KVRSS`S

SHIVRAJ COLLEGE GADHINGLAJ

Department of computer science

(B.Sc computer science Entire/BCS)

- **Program Outcomes (PO)**

1. Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and applied sciences.
2. Apply computer science theory and software development fundamentals to produce computing–based solution.
3. The education **objectives** of the major to produce graduates who possess: A sound technical foundation in **computer science** and the ability to creatively apply **computer** and related technologies to practical problems.
4. An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession.
5. Create, select, and apply appropriate techniques, resources, and modern computing and IT tools including prediction and modeling to complex scientific activities with an understanding of the limitations.
6. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
7. Students will be prepared for a career in an information technology oriented business or industry, or for graduate study in computer science.
8. An ability to analyze impacts of computing on individuals, organizations, and society.
9. An ability to apply knowledge of **computing** and mathematics appropriate to the discipline.
10. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

B.Sc-I Semester-I (Computer Science Entire)

- **CC101 Paper-I Fundamentals of Computer**
- **Course outcomes:**

At the end of the course student should be in a position to

1. The students are able to understand basic components in computers.
2. Understand basic system software and its applications software
3. Understand basic computer hardware and network system
4. Understand basic network protocols

- **CC102 Paper-II Programming in C Part-I**
- **Course outcomes:**

At the end of the course student should be in a position to

1. Describe the basics of computer and understand the problem solving aspect.
2. Ability to develop programs of 'C' using Ubuntu Linux Operating System
3. Design and develop C program to evaluate simple expressions and logical operations.
4. Demonstrate the algorithm and flow chart for the given problem.
5. Design programs using operators available in C.
6. Understand the need for data types in programming.
7. Write modular programs using suitable control structure.

- **GEC-103 Paper I Electronics Devices and Circuits - I**
- **Course Outcomes: After studying this course the students are able to**
  1. Understand basic components in computer
  2. Understand PN junction diode and its applications
  3. Bipolar Junction Transistors and Applications of Bipolar junction Transistor.

- **GEC-104 Paper-II Digital Electronics-I**
- **Course Outcomes: After studying this course the students are able to**
  1. After studying this course the students are able to – □ Understand different number systems and codes
  2. Understand logic gates and basics of Boolean algebra
  3. Study the combinational logic, Encoders,Decoders.
  4. Acquire skills in sequential circuits and counters.

Course Title: - GEC-105 DiscreteMathematics.
Course Outcome

- To understand logical concepts and to show logical equivalences by using truthtables and rules inlogics.
- Learn concept related tocounting.
- Introduction to advancedcounting

Course Title:-GEC-106 Algebra. Course Outcomes:-

- Learn to solve system of linearequation.
- Learn to solve Diophantineequation.
- Learn to find roots of polynomial overrational.
- Learn to find graphs, roots and primes integer using maximasoftware.
- Introduction to complex analysis.

- **GEC-107 Statistics Paper I**
- **Course Titile: Descriptive Statistics-I**
- **Course Outcomes:**

1. Knowing the concepts of data, classification of data ,graphical methods toCondense the data.
2. Knowing how to condense the data into single value which is part of central tendency.
3. Ability to study variation between the data and comparison between data sets.
4. Knowing the departure from symmetry, shape and height of frequency curve.

- **GEC-108 Statistics Paper II**
- **Course Title: Probability theory and Discrete Probability Distributions**
- **Course Outcomes**::

1. Knowing the concept of permutation, combination and probability.
2. Ability to knowing of independence of events, concept of conditional probability.
3. Knowledge of discrete random variable,it's pmf, cdf, mean and variance
4. Ability of studying discrete distributions like Uniform, Binomial and Poisson.

B. Sc. Part- I Computer Science Entire (Semester II)
Course Code: DSC-201: Computer Paper-III
Course Title: Linux Operating System

Course Outcome :At the end of the course student should be in a position to

- After studying this course the students are able to understand basic computer operating system
- Understand basic applications software for this operating system
- Understand basic shell programming
- Understand basic concept of inter net
- Understand basic internet protocols

Course Code: DSC-202: Computer paper-II

Course Title: Programming in 'C' Part-II

Total Contact Hours: 36 hrs (45 lectures of 48 min)

Credits: 02 Teaching Scheme: Theory – 03 Lect. / Week Total Marks: 50

Course outcomes:

At the end of the course student should be in a position to

1. Develop & Implement C programs with suitable modules to solve the given problem.
2. Develop structured programs using function.
3. Demonstrate the concept of pointer and perform I/O operations in files.
4. Design and develop solutions to real world.

- **B.Sc -I Entire Semester- II Electronics Paper- III**
- **GEC-203 Electronics Devices and Circuits – II**
- **Course outcomes:**

After studying this course the students are able to –

- Understand FET and applications of it.
- Study the amplifiers and oscillators.
- Understand Concept of Differential Amplifier and Comparator.

- **B.Sc -I Entire Semester- II Electronics Paper- IV**
- **GEC-204 Digital Electronics - II**

Course Outcomes: After studying this course the students are able to

- Understand Multivibrators and its types
- Study Memory Devices and its Types
- Study features, pin diagram and architecture of 8085
- Understanding the instruction set of 8085 and programming

- **B.Sc -I Entire Semester- II Electronics Paper- IV**
- **Course Title –GEC-205 Graph Theory**
- **Course Outcome**.

- To introduce the concept of graphs .
- To Study different types of graphs and operations on graphs.
- To Study concept of Trees in detail and algorithms to find special spanning trees
- To study directed graph and its applications

- **Course Title: GEC-206 Calculus**
- **Course Outcome**

•Student will be to understand differentiation and fundamental theorem indifferentiation and variousrules.

•Geometrical representation and problem solving on MVT and Rollstheorem.

•Finding extreme values offunction.

- Introduction to Ordinary DifferentialEquation

- **B.Sc.I Computer Science Entire Part-I**
- **Coures Code: GEC-207 Statistics Paper III**
- **Course Titile: Descriptive Statistics-II**
- **Course Outcomes:**
- CO 1: Knowledge of bivariate data , correlation, types of correlation and methods to study it.
- CO 2: Knowing of estimation of value of unkown variable using value of known variable
- CO 3: Ability of studying correlation and regression for trivariate

- **B.Sc.I Computer Science Entire Part-I**
- **Coures Code: GEC-208 Statistics Paper IV**
- **Course Titile: Continuous Probability Distribution and Testing of Hypothesis**

Course Outcomes:

- CO 1: Ability of studying continuous random variable, it's pdf, mean, variance and cdf
- CO 2: Knowledge of continuous probability distribution like Uniform, Exponential, Normal, t
- and F with theirproperties.
- CO 3: Knowing importance of testing of hypothesis using statistical methods.

- ## BSc (Computer Science) Entire Part II SEM III
- **Subject :- Computer Science**

- **Course code:- DSC-301: computer science paper V(SEM III)**
- **Course title: - RDBMS**
- **Course Outcomes:-**

1. CO 1: Knowing the concepts of data, information, database and database systems.
2. CO2: Ability to handle databases.
3. CO 3: Knowing the different database models used in current scenario and appreciate the applications of database systems.
4. CO 4: Ability to know the basics of SQL and construct different kinds of queries using SQL.
5. CO 5: Ability to design and develop proper databases.
6. CO 6: Getting the basics of PL/SQL with the sound knowledge of block structure, benefits, decision making and looping statements in PL/SQL.
7. CO 7: Learning one of the growing popular open source RDBMS i.e.(MYSQL) with ease and hands on it.
8. CO 8: SQL/MYSQL helps to get knowledge about data operations.

- **Course code:- DSC-302: computer science paper VI(SEM III)**
- **Course title: - Object Oriented Programming using C++**
- **Course Outcomes:-**

1. CO 1: Understanding basic concepts of object oriented programming.
2. CO2: Able to use various control structures to improve programming logic.
3. CO 3: Designing classes and objects.
4. CO 4: Able to use constructor and destructor.

CO 5: Utilize the OOP techniques like operator overloading,inheritance, and polymorphism.

Subject :- Electronics

- **Course Outcomes**
- **Semester – III Electronics Paper – V**
- **GEC-303 Computer Organization**

- **Course Outcomes: After studying this course the students are able to –**

1. Understand Digital Circuit Design & designing using K-Map
2. Understand Memory Organization & Memory Mapping Techniques
3. Understand Serial Communication,DMA Controller and Input Output Processor.
4. Study of CPU Organization.

- **Semester – III Electronics Paper – VI**
- **GEC-304 Computer Instrumentation**

Course Outcomes: After studying this course the students are able to –

1. Study Measurements,Units,Transducers and classification of it.
2. Understand Filters,ADC,DAC
3. Understand Electrical Actuators & DAS with its type
4. Study of Digital Instruments (Universal Counter,Tachometer)

- **Subject – Mathematics**
- **Semester – III Mathematics Paper – V**
- **Course Outcome of (GEC-305) Linear Algebra**

After studying this courseStudents will able to

1. Define Vector Space, Quotient space Direct sum, linear span and linear independence, basis and innerproduct.
2. Discuss the linear transformations, rank,nullity.
3. Find the characteristic equation, eigen values and eigen vectors of amatrix.
4. Prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidtorthogonalisationprocess.
5. Solve the system of simultaneous linearequations.

- **Semester – III Mathematics Paper – VI**
- **Course Outcome of (GEC-306)Numerical Analysis**
- **After studying this courseStudents will able to–**

1. Define Basic concepts of operators Δ, E, ∇
2. Find the difference ofpolynomial
3. SolveproblemsusingNewtonforwardformulaandNewtonbackwardformula.
4. DeriveGauss'sformulaandStirlingformulausingNewtonforwardformulaand Newton backwardformula.
5. Find maxima and minima for differencial differenceequation

6. Derive Simpson's 1/3 ,3/8 rules using trapezoidalrule
7. Find the solution of the first order and second order equation with constant coefficient
8. Find the summation of series finite differencetechniques
9. Find the solution of ordinary differential equation of first by Euler,Taylor and Runge-Kuttamethods

- **Course code:- DSC-401: computer science paper VII(SEM IV)**
- **Course title: - Data Structure using C++**
- **Course Outcomes:-**

1. CO 1: At the end of this course,studentsshoul be able to understand the most basic aspects of data structures including stacks, queue, linked list and trees.
2. CO2: should be able to understand different sorting and searching algorithms.
3. CO 3: Should be able to understand implementatios of linked list,stack and queue.

- **Course code:- DSC-402: computer science paper VIII(SEM IV)**
- **Course title: - Cyber Security Essentials**
- **Course Outcomes:-**

1. CO 1: Introducing and understanding an importance of Cyber Security and management.
2. CO2: Identifying different security threats and access controls.
3. CO 3: Knowing the types of security and overviewing the security management.
4. CO 4: Understanding cyber security rules and importance of security audit.
5. CO 5: Learn concept of wireless network security.

- **Semester – IV Electronics Paper – VII**
- **GEC-403 Microcontroller Architecture and Programming**
- **Course Outcomes: After studying this course the students are able to –**

1. Study Introduction to Microcontroller and Architecture of 8051
2. Understand 8051 instruction set
3. Studying the Timers and Counters & Programming the timers in Mode

4. Understand Facilities in 8051 and interfacing methods

- **Semester – IV Electronics Paper – VIII**
- **GEC-404 Communication Techniques**

- **Course Outcomes: After studying this course the students are able to –**
  1. Understand Electronic Communication & Concept of Communication System
  2. Understand Concept of Modulation and Demodulation.
  3. Acquire Knowledge of PAM,PCM,Concept of ASK,FSK,BPSK
  4. Study of wireless communication,Introduction to GPRS.

- **Semester – IV Mathematics Paper – VII**
- **Course Outcome of (GEC-405)Operation Research**
- **Course Outcomes: After studying this course the students are able to –**
  1. Define nature and feature of OperationsResearch
  2. Findthereplacementperiodofequipmentthatfailssuddenly/gradually
  3. DefineEOQ
  4. Find inventory decisions costs using deterministic inventory problems with no shortages /withshortages
  5. Find EOQ problems with pricebreaks
  6. Define CPM andPERT
  7. Define basic components of Network and find criticalpath
  8. Define queue charecteristics , transient and steadystate
  9. DefineKendalnotationssolutionofqueuemodels(M/M/1):(∞/FIFO), (M/M/1):(N/FIFO)
  10. Define Two persons sum games ,maximin-minimax principle, saddlepoints.
  11. Find graphical solution of 2×n and m×2games
  12. Find general solution of m×n rectangulargames

- **Semester – IV Mathematics Paper – VIII**

- **Course Outcome Of (GEC-406)Computational Geometry**
- **Course Outcomes: After studying this course the students are able to –**

1. Students Learn the representation of objects in 2D & 3D in form of Matrices
2. To study the transformations like Reflection, Rotation ,Scaling, Shearing, Translation of objects in 2D & 3D
3. Students learn to generate plane curves by using Parametric equation

- **B.Sc. Computer Science Entire Part –III (Semester– V)**
- **Course Code: DSE501 Paper IX**
- **Course Title: Core Java**
- **Course Outcomes:**

1. Understand Object oriented programming concepts using Java.
2. Getting Knowledge of input, its processing and getting suitable output.
3. Understand, design, implement and evaluate classes and applets
4. Understand concept of Multiprogramming and Exception Handling

- **B.Sc. Computer Science Entire Part-III (SEMESTER - V)**
- **Course Code: DSE-502: Computer Science Paper- X**
- **Course Title: C# Programming**
- **Course outcomes:**

1.Introducing Architecture of .Net framework and C#.

2. Understand working of .Net Framework.

3. Demonstrate concept of object oriented programming using C#.

4. Study importance and applications of exception handling.

5. Understand working of file handling in C#.

- **B.Sc. (Computer Science) Entire part-III (SEM V)**
- **Course Code: DSE-503: Computer Science Paper- XI**
- **Course Title: Software Engineering**

Course Outcomes: -

1. Understand the problem domain to choose process models correctly.
2. Choose software projects using appropriate design notations.
3. Measure the product and process performance using various metrics.
4. Evaluate the system with various testing techniques and strategies
5. Able to analyse, design, verify, validate, implement, and maintain software systems.

- **B.Sc.(Computer Science)Entire Part-III SEMESTER - V**
- **Course Code: DSE-504: Computer Science Paper-XII**
- **Course Title: Machine Learning Part- I (Elective Course-I)**
- **Course Outcomes**

1. Develop an appreciation for what is involved in learning models from data.
2. Understand a wide variety of learning algorithms.
3. Understand how to evaluate models generated from data.

- **B.Sc. Computer Science Entire Part-III SEMESTER - V**
- **Course Code: AECC-E: English Paper-III**
- **Course Title: English for communication- III**
- **CourseOutcomes:**
  1. comprehend communication process, methods of communication and flow of communication in business context.
  2. Apply acquired LSRW skills into real life situations and in professional context
  3. Compose effective business letters using standard language, style and structure

- **B.Sc. Part –III Computer Science Entire (Semester– VI)**

- **Course Code: DSE 601 Paper XIII**
- **Course Title: Advanced Java**
- **Course Outcomes:** At the end of the course student should be in a position to
    1. He will be able to develop distributed business applications, develop web pages using advanced server-side programming through servlets and Java server pages.
    2. Demonstrate approaches for performance and effective coding.
    3. To learn database programming using Java.
    4. To study web development concept using Servlet and JSP.

- **B.Sc. Computer Science Entire Part-III (SEMESTER – VI**
- **Course Code: DSE-602: Computer Science Paper- XIV**
- **Course Title: ASP.NET**
- **Course outcome:**

1. Understand working of Asp.Net web application

2. Demonstrate Asp.Net server controls.

3. Study database operations using ADO.Net.

4. Understand importance and working of state management.

- **B.Sc. Computer Part-III Science Entire SEMESTER – VI**
- **Course Code: DSE-603: Computer Science Paper- XV**
- **Course Title: Software Project Management**
- **Course Outcomes:**

1. Implement the basics of Project Management.

2. Choose correct Scheduling Techniques as per the software.

3. Develop Team Development skills and reduce conflicts.

4. Implement various Software Quality Standards.

5. Using CASE tools, Software Re-Engineering for creating efficient softwares.

- **B.Sc. Computer Part-III Science Entire SEMESTER – VI**

- **Code: DSE-604: Computer Science Paper- XVI**
- **Course Title: Machine Learning Part-II (Elective Course-II)**
- **Total Contact Hours: 48 hrs. (60 lectures of 48 min)**

Course Outcomes:

1. Understand complexity of Machine Learning algorithms and their limitations.
2. Understand modern notions in data analysis-oriented computing.
3. Apply common Machine Learning algorithms in practice and implementing their own.
4. Perform distributed computations.

- **B.Sc. Computer Science Entire Part-III**
- **Course Code: AECC-F: English Paper-IV**
- **Course Outcomes:**
  1. Comprehend the employment skills to have an effective first impression
  2. Construct effective technical reports and prepare effective presentations
  3. Use various interpersonal skills as per the need of situation and context