

B.Sc. Computer Science (NEP-2024)

Program Objective (PO)

PO No	Outcomes
P01	Develop creative skills, critical thinking, analytical skills and research to address the real world problems using computational skills
P02	Understand and apply mathematical foundation, computing and domain knowledge and develop computing models for defined problems
P03	Understand software project management and computing principles with computing knowledge to manage projects in multidisciplinary environments
P04	Illustrate the concepts of systems fundamentals, including architectures and organization, operating systems, networking and communication
P05	Understand and apply the concepts of Digital Electronics, Computer Architecture, IoT etc.
P06	Recognize the need for and develop the ability to engage in continuous learning as a Computing professional
P07	Apply modern computing tools, skills and techniques necessary for innovative software solutions
P08	Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations
P09	Gain Self Discipline and commit Professional Ethics in global economic environment
P010	Individual & Team Work: Ability to work as a member or leader in diverse teams in multidisciplinary environment
P011	Identify opportunities, entrepreneurship vision and use innovative ideas to create value and wealth for the betterment of the individual and society

Program Specific Objective (PSO)

- To develop problem solving abilities using a computer.
- To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
- To train students in professional skills related to the Software Industry.

- To prepare the necessary knowledge base for research and development in Computer Science.
- To help student's build-up a successful career in Computer Science and to produce entrepreneurs who can innovate and develop software products.

Course Outcomes

F.Y.B.Sc. (Computer Science) - Sem – I

Course Type: Subject 1

Code: CS-101-T

Course Title: Problem Solving Using C Programming

Course Outcomes:

- Explore algorithmic approaches to problem solving.
- Control the sequence of the program and give logical outputs.
- Understand and manage Input /Output operations in 'C' program
- Develop modular programs using control structures and arrays in 'C'.

Course Type: Subject 1

Code: CS-102-P

Course Title: Lab Course based on CS-101-T

Course Outcomes:

- Explore and develop the algorithmic approaches to problem solving.
- Understand and implement modular programs using control structures and arrays in 'C'.
- Implement programming logic and also test, debug and execute programs.
- Implement Control the sequence of the program and give logical outputs.

Course Type: Subject 2

Code: MTC-101-T

Course Title: Matrix Algebra

Course Outcomes:

- Work with graphs and identify certain parameters and properties of the given graphs.
- Perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms.

- Solve basic exercises of the type: given a graph with properties X, prove that the graph also has property Y.
- Develop an appreciation for the literature on the subject and be able to read and present results from the literature.
- Write cohesive and comprehensive solutions to exercises and be able to defend their arguments.

Course Type: Subject 2

Code: MTC-101-P

Course Title: Mathematics Practical I

Course Outcomes:

- Perform matrix operations and solve matrix-based problems accurately.
- Apply matrix methods to solve systems of linear equations.
- Verify mathematical results using computational techniques.
- Interpret matrix solutions in applied mathematical contexts.
- Develop logical reasoning in solving algebraic problems.
- Write clear and justified solutions for practical assignments.

Course Type: Subject 3

Code: ELC-101-T

Course Title: Principles of Analog Electronics

Course Outcomes

- Understand the concept of semiconductor diodes.
- Understand the different applications of FET, BJT and MOSFET.
- Understand working principle of different sensors.
- Use Op-amp for different application.

Course Type: Subject 3

Code: ELC-102-P

Course Title: Electronics Practical Course I

Course Outcomes

- Use different semiconductor diodes for various applications.
- Understand the different applications of FET, BJT and MOSFET.
- Use of different sensors for parameter measurement

Course Type: IKS (2)

Code: IKS-100-T

Course Title: Generic IKS

Course Outcomes:

- The concept of the ancient intellectual knowledge tradition will be understood.
- Developments in science from ancient times will be introduced.
- Developments in humanities from ancient times will be understood.

Course Type: GE/OE

Code: OE108COM-T

Course Title: Financial Literacy-I

Course Outcomes:

- To understand the importance, types, principles and concept of financial literacy.
- To develop proficiency for personal and family financial planning.
- To understand the importance and types of financial planning, digital payments and its types
- To understand the financial well-being and role of modern digital payment system

Course Type: SEC (2)

Code: SEC-101-CS-P

Course Title: Statistical Methods for Computer Science I

Course Outcomes:

- Present the complex data in tabular format.
- Use various diagrammatic and graphical techniques to represent statistical data and interpret the data.
- Compute various measures of central tendency, dispersion, skewness, and kurtosis using MS-Excel and interpret the results
- Establish relation between variables and estimate response for given bivariate data using software and interpret the results

Course Type: AEC (2)

Code: AEC-101-ENG

Course Title: English

Course Outcomes:

- Read and understand texts in English
- Enrich and use vocabulary effectively
- Understand and Develop Communicative Competence
- Use body language in different situations

- Acquaint with digital platforms and technology
- Write letter, notice, agenda, minutes and blog

Course Type: VEC (2)

Code: VEC-101-ENV

Course Title: EVS-I

Course Outcomes:

- Describe how human activities impact the environment.
- Explain principles of sustainable development and resource management.
- Analyze local, regional, and global environmental issues and their effects.
- Evaluate different strategies for conserving biodiversity and ecosystems.
- Apply relevant environmental policies and ethical considerations to real-world scenarios.
- Design and implement action plans for community-based environmental projects.

F.Y.B.Sc. (Computer Science) - Sem – II

Course Type: Major

Code: CS-151-T

Course Title: Advanced C Programming

Course Outcomes:

- Develop modular programs using control structures, function, pointers, arrays, strings and structures
- Design and develop solutions to real world problems using C.
- Understand and repeat the sequence of instructions and points for a memory location.
- Identification, analyzation, development, verify and document the requirements for a computing environment

Course Type: Major

Code: CS-151-P

Course Title: Lab Course based on CS-151-P

Course Outcomes:

- Develop modular programs using function, pointers, arrays, strings and structures
- Design and develop solutions to real world problems using Advanced C programming.

Course Type: Subject 2

Code: MTC-151-T

Course Title: Graph Theory**Course Outcomes:**

- Work with graphs and identify certain parameters and properties of the given graphs.
- Perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms.
- Solve basic exercises of the type: given a graph with properties X, prove that the graph also has property Y.
- Develop an appreciation for the literature on the subject and be able to read and present results from the literature.
- Write cohesive and comprehensive solutions to exercises and be able to defend their arguments.

Course Type: Subject 2**Code: MTC-152-P****Course Title: Mathematics Practical II****Course Outcomes:**

- Work with graphs and identify parameters and properties of given graphs through practical problems.
- Perform graph-based algorithms and analyze their working and efficiency.
- Solve practical exercises based on graph properties and relationships.
- Use computational tools for graph representation and analysis.
- Interpret and present graph-theoretic results logically.
- Write systematic and justified solutions for graph-based practical assignments.

Course Type: Subject 3**Code: ELC-151-T****Course Title: Principles of Digital Electronics****Course Outcomes:**

- To learn different number system and their inter conversion.
- To understand logic gates and their applications.
- To study rules and laws of Boolean Algebra.
- To understand and design of combinational circuit and their different types..

Course Type: Subject 3**Code: ELC-152-P****Course Title: Electronics Practical Course II****Course Outcomes:**

- Understand the design and build of digital circuits using logic gates.

- Use breadboard / tag-board for building small electronic circuits.
- Design digital circuits for different applications.
- Validate observed outputs with expected theoretical outputs.

Course Type: GE/OE

Code: OE158COM-T

Course Title: Financial Literacy-II

Course Outcomes:

- Students will understand the importance, types, principles and concept of personal finance. Students will Develop proficiency for personal financial planning.
- Students will be able to understand the importance and types of financial planning, budgeting and insurance.
- They will understand the process of financial management.

Course Type: SEC (2)

Code: SEC-151-CS-P

Course Title: Statistical Methods for Computer Science II

Course Outcomes:

- Fit second-degree curve, and exponential curves.
- Estimate trends by using time series data.
- Understand concept of probability.
- Estimate probabilities of standard probability distributions
- Perform tests based on normal, Chi-Square, t and F distributions

Course Type: AEC (2)

Code: AEC-151-ENG

Course Title: English

Course Outcomes:

- Read and understand texts in English
- Enrich and use vocabulary effectively
- Understand and Develop Communicative Competence
- Use body language in different situations
- Acquaint with digital platforms and technology
- Write letter, notice, agenda, minutes and blog

Course Type: VEC (2)

Code: VEC-151-ENV

Course Title: EVS-II**Course Outcomes:**

- Identify various types of environmental pollution and their impacts on health.
- Explain the basic concepts of climate change, including its causes and effects.
- Analyze different strategies for adapting to and mitigating the effects of climate change.
- Evaluate various environmental management practices and their effectiveness.
- Apply the principles of key environmental treaties and legislation to case studies.
- Create action plans that address specific environmental issues based on current policies and management practices.

Course Type: CC (2)**Code:CC-151-3****Course Title: Sports and Fitness (From University Basket)****Course Outcomes:**

- Demonstrate knowledge of a selected sport through a well-prepared written project including rules, history, skills, and major tournaments.
- Understand rules and technical aspects of various games and sports.
- Assess their own physical fitness level through standardized fitness tests.
- Improve health-related fitness components such as cardiovascular endurance, muscular strength, flexibility, speed, and agility.
- Apply basic principles of fitness training for maintaining a healthy and active lifestyle.

S.Y.BSC COMPUTER SCIENCE 2019 PATTERN (SEMESTER-I)**CS-231- Data Structures and Algorithms - I**

CO1 Ability to analyze algorithms and algorithm correctness

CO2 Understand the concept of dynamic memory management, data types, algorithms, big O notation.

CO3 Be able to design and analyze the time and space efficiency of the data structure

CO4 Ability to summarize searching sorting techniques.

CO5 Demonstrate the concepts of Linked List and apply various operations on them.

CO6 Demonstrate The concepts of stacks and queue apply various operations on them.

CO7 Be capable to Identify the appropriate data structure for given problem

CS-232 Software Engineering

CO1 Compare and chose a process model for a software project development.

- CO2 Identify requirements analyze and prepare models.
- CO3 Able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project
- CO4 Analyze and prepare the SRS, Design document, Project plan of a given software system
- CO5 Develop the code from the design and perform testing, and quality management and practice
- CO6 Able to use modern engineering tools necessary for software project management, time management and software reuse.

CS-233-Practical course on CS 231 and CS 232

- CO1 Implementation of searching algorithms and sorting algorithms
- CO2 Dynamic implementation of linked Lists, Merge two sorted lists. Addition of two Polynomials in a single variable.
- CO3 Static and Dynamic implementation of Stack, Implementation of an algorithm that reverses string of characters and Infix to Postfix Conversions, Evaluation of postfix expression
- CO4 Static and Dynamic implementation of Linear, Circular, priority Queue
- CO5 Prepare detailed statement of problem for the selected mini project, Develops Software Requirement Specification for the project
- CO6 Other artifacts: Class Diagram, activity diagram, sequence diagram, component diagram and any other diagrams as applicable to the project.

MTC-231 Group and Coding Theory

- CO1 To recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and aware of history of mathematics and future role as part of our culture.
- CO2 To demonstrate when a binary algebraic structure forms a group. Students will able to identify factor group and Implement group axioms
- CO3 To apply the basic concepts to solve, and analyze real-world situations.
- CO4 To apply their skills and knowledge, that is, translate information presented verbally into mathematical form. Student will use appropriate techniques of coding to do the programming in real life situation.

MTC- 232 Numerical Techniques

- CO1 To recall basic facts about mathematics and display knowledge of conventions such as notations, terminology.

- C02 To get sufficient knowledge of fundamental principles, methods and a clear perception of mathematical ideas and tools and know how to use them by modelling, solving, and interpreting.
- C03 To develop mathematical tools for continuing further study in Computer Science.
- C04 To get equipped with mathematical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

MTC-233 Mathematics Practical: Python Programming Language-I

- C01 To know the basic concept of functions in Python.
- C02 To know how to work with string, lists and tuples.
- C03 To use basic functions like “if” and different types of loops.
- C04 To solve the examples of linear algebra using python.
- C05 To create simple and efficient Python codes that output the numerical solutions at the required degree of accuracy.

ELC 231 - Microcontroller Architecture & Programming

- C01 To get knowledge of basics of microcontroller.
- C02 To write programs for 8051 microcontrollers.
- C03 To interface I/O peripherals to 8051 microcontrollers.
- C04 To design small microcontroller-based projects

ELC 232 - Digital Communication and Networking

- C01 Define and explain terminologies of data communication
- C02 Understand the impact and limitations of various digital modulation techniques
- C03 To acknowledge the need of spread spectrum schemes.
- C04 Identify functions of data link layer and network layer while accessing communication link.
- C05 To choose appropriate and advanced techniques to build the computer network

ELC 233 – Electronics Practical

- C01 To design and build his/her own microcontroller-based projects.
- C02 To acquire skills of Embedded C programming
- C03 To know multiplexing and modulation techniques useful in developing wireless application
- C04 Do build and test own network and do settings.

AECC-I Environment Science – I

- CO1 Gain knowledge about environment and ecosystem.
- CO2 Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource
- CO3 Gain knowledge about the conservation of biodiversity and its importance

AECC-II Language Communication-I

- CO1 Students will learn about literature
- CO2 Students will learn about Conversational Skill
- CO3 Students will learn about Interview Techniques

S.Y.BSC COMPUTER SCIENCE 2019 PATTERN (SEMESTER-II)

CS-241- Data Structures and Algorithms – II

- CO1 Ability to have knowledge of trees concepts
- CO2 Implement Binary Search Trees and understand the basic concepts of self-balancing Binary Search Trees such as Red-Black and AVL trees.
- CO3 Understand Graph Representation, Traversal and its applications
- CO4 Implement graph traversal techniques and algorithms
- CO5 Describe the hash function and concepts of collision and its resolution methods
- CO6 Usage of appropriate data structures for problem solving

CS-242-Computer Networks-I

- CO1 Understand computer network basics, network architecture, TCP/IP and OSI reference models.
- CO2 Identify and understand various techniques and modes of transmission
- CO3 Describe data link protocols, multi-channel access protocols and IEEE 802 standards for LAN
- CO4 Describe routing and congestion in network layer with routing algorithms
- CO5 Discuss the elements and protocols of transport layer
- CO6 Understand and classify IPV4 addressing scheme and IPV6.

CS-243-Practical course on CS 241 and CS 242

- CO1 Implement Binary Search Tree (BST) to perform various operations on BST

- C02 Sort set of elements using Heap sort, encode a set of characters using Huffman encoding
- C03 Implement Graph as adjacency matrix and adjacency List, Graph traversals: BFS and DFS., Calculate in degree and out degree of vertices
- C04 Implementation of algorithms to find shortest path
- C05 Implementation of static hash table with Linear Probing, implementation of Static hash table with chaining. Implementation of linked hash table with chaining.
- C06 Networking Assignment

MTC-241 Computational Geometry

- C01 To recognize basic geometrical figures and graphical displays, state important facts resulting from their studies
- C02 To recognize the key concepts, problems, techniques and data structures within computational geometry, including: Concepts (points, lines, planes, spheres, duality, subdivisions, etc.
- C03 To apply geometric techniques to real-world problems in graphics. Students will be able to apply their skills & knowledge, and analyse algorithms for small domain problems.
- C04 To recognize parametric equations for a space curve. Student should understand the concept of a parametric surface with the help of examples.

MTC-242 Operation Research

- C01 To find optimized solution to a given problem.
- C02 To be able to construct mathematical model.
- C03 To solve problems on optimizing the total output by maximizing profit and minimizing cost.
- C04 To solve aggregate planning problems using transportation model

MTC-243 Mathematics Practical: Python Programming Language-II

- C01 To use python in solving various types of graph plotting.
- C02 To use Graphical aspects of two dimensional transformation matrix using Matplotlib that deal with different problems in computational geometry.
- C03 To use Graphical aspects of three dimensional transformation matrix using matplotlib that deal with different problems in computational geometry.
- C04 To apply effect of concatenation of two dimensional and three dimensional transformations to solve, and analyse real-world situations.
- C05 To apply algorithms to solve problems of Operation Research using appropriate techniques in python.

ELC 241 - Embedded System Design

- CO1 To understand the difference between general computing and the Embedded systems.
- CO2 To know the fundamentals of embedded systems.
- CO3 Understand the use of Single board Computer (Such as Raspberry Pi) for an embedded System application.
- CO4 Familiar with the programming environment to develop embedded systems and their interfaces with peripheral devices.
- CO5 To develop familiarity with tools used to develop in an embedded environment.

ELC 242 - Wireless Communication and Internet of Things

- CO1 Know working of wireless technologies such as Mobile communication, GSM, GPRS.
- CO2 Become familiar with 3G and 4G Cellular Network Technologies for Data Connections.
- CO3 Understand working principles of short-range communication application.
- CO4 Get introduce to upcoming technology of Internet of Things.
- CO5 Explore themselves and develop new IoT based applications.

ELC 243 – Electronics Practical

- CO1 To design and develop own smart applications using Raspberry-Pi
- CO2 To write Python program for simple applications
- CO3 To build own IoT based system
- CO4 To understand design procedures of different electronic circuits as per requirement used in real life.
- CO5 To develop practical skill towards embedded system.

AECC-I Environment Science – II

- CO1 Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures
- CO2 Students will learn about increase in population growth and its impact on environment
- CO3 Gain knowledge about the environmental communication and public awareness

AECC-II Language Communication-II

- CO1 Students will learn about Literature
- CO2 Students will learn about Writing Skills

C03 Students will learn about Soft Skills and Personality Development

T.Y.BSC COMPUTER SCIENCE 2019 PATTERN (SEMESTER-I)

CS-351- Operating System-I (Sem-I)

- C01 Adequate knowledge in operating system and its function, and overview of operating system
- C02 Thread Scheduling by operating system, for the design of kernel system calls supporting multi-processing and multi-threading systems
- C03 To understand design issues related to process management and various related algorithms and analyze the Process scheduling algorithms
- C04 Ability to understand the use synchronization techniques and tools needed for the design and implementation of operating system.
- C05 Adequate knowledge in operating system of memory management, with different schemes (paging, segmentation and virtual memory) used in operating system and also implementation page replacement algorithms

CS-352- Computer Networks II

- C01 Student will understand the different protocols of Application layer.
- C02 Develop understanding of technical aspect of Multimedia Systems
- C03 Develop various Multimedia Systems applicable in real time.
- C04 Identify information security goals.
- C05 Understand, compare and apply cryptographic techniques for data security.

CS-357- Practical Based on CS-351

- C01 To implement the concept of process scheduling with the help of simulation
- C02 To implement various operating system shell and working using C programming
- C03 To implement various process scheduling algorithms using C programming
- C04 To implement Simulation of demand paging using memory page replacement algorithms

CS-353- Web Technology -I

- C01 Implement Simple PHP programs to solve simple problems
- C02 Validate input in a PHP program.
- C03 Understand how to develop dynamic and interactive Web Page
- C04 understand the process of designing and implementing Web applications, using PHP

CS-354- Foundation of Data Science

- CO1 Knowledge of basic concepts of data science and big data
- CO2 To understand perform exploratory data analysis and demonstrate proficiency with statistical analysis of data.
- CO3 To understand and implement the role of statistics in data science along with python programming
- CO4 Knowledge about data pre-processing to detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization.
- CO5 Knowledge about data visualization using basic data visualization tools and special data visualization tools

CS-358- Practical course based on CS 353 and CS 354

- CO1 Understand how to develop dynamic and interactive Web Page
- CO2 Prepare data for use with a variety of statistical methods and recognize how the quality of the data may affect conclusions
- CO3 Perform exploratory data analysis using python programming
- CO4 Implantation of data visualization techniques on data sets

CS-355- Object Oriented Programming using Java – I

- CO1 Use the Object-Oriented Programming language
- CO2 Use the syntax and semantics of java programming language and basic concepts of OOP.
- CO3 Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
- CO4 Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
- CO5 Design event driven GUI and web related applications which mimic the real word scenarios.
- CO6 To design User Interface using Swing and AWT

CS-356- Theoretical Computer Science

- CO1 Design a finite automaton to recognize a given regular language.
- CO2 Transform a language into regular expression or finite automaton or transition graph and define deterministic and nondeterministic finite automata.
- CO3 Prove properties of regular languages and classify them

- C04 Define relationship between regular languages and context-free grammars.
- C05 Prove properties of regular languages and classify them.
- C06 Building a context-free grammar for pushdown automata.
- C07 Determine whether a given language is context-free language or not and Prove properties of context-free languages.
- C08 Design Turing machine and Post machine for a given language.
- C09 Students are exposed to a broad overview of the theoretical foundations of computer science.

CS-359- Practical Course based on CS 355

- C01 Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
- C02 Read and make elementary modifications to Java programs that solve real-world problems.
- C03 Validate input in a Java program.
- C04 Understand how to develop dynamic and interactive Web Page
- C05 Validate input in a PHP program

CS-3510- Python Programming

- C01 Develop logic for problem solving
- C02 Determine the method to create and develop Python programs by utilizing data Structures like list, dictionaries, tuples and sets
- C03 To be familiar about the basic constructs of programming such as data, operation conditions, loops, functions etc.
- C04 To be familiar about the modules, package, working with files, exception handling
- C05 To write python programs and develop a small application project

CS-3511- Blockchain Technology

- C01 Understand the fundamentals of Blockchain Technology.
- C02 Understand the working of Remix-Ethereum IDE for Smart Contracts
- C03 Write a Simple Python program to create a Blockchain.
- C04 Learn Blockchain programming using Solidity language.
- C05 Basic knowledge of Smart Contracts and how they function.
- C06 Write a Simple Smart Contract for Bank with withdraw and deposit.

T.Y.BSC COMPUTER SCIENCE 2019 PATTERN (SEMESTER-II)

CS-361- Operating System-II

- CO1 Implement the concept of deadlocks and deadlock handling
- CO2 Knowledge to understand design issues related to File management by operating system using with the help of various schemes
- CO3 Knowledge to understand design issues related to Disk Scheduling by operating system using with the help of various scheduling algorithms
- CO4 To understand concept of Distributed Operating System and its architecture
- CO5 To understand concept of mobile operating systems along with mobile OS architectures and comparative study of different mobile OS

CS-362- Software Testing

- CO1 To understand various software testing methods and strategies
- CO2 To understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software.
- CO3 To design test cases and test plans, review reports of testing for qualitative software.
- CO4 To understand latest testing methods used in the software industries.

CS-367- Practical Based on CS-361

- CO1 To implement Banker's algorithm of deadlock avoidance in processes of operating system using c programming
- CO2 To implement File Allocation methods and free space management in storage using C programming
- CO3 To implement various Disk scheduling algorithms using C programming
- CO4 To implement Assignment based on distributed and mobile OS

CS-363- Web Technologies – II

- CO1 Implement Simple PHP programs to solve simple problems
- CO2 Build Dynamic Website
- CO3 Using MVC based framework easy to design and handling the error in dynamic website.
- CO4 Understand the process of designing and implementing Web applications, using PHP

CS-364- Data Analytics

- CO1 Ability to analyze and identify best practices to handle data science

- CO2 Ability to identify the characteristics of datasets and apply appropriate data model to handle data for various applications
- CO3 Ability to select and implement machine learning techniques for the various applications using appropriate programming language
- CO4 Ability to implement various data analytics techniques to analyze the data.

CS-368- Practical course based on CS 363 and CS 364

- CO1 Understand how to develop dynamic and interactive Web Page using different technologies used at client-Side Scripting Language
- CO2 Implement program to understand the behaviour of web pages using JavaScript and AJAX to make our application more dynamic.
- CO3 Perform data analysis by choose relevant models and algorithms for respective datasets using python programming
- CO4 Implement different classification, prediction, clustering algorithms using python programming

CS-364- Object Oriented Programming using Java – II

- CO1 Use the Collection framework
- CO2 To access open database through Java programs using Java Data Base Connectivity (JDBC) and develop the application
- CO3 Understand and create dynamic web pages, using Servlets and JSP.
- CO4 Develop a game application using multithreading
- CO5 Work with basics of framework to develop secure web applications.
- CO6 Understand socket programming concept

CS-365- Compiler Construction

- CO1 Understand the process of scanning and parsing of source code.
- CO2 Learn the conversion code written in source language to machine language.
- CO3 Understand tools like LEX and YACC.
- CO4 To learn working of compiler and non-compiler applications
- CO5 To know about compiler generation tools and techniques
- CO6 Generate intermediate code for statements in high level language.
- CO7 Apply optimization techniques to intermediate code and generate machine code for high level language program
- CO8 Design a compiler for a simple programming language

CS-369- Practical Course based on CS 365

- C01 Develop program using Collection framework.
- C02 To develop a game application using multithreading
- C03 Develop program using JDBC connectivity to access data from database and execute different queries to get required results.
- C04 Understand and create dynamic web pages, using Servlets and JSP.
- C05 Work with basics of framework to develop secure web applications.

CS-3610- Software Testing Tools

- C01 Understand the knowledge of software testing methods and strategies.
- C02 How to use testing methods as an effective tool in quality assurance of software
- C03 Develops skills to design test case plan for testing software.
- C04 Gain knowledge of latest testing tools

CS-3611- Project

- C01 Demonstrate a sound technical knowledge of their selected project topic.
- C02 Undertake problem identification, formulation and solution.
- C03 Design engineering solutions to complex problems utilizing a systems approach.
- C04 Project-based learning connects students to the real world.
- C05 Prepares students to accept and meet challenges in the real world, mirroring what professionals do every day.