
- C02:** Application of aquarium fish management practices for developing entrepreneurial skills.
- C03:**Application of sericulture management practices for developing entrepreneurial skills.
- C04:**Application of apiculture management practices for developing entrepreneurial skills.
- C05:**Application of vermiculture management practices for developing entrepreneurial skills.
- C06:**Application of pearl culture management practices for developing entrepreneurial skills.

Animal Diversity- Non Chordata I

Course Title: Animal Diversity- Non Chordata I
Course Code: 19U1CRZ0001
Semester: One

Course Outcomes

C01: Understand the history, branches and the scope of Biology.

C02: Understand the concept of Symmetry and Coelom

C03: Understand the principles, nomenclature, classification, approaches and modern trends in taxonomy.

C04: Understand the concept of Two kingdom and Five kingdom classification in taxonomy

C05: Differentiate the animals in to phyla based on their characters.

C06: Analyze the life cycle and reproduction of Kingdom Protista and Animalia.

Animal Diversity – Non Chordata

Course Title: Animal Diversity – Non Chordata
Course Code: 19U1CPZ001
Semester: One

Course Outcomes

C01: Understand the basic concepts and principles of invertebrate taxonomy.

C02: Understand salient features and taxonomy up to phylum of Kingdom Protista

C03: Understand the salient features and taxonomy of mesozoa and parazoa.

C04: Differentiate the coral reefs and the rich biodiversity of coelenterates

C05: Understand the pathogenicity of round worms and flat worms.

C06: Understand the salient features and taxonomy of segmented, jointed and shelled invertebrates.

C07: Understand the morphological aspects, structural and functional facets of Penaeus.

C08: Understand the pests of paddy, coconut and stored grains.

Biochemistry, Human Physiology And Endocrinology

Course Title: Biochemistry, Human Physiology And
Endocrinology
Course Code: 15U6PRZO005
Semester: Six

Course Outcomes

- C01:** Analyse the haemoglobin content of human blood.
- C02:** Analyse the RBC and WBC count using haemocytometer
- C03:** Analyse the Packed cell volume of the given blood sample
- C04:** Analyse the effect of hypertonic, hypotonic and isotonic solutions on the diameter of RBC
- C05:** Application of sphygmomanometer, stethoscope and kymograph
- C06:** Analyse the brain of cockroach
- C07:** Analyse the human endocrine disorders
- C08:** Analyse the chemical nature of biological fluids

Practical 3 Environmental Biology, Toxicology And Disaster Management

Course Title: Practical 3 Environmental Biology,
Toxicology And Disaster Management
Course Code: 15U6PRZO003
Semester: Six

Course Outcomes

- C01:** Understand the methodology for examining ecological parameters of freshwater habitats.
- C02:** Analyze the amount of dissolved Oxygen and Dissolved Carbon Dioxide in water sample
- C03:** Understand the technique for identifying planktonic materials in a water sample
- C04:** Analyze Zooplankton in a water sample qualitatively and quantitatively
- C05:** Understand the methodology for analyzing soil fauna
- C06:** Understand the mineral composition and ecological importance of rocks and minerals
- C07:** Understand the technique of studying the water turbidity using Secchi's Disc and plankton net
- C08:** Understand the structure and function of a terrestrial, freshwater or marine ecosystems

Evolution, Zoogeography and Ethology (Practical 3)

Course Title: Evolution, Zoogeography And Ethology
(Practical 3)
Course Code: 19U6PRZ0003
Semester: Six

Course Outcomes

- C01:** Differentiate zoogeographical realms using map.
- C02:** Differentiate endemic species of each realm
- C03:** Differentiate different stages of horse evolution
- C04:** Differentiate Homologous and Analogous organs
- C05:** Analyse various connecting links
- C06:** Analyse pheromone traps
- C07:** Differentiate Skinner box and T Maze & different types of behaviour

General Informatics, Bioinformatics, Biostatistics And Research Methodology

Course Title: General Informatics, Bioinformatics,
Biostatistics And Research Methodology
Course Code: 15U6CRZ0012
Semester: Six

Course Outcomes

C01: Understand basic fundamentals of informatics and operating system..

C02: Understand databases, sequence and genome analysis.

C03: Understand basics of proteomics and molecular phylogenetics.

C04: Understand basic concept of computer Aided Drug Discovery and bioinformatics tools.

C05: Understand sampling techniques.

C06: Understand measures of central tendency, dispersion, probability distribution and correlation.

C07: Understand the tools and techniques in biological research.

C08: Understand the concept of research methodology.

Reproductive And Developmental Biology

Course Title: Reproductive And Developmental Biology
Course Code: 15U6CRZ0001
Semester: Six

Course Outcomes

C01: Understand the definition, sub-divisions, terms, early history, applications and scope of embryology.

C02: Understand the concepts of gametogenesis, fertilization, cleavage, blastulation, gastrulation, fate maps and egg types

C03: Understand the embryology of human, chick, frog and drosophila

C04: Understand the sexual cycle

C05: Understand the experimental embryology and regeneration in animals

C06: Understand the concept of teratology

C07: Understand the birth and developmental defects

Reproductive And Developmental Biology

Course Title: Reproductive And Developmental Biology
Course Code: 19U6PRZ0005
Semester: Six

Course Outcomes

- C01:** Analyze the development of frog, chick and Drosophilla.
- C02:** Analyse the developmental stages of Drosophila and the life cycle from fruit fly stock culture
- C03:** Analyse Mammalian Development
- C04:** Analyse the placenta of pig and man
- C05:** Analyse the embryological techniques
- C06:** Candling of chick egg –Analyse whether the egg is fertilised or not
- C07:** Analyse the male and female reproductive system of a teleost fish / cockroach

Genetics And Biotechnology

Course Title: Genetics And Biotechnology
Course Code: 15U6CRZ0010
Semester: Six

Course Outcomes

C01: Understanding of scope and importance of genetics, brief explanation of terms and laws of genetics.

C02: Understanding of gene interactions. Linkage and recombination of genes

C03: Understanding of sex determination in man, honey bees, hormonal influence and environmental influence on sex and study of mutations, its types and molecular basis of mutations and understanding the concept of extra nuclear inheritance

C04: Understanding of bacterial genetics, bacterial gene transfer, drug resistance, transposons, transposable genetic elements

C05: Understanding of Human genetics, genetic disorders in man, autosomal and sex chromosomal anomalies,

C06: Understanding of biotechnology, scope, importance, basic aspects of genetic engineering,, tools, vectors, DNA isolation, techniques in gene transfer

C07: Understanding of general techniques in biotechnology, gene cloning, blotting techniques, hybridization techniques, stem cultures

C08: Understanding of practical applications of biotechnology and problems and hazards of genetic engineering

Genetics And Biotechnology

Course Title: Genetics And Biotechnology
Course Code: 15U6PRZ0010
Semester: Six

Course Outcomes

C01: Evaluating genetic problems – mono and dihybrid ratio, back cross and multiple alleles.

C02: Analysis of human buccal epithelium

C03: Analyse the chromosomal anomalies in man

C04: Examine the karyotype and idiogram of somatic metaphase chromosome in human

C05: Analysing the sex in *Drosophila*

C06: Isolation of DNA

C07: Analysis of polymerase chain reaction

C08: Analysis and study of the blotting techniques

Microbiology And Immunology

Course Title: Microbiology And Immunology
Course Code: 19U6CRZ0011
Semester: Six

Course Outcomes

C01: Understand the history and scope of microbiology and outline classification of bacteria, fungi and viruses.

C02: Understand the methods in microbiology

C03: Understand basic bacteriology.

C04: Understand basic virology

C05: Differentiate the types and carriers of microbial infections and the diseases caused.

C06: Understand the basics of immunology, antigens and antibodies.

C07: Understand the clinical applications of antigen-antibody reaction.

C08: Understand immune response system and their disorders.

Microbiology And Immunology

Course Title: Microbiology And Immunology
Course Code: 15U6PRZ0006
Semester: Six

Course Outcomes

C01: Apply the principles of instruments used in microbiology lab.

C02: Apply the knowledge for the preparation of different media

C03: Analyse different types of media and their uses

C04: Analyse different culture techniques in microbiology

C05: Analyse the different staining techniques in microbiology

C06: Analyse the blood samples using ABO and Rh antigen typing

C07: Analyse the primary and secondary lymphoid organs using photographs

Nutrition, Community Health And Sanitation

Course Title: Nutrition, Community Health And Sanitation
Course Code: 15U6CRZ0013
Semester: Six

Course Outcomes

C01: Understand the basic principles of physical activity and exercise and its effect on body systems.

C02: Understand the programmes on community health promotion.

C03: Understand life skill education like yoga, meditation and relaxation.

C04: Understand the importance of balanced diet, and awareness on nutritional disorders

C05: Understand the principles and importance of health and safety.

C06: Understand the pathology of water borne diseases and their prevention; waste water and solid waste management

C07: Understand the microbiology of food borne diseases and their prevention

C08: Understand the pathology and control measures of emerging diseases, vector borne and life style diseases

Animal Diversity - Chordata

Course Title: Animal Diversity - Chordata
Course Code: 15U3CRZ0003
Semester: Three

Course Outcomes

C01: Understand the general classification of Phylum Chordata, sub phyla Urochordata and Cephalochordata their classes and specific examples.

C02: Understand the classification of Sub phylum Vertebrata, divisions Agnatha and Gnathostomata, super class Pisces and its various classes with typical examples

C03: Understand the accessory respiratory organs in fish, parental care, scales in fishes, migration, common culture fishes and lung fishes

C04: Understand super class Tetrapoda, class Amphibia, elaborate study of type – frog, various orders under class Amphibia

C05: Understand the class Reptilia, its various subclasses with examples, identifying poisonous and non poisonous snakes

C06: Understand the class Aves, its various subclasses, migration in birds and flight adaptations in birds

C07: Understand the characteristics of Class Mammalia and detailed study of type - Rabbit

C08: Understand the various sub classes under Mammalia, their orders and examples and dentition in mammals and aquatic mammals

Animal Diversity - Chordata

Course Title: Animal Diversity - Chordata
Course Code: 15U3PRZ003
Semester: Three

Course Outcomes

C01: Apply taxonomic principles and identify animals belonging to various phyla and classes by their scientific names.

C02: Apply scientific principles and draw vertebrate specimens belonging to different classes

C03: Analyse the viscera, digestive system, arterial system, spinal nerves, sciatic plexus and brain of frog

C04: Examine, draw and describe the scales in fishes

C05: Analyse and examine the vertebrae and girdles of frog and rabbit, skull of rabbit and turtle - plastron and carapace

C06: Analyze the morphology and cross-sections of Amphioxus

C07: Apply taxonomic principles to identify fishes upto order level

C08: Apply taxonomic principles to identify snakes upto order level

Human Physiology And Immunology

Course Title: Human Physiology And Immunology
Course Code: 19U3CPZ003
Semester: Three

Course Outcomes

C01: Understand nutrition and deficiency disorders.

C02: Understand the functional aspects of respiration and respiratory disorders

C03: Understand functional aspects of cardiovascular circulation, disorders and clinical aspects.

C04: Understand structure and function of human nitrogenous excretory organ and renal disorders.

C05: Understand structural and functional features of neuromuscular system and its disorders.

C06: Understand functional characteristics of hormonal glands and its disorders.

C07: Understand the basics of immunology, antigens and antibodies, antigen antibody reactions and its clinical applications.

C08: Understand the applications, new developments and recent trends in immune research.

Practical I

Course Title: Practical I
Course Code: 19U2PRZO001
Semester: Two

Course Outcomes

C01: Understand the structure and function of simple and compound light microscopes.

C02: Understand the structure and function of Camera Lucida

C03:Analyze the specimens by their generic names

C04:Apply the principles in Scientific Drawing

C05:Understand the anatomy of Hydra

C06:Understand the larval forms

C07:Analyze the specimens of insects

Animal Diversity- Non Chordata II

Course Title: Animal Diversity- Non Chordata II
Course Code: 19U2CRZO002
Semester: Two

Course Outcomes

C01: Understand the classification of phylum Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca and Hemichordata.

C02: Understand the Life history of platyhelminth parasites

C03: Understand the pathogenic nematodes

C04: Understand the vectoral arthropods

C05: Understand the larval forms of Penaeus

C06: Understand the pearl formation and culture

C07: Understand the water vascular system in Echinodermata

Practical I Animal Diversity- Non Chordata II

Course Title: Practical I Animal Diversity- Non Chordata II
Course Code: 19U2PRZO001
Semester: Two

Course Outcomes

C01: Understand the structure of Ascaris, Earthworm and Fasciola.

C02: Analyze the Nervous system of Prawn and Cockroach

C03:Analyze salivary glands of Cockroach

C04:Analyze the mouth parts of Insects

C05:Analyze the prawn appendages and earthworm setae

C06:Analyze the taxonomic classifications of the specimens

C07:Understand the ecological, morphological, evolutionary and economic importance of invertebrates

Animal Diversity – Non Chordata

Course Title: Animal Diversity – Non Chordata
Course Code: 19U2PCZ001
Semester: Two

Course Outcomes

C01: Application of scientific principles in drawing invertebrates.

C02: Application of taxonomic principles in identification of invertebrates.

C03:Analyse Prawn Nervous system.

C04:Analyse Cockroach Nervous system.

C05:Analyse Prawn appendages

C06:Analyse mouthparts of cockroach.

C07:Application of histological principles in invertebrate systematics.

Animal Diversity – Chordata

Course Title: Animal Diversity – Chordata
Course Code: 19U2CPZ002
Semester: Two

Course Outcomes

C01: Understand taxonomy of Phylum Chordata, sub phyla Urochordata and Cephalochordata their classes and specific examples..

C02: Understand the taxonomy and salient features of Sub phylum Vertebrata, divisions Agnatha and Gnathostomata, super class Pisces and its various classes with typical examples

C03: Understand the accessory respiratory organs in fish.

C04: Understand the morphological aspects, structural and functional characteristics of frog.

C05: Understand salient features of class Reptilia, its various subclasses with examples, identifying poisonous and nonpoisonous snakes.

C06: Understand Avian characteristics, its taxonomy and flight adaptations.

C07: Understand the general characteristics of Class Mammalia and its classification.

C08: Understand adaptations in aquatic mammals.

Animal Diversity – Chordata

Course Title: Animal Diversity – Chordata
Course Code: 19U2PCZ002
Semester: Two

Course Outcomes

- C01:** Apply taxonomic principles and identify animals belonging to various phyla and classes by their scientific names.
- C02:** Apply scientific principles and draw vertebrate specimens belonging to different classes
- C03:** Analyse the viscera, digestive system, arterial system, sciatic plexus and brain of frog
- C04:** Analyze placoid scales in fish.
- C05:** Analyse and examine the vertebrae and girdles of frog
- C06:** Apply taxonomic principles to identify snakes