

**Government of Karnataka
Department of Collegiate Education
Government First Grade College Raichur**

2021-2022

Course outcomes of all the Programmes offered by the institution

(ANNEXURE-2.11)
Criterion 02
(Metric -2.5.1)

Name of the Programme	Name of the Course	Programme Outcomes
BCA(CBCS)	Computer Fundamentals	1. Understand Theory Of Digital Design And Computer Organization To Provide An Insight Of How Basic Computer Components Are Specified. 2. Understand The Functions Of Various Hardware Components And Their Building Blocks 3. An in depth understanding of how different hardware components are related and work in coordination 4. An ability to understand computer buses and input/output peripherals
	Problem Solving Using C	1. Explore algorithmic approaches to problem solving. 2. Ability to analyze a problem and devise an algorithm to solve it. 3. Able to formulate algorithms, pseudo codes and flowcharts for arithmetic and logical problems. 4. Ability to implement algorithms in the 'C' language.

	<p>Digital Electronics</p> <p>Discrete Mathematics</p>	<ol style="list-style-type: none">5. Develop modular programs using control structures and arrays in 'C'.6. Able to devise pseudo code and flowchart for computational problems.7. Understand how to write, debug and execute simple programs in C. <ol style="list-style-type: none">1. To get familiar with concepts of digital electronics.2. To study arithmetic circuits, combinational circuits and sequential circuits3. Understand And Appreciate Boolean Algebraic expressions to digital design4. An in depth understanding of sequential! Combinational circuits <p>Understanding the concepts of discrete mathematics.</p> <ol style="list-style-type: none">1. Learning applications of discrete structures in Computer Science.2. Express a logic sentence in terms of predicates, quantifiers, and logical connectives.3. Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion.4. Demonstrate different traversal methods for trees and graphs.
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**Object-oriented
Programming in C++**

**Data Base Management
System**

6. Model problems in Computer Science using graphs and trees

- 1. Able to understand the concept of object oriented programming.
- 2. Use the benefits of object oriented design and understand when it is an appropriate methodology to use.
- 3. Design object oriented solutions for small systems involving multiple objects.

Gain a good understanding of the architecture and functioning of database management systems as well as associated tools and techniques, principles of data modeling using entity relationship and develop a good database design and normalization techniques to normalize a database.

Understand the use of structured query language and its syntax, transactions, database recovery and techniques for query optimization.

Acquire a good understanding of database systems concepts and to be in a position to use and design databases for different applications

	<p>Computer-Oriented Statistical Method</p> <p>Data Structures and File Processing</p> <p>Operating System</p>	<ol style="list-style-type: none"> 1. The main purpose of statistics is to provide a brief summary of the samples and the measures done on a particular study. 2. To provide basic information about variables in a dataset. 3. It will help students develop skills in thinking and analyzing problems from a probabilistic and statistical point of view. 4. It will provide difference between Discrete and continuous distributions. <ol style="list-style-type: none"> 1. Understand different methods of organizing large amount of data using data structure. 2. Able to choose appropriate data structure as applied to specified problem definition. 3. Understand various techniques for representation of the data in the real world. 4. Able to compute the complexity of various algorithms. 5. Able to understand internal structure of compiler and interpreters. <ol style="list-style-type: none"> 1. Learn different types of operating systems along with concept of file
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	<p style="text-align: center;">JAVA Programming</p> <p style="text-align: center;">Software Engineering</p>	<p>systems and CPU scheduling</p> <p>Algorithms used in operating system.</p> <p>2. Provide students knowledge of memory management and deadlock handling algorithms.</p> <p>3. Implement various algorithms required for management, scheduling, allocation and communication used in Operating System</p> <p><input type="checkbox"/> Understand to implement object oriented programming concepts.</p> <p><input type="checkbox"/> Understand how to design graphical user interface in Java programs.</p> <p><input type="checkbox"/> Understand how to design and develop applets.</p> <p><input type="checkbox"/> Able to design User Interface using Swing and AWT.</p> <p><input type="checkbox"/> Understand concept of packages and study how to implement them.</p> <p>1. Able to design and conduct experiments, as well as to analyze and interpret data.</p> <p>2. Able to identify, formulate, and solve engineering problems.</p> <p>3. Able to analyze, design, verify, validate, implement, apply, and maintain software systems.</p> <p>4. Able to understand different phases of SDLC.</p>
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Web Technologies

- Understand, analyze and apply the role of languages like HTML, DHTML, CSS, XML, JavaScript, VBScript, ASP, PHP and protocols in the workings of the web and web applications. Analyze a web project and identify its elements and attributes in comparison to traditional projects.
- Understand, analyze and create web pages using HTML, DHTML and Cascading Styles Sheets.
- Understand, analyze and build dynamic web pages using JavaScript and VB Script (client side programming).
- Understand, analyze and build interactive web applications.
- Understand, analyze and build web applications using PHP.
- 6. Understand, analyze and create XML documents and XML Schema

Data Communications and Networks

- Understand basic computer network technology.
- Understand and explain Data Communications System and its components.
- Able to identify the different types of network topologies and protocols.
- Enumerate the layers of the OSI model and

**BSc(Computer Science)
CBCS**

**Object-oriented
Programming in C++**

TCP/IP. Explain the function(s) of each layer.

- Identify the different types of network devices and their functions within a network .
- Understand the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

1. Use the benefits of object oriented design and understand when it is an appropriate methodology to use.

2. Design object oriented solutions for small systems involving multiple objects.

- Understand the difference between object oriented programming and procedural oriented language and data types in C++.

- Program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.

- Simulate the problem in the subjects like Operating system, Computer networks and real world problems

**Data Structures and File
Processing**

1. Understand different methods of organizing large amount of data using data structure.
2. Able to choose appropriate data

	<p data-bbox="532 611 841 646">Numerical Computing</p> <p data-bbox="532 1524 927 1598">Analysis and Design of Algorithms</p>	<p data-bbox="1076 98 1482 170">structure as applied to specified problem definition.</p> <ol data-bbox="1027 180 1490 478" style="list-style-type: none">3. Understand various techniques for representation of the data in the real world.4. Able to compute the complexity of various algorithms.5. Able to understand internal structure of compiler and interpreters. <ol data-bbox="1027 615 1497 1381" style="list-style-type: none">1. Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.2. Apply numerical methods to obtain approximate solutions to mathematical problems.3. Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.4. Analyze and evaluate the accuracy of common numerical methods. <ul data-bbox="1019 1518 1505 1892" style="list-style-type: none"><input type="checkbox"/> Design and analyze the time and space efficiency of the data structure<input type="checkbox"/> Design an algorithm by selecting appropriate design strategies.<input type="checkbox"/> Identity the appropriate data structure for given problem<input type="checkbox"/> Have practical knowledge on the application of data structures
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	<p style="text-align: center;">Android Programming</p> <p style="text-align: center;">JAVA Programming</p> <p style="text-align: center;">Information Security</p>	<ul style="list-style-type: none">☐☐ Apply graph and tree traverse technique to various applications.6. Implement dijkstra's algorithm, binary trees, travelling Sales person Problem <ol style="list-style-type: none">1. Understand about the architecture and features of Android2. Understand about the Android user interface3. Learn to use SQLite Database in Android4. Introduction and use of to JSON and XML <ol style="list-style-type: none">1. Understand to implement object oriented programming concepts.2. understand how to design graphical user interface in Java programs.3. Understand how to design and develop applets.4. Able to design User Interface using Swing and AWT.5. Understand concept of packages and study how to implement them. <ul style="list-style-type: none">☐☐ Understand the basic working of Internet and its main services.☐☐ Know various features, advantages and disadvantages of internet.☐☐ Learn to create blogs.☐☐ Understand how internet can be used in teaching and learning.
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BCA (NEP)

Fundamentals of Computers

- Acquire knowledge about Cyber Crime and the facilities for secure use of computers.
- Learn the causes, symptoms and prevention of cyber addiction.

1. Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
2. Operating systems, functions of operating systems, classification of operating systems, kernel, shell, basics of Unix, shell programming, booting
3. Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in not in
4. Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
5. Web Programming basics, introduction of HTML and CSS programming • Introduction of computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Programming in C

1. Confidently operate Desktop Computers to carry out computational tasks • Understand working of Hardware and

		<p>Software and the importance of operating systems</p> <ol style="list-style-type: none"> 2. Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts 3. Read, understand and trace the execution of programs written in C language 4. Write the C code for a given problem 5. Perform input and output operations using programs in C 6. Write programs that perform operations on arrays 7. Study and solve problems related to connectives, predicates and quantifiers under different situations. 8. Develop basic knowledge of matrices and to solve equations using Cramer's rule. 9. Know the concept of Eigen values. 10. To develop the knowledge about derivatives and know various applications of differentiation. 11. Understand the basic concepts of Mathematical reasoning, set and functions
	Mathematical Foundation	
	Data Structures using C	<ol style="list-style-type: none"> 1. Describe how arrays, records, linked structures, stacks, queues,

	<p style="text-align: center;">Object Oriented Programming with JAVA</p>	<p>trees, and graphs are represented in memory and used by algorithms</p> <ol style="list-style-type: none"> 2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs 3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs 4. Demonstrate different methods for traversing trees 5. Compare alternative implementations of data structures with respect to performance 6. Describe the concept of recursion, give examples of its use 7. Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing <ol style="list-style-type: none"> 1. Understand the features of Java and the architecture of JVM 2. Write, compile, and execute Java programs that may include basic data types and control flow constructs and how type casting is done 3. Identify classes, objects, members of a class and relationships among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance
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	<p>Discrete Mathematical Structures</p> <p>Database Management Systems (DBMS)</p>	<ol style="list-style-type: none"> 4. The students will be able to demonstrate programs based on interfaces and threads and explain the benefits of JAVA's Exceptional handling mechanism compared to other Programming Language 5. Write, compile, execute Java programs that include GUIs and event driven programming and also programs based on files <ol style="list-style-type: none"> 1. To understand the basic concepts of Mathematical reasoning, set and functions. 2. To understand various counting techniques and principle of inclusion and exclusions. 3. Understand the concepts of various types of relations, partial ordering and 4. equivalence relations. 5. Apply the concepts of generating functions to solve the recurrence relations. 6. Familiarize the fundamental concepts of graph theory and shortest path algorithm <ol style="list-style-type: none"> 1. Explain the various database concepts and the need for database systems. 2. Identify and define database objects, enforce integrity
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	<p>C# and Dot Net Framework</p> <p>Data Communication and Networks</p>	<p>constraints on a database using DBMS.</p> <ol style="list-style-type: none"> 3. Demonstrate a Data model and Schemas in RDBMS. 4. Identify entities and relationships and draw ER diagram for a given real-world problem. 5. Convert an ER diagram to a database schema and deduce it to the desired normal form. 6. Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulation. 7. Explain the transaction processing and concurrency control techniques. <ol style="list-style-type: none"> 1. Describe Object Oriented Programming concepts like Inheritance and Polymorphism in C# programming language. 2. Interpret and Develop Interfaces for real-time applications. 3. Build custom collections and generics in C#. <ol style="list-style-type: none"> 1. Explain the transmission technique of digital data between two or more computers and a computer network that allows computers to exchange data. 2. Apply the basics of data communication and various types
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	<p style="text-align: center;">Artificial Intelligence</p>	<p>of computer networks in real world applications.</p> <ol style="list-style-type: none">3. Compare the different layers of protocols.4. Compare the key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI. <ul style="list-style-type: none"><input type="checkbox"/> <input type="checkbox"/> Appraise the theory of Artificial intelligence and list the significance of AI.<input type="checkbox"/> <input type="checkbox"/> Discuss the various components that are involved in solving an AI problem.<input type="checkbox"/> <input type="checkbox"/> Illustrate the working of AI Algorithms in the given contrast.<input type="checkbox"/> <input type="checkbox"/> Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.<input type="checkbox"/> <input type="checkbox"/> Apply the AI concepts to build an expert system to solve the real-world problems.
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**Government of Karnataka
Department of Collegiate Education
Government First Grade College Raichur**

Programme outcomes for all Programmes offered by the institution

(ANNEXURE-2.12)

BCA (CBCS and NEP Syllabus) 2021-2022

Criterion 02

(Metric -2.5.1)

Name of the Programme	Programme Outcomes
BCA	<p>The students will be able to:</p> <ul style="list-style-type: none">• Understand, analyze and develop computer programs in the areas related to algorithm, web design and networking for efficient design of computer based system.• Work in the IT sector as system engineer, software tester, junior programmer, web developer, system administrator, software developer etc.• Apply standard software engineering practices and strategies in software project development using open source programming environment to deliver a quality of product for business success.• Equip themselves to potentially rich & employable field of computer applications.• Pursue higher studies in the area of Computer Science/Applications.• Take up self-employment in Indian & global software market.

BSc(Computer Science)

- Meet the requirements of the Industrial standards.
- Develop ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.
- To prepare students to undertake careers involving problem solving using computer science and technologies.
- Develop ability to pursue advanced studies and research in computer science.

To produce entrepreneurs who can innovate and develop software produce.

BCA (NEP syllabus)

1. **Discipline**

knowledge: Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity

2. **Problem Solving:** Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.

3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems.

Establishing excellent skills in applying

various design strategies for solving complex problems.

4. **Programming a computer:**

Exhibiting strong skills required to program a computer for various issues and problems of day-to-day applications with thorough knowledge on programming languages of various levels.

5. **Application**

Systems Knowledge:

Possessing a sound knowledge on computer application software and ability to design and develop app for applicative problems.

6. **Modern Tool Usage:**

Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.

7. **Communication:** Must

have a reasonably

good communication knowledge both in oral and writing.

8. **Project**

Management: Practicing of existing projects and becoming independent to launch own project by identifying a gap in solutions.

9. **Ethics on Profession, Environment and Society:**

Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.

10. **Lifelong Learning:** Should become an independent learner. So, learn to learn ability.

9. **Motivation to take up Higher Studies:**

Inspiration to continue educations towards advanced studies on Computer Science

DEPARTMENT OF PHYSICS

Program Specific Outcomes	Demonstrate an understanding of core Knowledge in Physics
	students will demonstrate written and oral communication skills in communicating Physics -related topics
	Students will demonstrate an understanding of the impact of physics and science on society
	Students will design and conduct an experiment (or series of experiments) demonstrating their understanding of the scientific method and process.
Course	Program Outcomes
B.Sc 1st Sem Mechanics (NEP)	An Ability to identify formulates & solve complex engineering problems by applying principal of engineering, sciences mathematics.
B.Sc IInd Sem Electricity & Magnetism (NEP)	Apply Knowledge of electricity and magnetism to explain natural physical process and related technological advances. Use an understanding of calculus along with physical principal to effective solve problems encountered in everyday life ,further study in science, and in the professional world.

<p>B.Sc III rd Sem Wave Motion & optics(NEP)</p> <p>B.Sc IVth Sem Thermal physics &Electronics (NEP)</p>	<p>The program outcome with disciplinary knowledge , research skills, critical thinking, team work .</p> <p>It identifies different types of waves by looking into their characteristics</p> <p>Describe different models of light propagation, Depts. like Michelson interferometer, interference, diffraction, and polarisation.</p> <p>Program outcome</p> <p>It has disciplinary knowledge, moral and ethical awareness, reasoning, problem solving, communication skills</p> <p>Applying the laws of thermodynamics and analyse the thermal system. use the concepts of semiconductors such as BJT,FET, Transistors, etc.,</p>
<p>B.Sc Vth sem P1: Quantum mechanics</p> <p>P2: Solid state Physics</p> <p>Section Paper1: Physics work shop skill</p>	<p>General Formalism of Quantum Mechanics, mixed states, wave packets, uncertainty relation, representation in quantum mechanics, picture of quantum mechanics, Eigen value problem, matrix mechanics angular momentum, clebsch-Gordon coefficients, time independent perturbation theory, Zeeman effect, stark variation method, time dependent perturbation method, interaction picture, Fermi's golden rule, WKB approximation, semi classical reduction.</p> <p>The course gives an introduction to solid state physics, and will enable the student to employ classical and quantum mechanical theories needed to understand the physical properties of solid.</p> <p>Physical programme provides the candidate the required knowledge, general Competence, and analytical skill on an advanced level, needed in industry Consultancy, education, research, or in public administration.</p> <p>Apply the fundamental of instrumentation in measurements and calibration of instruments Make use of instrument with appropriate specification and design of extension of range instrument.</p>

<p>Section paper 2 : basic instruction</p>	<p>Demonstrate the use of oscilloscopes for electrical parameter measurement. Select the digital instrument for the measurement of given parameter</p>
<p>B.sc VIth sem P1: Nuclear and partical physics</p> <p>P2: Medical Physics</p> <p>Section Paper 1: Radiation safety</p> <p>Section paper 2: Renewable energy and energy harvesting</p>	<p>In low energy nuclear physics we research the forces binding nuclear together and nuclear structures and dynamics, as well as nuclear reactions and their probabilities. Nuclear as- trophysics research nuclear reactions in astro physical environments, such as stars, super- novae and neuron star collisions in order to better understand the creation of the elements.</p> <p>Knowledge of the normal structure and function of the body and its major organ system with emphasis on content applicable to clinical diagnostic imaging and/or radiation oncology</p> <p>Knowledge of radiation and radioactivity, its properties, unites of measure dosimetry measurement concepts and methods</p> <p>Knowledge of the biological effects of radiation and its application for radiation safety and for radiation treatment.</p> <p>This draft Learning Guide document provides initial information relating to trainees recruited onto the medical physics theme that will be following Radiation safety physics pathway and provides information for provides and trainees for the first phase of work based training.</p> <p>To understand the different kinds of energy sources. To study the basis of solar energy and solar radiation measurement. To learn the fundamental principal and theory of wind energy conversion system.</p> <p>This course helps the students to understand the concepts of hydropower system. Biomass, bio gasification and liquefaction, biogas plants, power generation system using biofuels, ocean thermal energy, wave energy conversation, geothermal energy. students will acquire knowledge about the renewable energy resources.</p>

Commerce Course Outcomes:

Financial Accounting:

Course Outcomes: On successful completion of the course, the Students will be able to:

- a) Understand the theoretical frame work of accounting as well accounting standards.
- b) Demonstrate the preparation of financial statement of manufacturing and non-manufacturing entities of sole proprietors.
- c) Exercise the accounting treatments for consignment transactions & events in the books of consignor and consignee.
- d) Understand the accounting treatment for royalty transactions & articulate the Royalty agreements.

Outline the emerging trends in the field of accounting.

Management Principles and Applications

- a) Understand and identify the different theories of organisations, which are relevant in the present context.
- b) Design and demonstrate the strategic plan for the attainment of organizational goals.
- c) Differentiate the different types of authority and chose the best one in the present context.
- d) Compare and chose the different types of motivation factors and leadership styles.

Choose the best controlling techniques for better productivity of an Organisation

Name of the Course: Principles of Marketing:

Course Out comes:

On successful completion of the course, the Students will be able to

- f) Understand the basic concepts of marketing and asses the marketing environment.
- g) Analyse the consumer behavior in the present scenario and marketing segmentation.
- h) Discover the new product development & identify the factors affecting the price of a product in the present context.
- i) Judge the impact of promotional techniques on the customers & importance of channels of distribution.

Outline the recent developments in the field of marketing.

Name of the Course: Accounting for Everyone:

- k) Analyse various terms used in accounting;
- l) Make accounting entries and prepare cash book and other accounts necessary while running a business;
- m) Prepare accounting equation of various business transactions;
- n) Analyse information from company's annual report;
Comprehend the management reports of the company

Name of the Course: Financial Literacy

Course Outcomes: On successful completion of the course, the Students will be able to

1. Describe the importance of financial literacy and list out the institutions providing financial services;
2. Prepare financial plan and budget and manage personal finances;
3. Open, avail, and manage/operate services offered by banks;
4. Open, avail, and manage/operate services offered by post offices;
Plan for life insurance and property insurance & select instrument for investment in shares

Name of the Course: Advanced Financial Accounting

Course Outcomes:

On successful completion of the course, the Students will be able to

- p) Understand & compute the amount of claims for loss of stock & loss of Profit.
- q) Learn various methods of accounting for hire purchase transactions.
- r) Deal with the inter-departmental transfers and their accounting treatment.
- s) Demonstrate various accounting treatments for dependent & independent branches.
Prepare financial statements from incomplete records

Name of the Course: Business Mathematics

- a) Understand the number system and indices applications in solving basic business problems.
- b) Apply concept of commercial arithmetic concepts to solve business problems.
- c) Make use of theory of equation in solving the business problems in the present context.
- d) Understand and apply the concepts of Set Theory, Permutations & Combinations and Matrices solving business problems.
Apply measurement of solids in solving simple business problems.

Name of the Course: Corporate Administration

- u) Understand the framework of Companies Act of 2013 and different kind of companies.
- v) Identify the stages and documents involved in the formation of companies in India.
- w) Analyse the role, responsibilities and functions of Key management Personnel in Corporate Administration.
- x) Examine the procedure involved in the corporate meeting and the role of company secretary in the meeting.

Evaluate the role of liquidator in the process of winding up of the company.

Name of the Course: Law and Practice of Banking

- z) Summarize the relationship between Banker & customer and different types of functions of banker.
- aa) Analyse the role, functions and duties of paying and collecting banker.
- bb) Make use of the procedure involved in opening and operating different accounts.
- cc) Examine the different types of negotiable instrument & their relevance in the present context.
- dd) Estimate possible developments in the banking sector in the upcoming days.

Name of the Course: Financial Environment

- ee) Understand the fundamentals of Indian Economy and its significance.
- ff) Evaluate the impact of monetary policy on the stakeholders of the Economy.
- gg) Assess the impact of fiscal policy on the stakeholders of the Economy.
- hh) Examine the status of inflation, unemployment and labour market in India
- ii) Infer the financial sector reforms in India.

Name of the Course: Investing in Stock Markets

- jj) Explain the basics of investing in the stock market, the investment environment as well as risk & return;
- kk) Analyse Indian securities market;
- ll) Examine EIC frame work and conduct fundamental analysis;
- mm) Perform technical analysis;
- nn) Invest in mutual funds market

Department of chemistry

Course Objectives:

- 1) Interrelationship among frequency, wavelength and wave number and importance of validation parameters of an instrumental method will be taught
- 2) Principle, instrumentation and applications of spectrophotometry, nephelometry and turbidometry will be taught
- 3) Fundamentals of separation methods and principles of paper, thin layer and column chromatography will be taught
- 4) Principle, types and applications of solvent extraction will be taught
- 5) Principle and mechanism of ion-exchange, types of resins and domestic and industrial applications of ion-exchange chromatography will be taught
- 6) The concept of mechanism and its importance will be taught to the student
- 7) Concept and importance of intermediates in organic chemistry will be taught taking proper examples
- 8) The various techniques for identification of reaction mechanism will be taught to the student taking proper examples
- 9) Concept of stereochemistry and its importance will be taught.
- 10) The various projection formulae and the techniques of designating the molecules into R, S, D, L will be taught taking proper examples
- 11) The theory and concept of Cis-, Trans- isomerism and its importance and the techniques to differentiate between them will be taught taking examples

Course Specific Outcomes

After the completion of this course, the student would be able to

- 1) Understand the importance of fundamental law and validation parameters in chemical analysis
- 2) Know how different analytes in different matrices (water and real samples) can be determined by spectrophotometric, nephelometric and turbidometric methods.
- 3) Understand the requirement for chemical analysis by paper, thin layer and column

chromatography.

- 4) Apply solvent extraction method for quantitative determination of metal ions in different samples
- 5) Utilize the ion-exchange chromatography for domestic and industrial applications
- 6) Explain mechanism for a given reaction.
- 7) Predict the probable mechanism for an reaction Explain the importance of reaction intermediates, its role and techniques of generating such intermediates
- 8) Explain the importance of Stereochemistry in predicting the structure and property of organic molecules.
- 9) Predict the configuration of an organic molecule and able to designate it.
- 10) Identify the chiral molecules and predict its actual configuration.

**Syllabus for B.A./B.Sc. with Mathematics as Major Subject &
B.A./B.Sc. (Hons) Mathematics**

SEMESTER – I

MATDSCT 1.1: Algebra - I and Calculus - I	
Teaching Hours : 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max. Marks: 100 (S.A.-70 + I.A. – 30)

Course Learning Outcomes: This course will enable the students to

- Learn to solve system of linear equations.
- Solve the system of homogeneous and non homogeneous linear of m equations in n variables by using concept of rank of matrix, finding eigen values and eigen vectors.
- Sketch curves in Cartesian, polar and pedal equations.
- Students will be familiar with the techniques of integration and differentiation of function with real variables.
- Identify and apply the intermediate value theorems and L'Hospital rule.

Unit-I: Matrix: Recapitulation of Symmetric and Skew Symmetric matrices, Cayley-

Mathematics:

Course Learning Outcomes:

This course will enable the students to:

- Solve first-order non-linear differential equations and linear differential equations.
- To model problems in nature using Ordinary Differential Equations.
- Formulate differential equations for various mathematical models
- Apply these techniques to solve and analyze various mathematical models.
- Understand the fundamental properties of the real numbers that lead to define sequence and series, the formal development of real analysis.
- Learn the concept of Convergence and Divergence of a sequence.
- Able to handle and understand limits and their use in sequences, series, differentiation, and integration.
- Apply the ratio, root, alternating series, and limit comparison tests for convergence and absolute convergence of an infinite series.

PRACTICAL

Course Learning Outcomes:

This course will enable the students to gain hands-on experience of

- Free and Open Source software (FOSS) tools or computer programming.
- Solving exact differential equations
- Plotting orthogonal trajectories
- Finding complementary function and particular integral of linear and homogeneous differential equations.
- Acquire knowledge of applications of real analysis and differential equations.
- Verification of convergence/divergence of different types of series

BOTANY- PLANT ANATOMY AND DEVELOPMENT BIOLOGY

COURSE OUTCOMES:

On Completion of this course, the students will be able to:

1. Observation of variations that exists in internal structure of various parts of a plant as well as among different plant groups in support for the evolutionary concept.
2. Skill Development for the proper description of internal structure using botanical terms, their identification and further classification.
3. Induction of the enthusiasm of internal structure of locally available plants.
4. Understanding various levels of organisations in a plant body with an outlook in the relationship between the structure and function through comparative studies.
5. Observations and classification of the floral variations from the premises of college and house
6. Understanding the various reproductive methods sub-stages in the life cycle of plants
7. Observations and classification of the embryological variations in angiosperms
8. Enthusiasm to understand evolution based on the variations in reproduction among Plants.

Gulbarga



University

**Board of Studies in English (UG) Curriculum Framework for English on Multi-Disciplinary Programme as per NEP-2020
Choice Based Credit System Semester Scheme with Multiple Entry and Exit Options**

**CURRICULUM STRUCTURE FOR THE UNDERGRADUATE DEGREE PROGRAM
SEMESTER III
DISCIPLINE SPECIFIC CORE COURSE(DSCC)
BA (HONS.) ENGLISH**

Starting Year of Implementation: 2022-23 (For students admitted to the Third Semester in 2022-23)

Discipline/Subject: Discipline Specific Course (DSC)

Name of the Degree Programme: BA (HONS.)

English Total Credits for the Programme: 03

Teaching Hours per Week: 4

PROGRAMME SPECIFIC OUTCOMES (PSO):

On completion of the 03/04 years Degree in Optional English, students will be:

1. Exposed to and demonstrate a broad knowledge of major and minor writers, texts and contexts and defining issues of canonical and non-canonical literature
2. Enriched by familiarity with other literatures and more importantly with Indian writers, their ethos and tradition of writing and discourse
3. Honing their skills of remembering, understanding, applying, analyzing, evaluating and creating literature
4. Able to write with clarity, creativity and persuasiveness
5. Developing and demonstrating their awareness of the significance of literature and literary forms and the debates of culture they generate as values
6. Equipped with advanced literary, linguistic skills
7. Able to develop Competency in the use of English from/for a variety of domains
8. Able to inculcate a spirit of inquiry and critical thinking
9. Be able to articulate thoughts and generate/understand multiple interpretations
10. Able to locate and contextualize texts across theoretical orientations and cultural spaces
11. Possessing Reading and writing skills catering to academic and other professional disciplines viz. print and electronic media, advertising, content writing etc.
12. Imbibing a multi-disciplinary approach in higher education and research
13. Skilled in multiple domains and careers
14. Adept in using English in the current technological climate
15. Having hands-on work experience

Dr. N. N. N. N. N.
CHAIRMAN