C105 – Computer Programming

C105.1: Understand the basics of digital computer and the number systems. To define problem statements and derive solutions in non-programming ways including Flowchart and Pseudo code.

C105.2: Understand the structure of C program and various control structures associated with C language.

C105.3: Understand the basics of arrays and their effective usage, the purpose of strings and various string operations.

C105.4: Understand the concept and importance of functions and pointers

C105.5: Understand the user defined data types like structure, union and their application and introduction to preprocessor directives.

C107 – Computer Practices Laboratory

C107.1: Able to use office software for good presentation and visualization.

C107.2: Able to Design and implement C programs for simple scientific applications.

C107.3: Able to develop C program with modular programming, recursion, derived data types.

C115 – Programming and Data Structure – I

C115.1: Able to familiarize with fundamentals features of C Programming

C115.2: Able to familiarize with advanced features of C Programming

C115.3: Able to implement abstract data types for list data structures.

C115.4: Able to apply the different linear data structures like stacks and queues.

C115.5: Able to critically analyse searching, sorting and hashing techniques.

C118 – Programming and Data Structures Laboratory – I

C118.1: Able to apply good programming design methods for program development.

C118.2: Able to design and implement C programs for implementing stacks, queues, linked lists

C118.3: Able to apply the different data structures for implementing solutions to practical problems

C118.4: Able to develop searching and sorting programs

C202 – Programming and Data Structure – II

C202.1: Able to familiarize the fundamentals features of Object Oriented Programming

C202.2: Able to apply the concept of Object Oriented Programming

C202.3: Able to familiarize the advanced features of Object Oriented Programming.

C202.4: Able to apply the nonlinear data structures to problem solutions.

C202.5: Able to apply and critically analyse the various graph algorithms.

C203 – Database Management Systems

C203.1: Able to understand the fundamentals of Database Management Systems and to familiarize the concepts of relational model, E-R Diagrams and normalization.

C203.2: Able to familiarize the concepts of SQL and to understand Query Processing and Optimization.

C203.3: Able to understand the fundamentals of Transaction Processing and Concurrency Control.

C203.4: Able to familiarize the concepts of various types of storage their organization of record in files and to know the different types of databases.

C203.5: Able to know the different Security Issues in Databases and to understand the concepts of data mining and data warehousing along with information retrieval.

C204 – Computer Architecture

C204.1: Able to make students understand the basic structure, operation of digital computer and hardware-software interface

C204.2: Able to familiarize the students with arithmetic and logic unit and implementation of fixed point and floating-point arithmetic operations

C204.3: Able to expose the students to the concept of pipelining and its hazards.

C204.4: Able to familiarize the students with the concepts of parallelism and multicore processors and to design parallel processing architectures.

C204.5: Able to familiarize the students with hierarchical memory system including cache memories and virtual memory and to expose the students with different ways of communicating with I/O devices and standard I/O interfaces.

C206– Environmental Science and Engineering

C206.1: Understand the basics of environmental studies, types of ecosystem and biodiversity

C206.2: Understand the various types of pollutions, Measures to reduce pollutions and impacts of pollution towards nature, various natural disaters and ways to prevent disasters

C206.3: Understands the importance of natural resources and how far it saves our earth, to restrict the excess usage of resources and there by provides healthy life.

C206.4: Impart knowledge on the environmental related social issues and to create awareness about various government proposed acts against degrading the natural life

C206.5: Create awareness about rising population and how it affects the environment

C207– Programming and Data Structure Laboratory – II

C207.1: Able to apply good programming design methods for program development

C207.2: Able to design and implement C++ programs for implementing stacks, trees and graphs

C207.3: Able to apply the different data structures for implementing solutions to practical problems.

C207.4: Able to develop recursive programs using trees and graphs.

C208– Database Management Systems Laboratory

C208.1: Design and implement a database schema and constraints for a given problem domain.

C208.2: Populate and query a database using DML Commands.

C208.3: Design maintains and manipulate database using PL/SQL, procedures and triggers.

C208.4: Design and develop applications using Mysql and front end tools.

C210 – Computer Networks

C210.1: Able to understand the division of networks, functionalities in different layers and link layer services

C210.2: Able to familiarize the components required to build different types of networks and to understand basic internetworking

C210.3: Able to understand the process of selecting a path in a network, distribute data to multiple recipients and to trace the flow from one node to another.

C210.4: Able to understand the functionality of the transport layer protocols and to learn congestion control and avoidance mechanisms

C210.5: Able to understand effective file sharing process to provide precise communication service required by the application.

C211 – Operating Systems

C211.1: Able to familiarize with Computer System and Operating System structures.

C211.2: Able to understand Process communication, Threading, Process Scheduling, Concurrency and deadlock handling.

C211.3: Able to compare and contrast various memory management schemes.

C211.4: Able to understand file systems and device management.

C211.5: Able to Perform administrative tasks on Linux Servers

C212 – Design and Analysis of Algorithms

C212.1: Able to design and analyze the algorithm's efficiency for a given computational problem in terms of asymptotic notations.

C212.2: Able to critically analyze the different algorithm design techniques such as brute force and divide - and - conquer for a given problem

C212.3: Able to apply dynamic programming and greedy techniques for a given problem.

C212.4: Able to solve optimization problems using iterative improvement algorithms.

C212.5: Able to understand the limitations of algorithm power and the benefits of using backtracking, branch- and- bound and approximation algorithms.

C213 – Microprocessor and Microcontroller

C213.1: Understand the 8086 microprocessor instruction set and apply the programming techniques in developing the assembly language program for microprocessor Application.

C213.2: Understand the concept of Multiprocessor configurations, architecture of Numeric Data Processor and I/O processor and how they communicate with CPU.

C213.3: Understand various types of interface devices including Intel 8253/8254, Intel8255, Intel 8237, Intel 8251, Intel 8259 and Intel 8279, Analyze suitable mechanism to Interface 8085/8086 microprocessors with various devices.

C213.4: Understand the 8051 Microcontroller instruction set and apply the programming techniques in developing the assembly language program for microcontroller application.

C213.5: Understand various types of interface devices including ADC, DAC, Keyboard and LCD. Analyze suitable mechanism to interface 8051 microcontroller with various devices.

C214 – Software Engineering

C214.1: Identify the key activities in managing a software project and process models.

C214.2: Concepts of requirements engineering and Analysis Modeling.

C214.3: Apply systematic procedure for software design and deployment.

C214.4: Compare and contrast the various testing and maintenance.

C214.5: Ability to understand project estimation, project management and risk.

C215 – Networks Laboratory

C215.1: Implement various protocols for the purpose of communication between client and server using socket programming.

C215.2: Analyze the performance of various protocols that make use of the services offered by different layers.

C215.3: Learn and apply NS2 with TCL programming to create an open simulation environment in computer networking.

C215.4: Study the various routing algorithms to select optimal and economical network path during data transfer.

C216 – Microprocessor and Microcontroller Laboratory

C216.1: Able to write assembly language program for fixed, floating point and arithmetic.

C216.2: Able to interface ALP programs with I/Os and Processor.

C216.3: Able to generate waveforms using microprocessor.

C216.4: Able to execute programs in 8051.

C216.5: Able to Explain the difference between simulator and Emulator.

C217 – Operating Systems Laboratory

C217.1: Understanding UNIX commands and Shell Programming

C217.2: Compare the performance of various CPU Scheduling Algorithm, Implement IPC and Threading mechanism

C217.3: Implement Semaphores, deadlock avoidance, and Detection Algorithms

C217.4: Analyze the performance of various page replacement algorithms, Memory management schemes

C217.5: Implementing File allocation and File Organization techniques

C302 – Internet Programming

C302.1: Implement Java programs

C302.2: Create a basic website using HTML and Cascading Style Sheets.

C302.3: Design and implement dynamic web page with validation using JavaScript Objects and by applying different event handling mechanisms.

C302.4: Design rich client presentation using AJAX.

C302.5: Design and implement simple web page in PHP, and to present data in XML format.

C302.6: Design and implement server side programs using Servlets and JSP.

C303 – Object Oriented Analysis and Design

C303.1: To use UML diagrams, use case models and formats.

C303.2: Applying design patterns based on design models.

C303.3: To learn object oriented analysis and design skills and to implement projects using OO concepts for case studies.

C303.4: To create code from design patterns.

C303.5: Comparing various object oriented testing techniques.

C304 – Theory of Computation

C304.1: Able to design Finite State Automata for a language

C304.2: Able to design and express the grammar for a language

C304.3: Able to design Pushdown Automata for a language

C304.4: Able to design Turing Machine for a language

C304.5: Able to explain the Decidability or Undesirability of various problems

C305 – Computer Graphics

C305.1: Able to gain knowledge about graphics hardware devices and software used.

C305.2: Able to design two dimensional graphics & Apply two dimensional transformations.

C305.3: Able to design three dimensional graphics & Apply three dimensional transformations

C305.4: Able to apply clipping techniques to graphics.

C305.5: Able to apply Illumination and color models.

C305.6: Able to design animation sequences.

C306 – Case Tools Laboratory

C306.1: Design and implement projects using OO concepts.

C306.2: Use the UML analysis and design diagrams.

C306.3: Apply appropriate design patterns.

C306.4: Create code from design.

C306.5: Compare and contrast various testing techniques

C307 – Internet Programming Laboratory

C307.1: Able to design Web pages using HTML/XML and style sheets

C307.2: Able to create user interfaces using Java frames and applets.

C307.3: Able to create dynamic web pages using server side scripting.

C307.4: Able to write client server applications.

C307.5: Able to use the frameworks JSP Strut, Hibernate, Spring

C307.6: Able to create applications with AJAX

C308 – Computer Graphics Laboratory

C308.1: Implement Graphics programming(Line,Circle)

C308.2: Create 2D, 3D graphical scenes using open graphics library suits

C308.3: Implement image manipulation and enhancement.

C308.4: Create 2D animations using tools

C309 – Distributed Systems

C309.1: Ability to discuss the characterization of Distributed Systems.

C309.2: Ability to understand the System Models, apply Network Virtualization and Inter-process Communication, apply Remote Method Invocation, Indirect Communication and Distributed Objects.

C309.3: Ability to understand Peer-to-Peer Systems, Distributed File Systems and Name Services.

C309.4: Ability to apply synchronization techniques, Distributed transaction and replication.

C309.5: Ability to design Process and Resource Management Systems

C310 – Mobile Computing

C310.1: Able to explain the basics of mobile telecommunication system.

C310.2: Able to choose the required functionality at each layer for given application

C310.3: Able to identify solution for each functionality at each layer.

C310.4: Able to use simulator tools and design ad hoc networks

C310.5: Able to develop a mobile application.

C311 – Compiler Design

C311.1: Able to familiarize with LEX and YACC tools and implementation of different phases of compiler

C311.2: Able to design lexical analyzer for a sample language

C311.3: Able to Design of a syntax analyzer for a sample language

C311.4: Able to evaluate the expressions and type conversions

C311.5: Able to apply various optimization techniques in code

C313 – Artificial Intelligence

C313.1: Understand the basics of AI and identify problems that are open to solution by AI methods.

C313.2: Apply knowledge representation techniques and problem solving strategies to common AI applications.

C313.3: Formalize a given problem in the language/framework of different AI methods.

C313.4: Use planning algorithms to find optimal solutions and implement basic AI algorithms and understand the basics of machine learning..

C313.5: Identify the problems and methods of developing expert systems (ES) and knowledge-based systems (KBS).

C314 – Total Quality Management

C314.1: Able to understand the basics of TQM, needs and evolution of quality, the contribution of TQM gurus and customer's focus on quality

C314.2: Able to understand Leadership, team work, employee involvement, performance appraisal, supplier partnership and continuous process improvement.

C314.3: Able to understand the TQM tools, six sigma, bench marking and FMEA.

C314.4: Able to understand Control charts, Concepts of six sigma, QFD, Taguchi quality loss function, TPM concepts, needs and performance measures

C314.5: Able to understand the need for quality system and quality auditing.

C315 – Mobile Application Development Laboratory

C315.1: Design and Implement various mobile applications using emulators.

C315.2: Deploy applications to hand-held devices

C316 – Compiler Laboratory

C316.1: Implement the different Phases of compiler using tools

C316.2: Analyze the control flow and data flow of a typical program

C316.3: Optimize a given program

C316.4: Generate an assembly language program equivalent to a source language program.

C401 –Cryptography and Network Security

C401.1: Understand the network security threats, determine efforts to counter them and number theory.

C401.2: Understand relevant cryptography algorithms

C401.3: Understand secure access client for access to a server by hash function and digital signature.

C401.4: Understand network security tools and authentication applications

C401.5: Understand to send and receive secure mails.

C402 – Graph Theory and Applications

C402.1: Understand the concept of graphs, trees and frame mathematical definitions of objects in graph theory.

C402.2: Understand the concept of spanning trees, fundamental cut sets, circuits and planar graphs and their representation.

C402.3: Understand the concept and theorems that describes the various ways of colouring graphs

C402.4: Use a combination of theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory.

C402.5: Analysing and applying the definitions to construct mathematical proofs.

C403 – Grid and Cloud Computing

C403.1: Apply grid computing techniques to solve large scale scientific problems & Outline the concept of Grid and Cloud Architectures.

C403.2: Illustrate the data intensive grid service models and grid computing techniques.

C403.3: Use the cloud tool kit & Demonstrate the concept of virtualization in cloud

C403.4: Experiment with the programming model for Hadoop and Globus toolkit.

C403.5: Interpret the security models in the grid and the cloud environment

C404 – Resource Management Techniques

C404.1: Solve optimization problems using graphical solution and simplex method.

C404.2: Solve dual relationships and application of dual simplex method.

C404.3: Find optimal assignment for transportation and assignment model.

C404.4: Apply integer programming and linear programming to solve real-life applications.

C404.5: Obtaining solution for unconstrained external problems.

C404.6: Use PERT and CPM for problems in project management.

C405 – Service Oriented Architecture

C405.1: Able to learn XML fundamentals.

C405.2: Can be exposed to build applications based on XML.

C405.3: Able to understand the key principles behind SOA.

C405.4: To be familiar with the web services technology elements for realizing SOA

C405.5: Learn the various web service standards and build SOA-based applications.

C406 – Data Analytics

C406.1: To learn how big data evolved.

C406.2: Apply the statistical analysis methods.

C406.3: Compare and contrast various soft computing frameworks..

C406.4: Apply Stream data model.

C406.5: To learn the mining and clustering.

C406.6: Design distributed file systems and use Visualization techniques

C407 – Security Laboratory

C407.1: Implement the cipher techniques

C407.2: Develop the various security algorithms

C407.3: Use different open source tools for network security and analysis

C408 – Grid and Cloud Computing Laboratory

C408.1: Use Grid toolkit to design and implement applications on the Grid environment

C408.2: Use Cloud toolkit to design and implement applications on the Cloud environment

C408.3: Use Hadoop for Cloud Applications.

C409 – Multi-Core Architectures and Programming

C409.1: Understand Parallel Architectures and how they exploit parallelism.

C409.2: Understand the performance of multicore processors and also has ability to identify and correct data races.

C406.3: Develop Shared memory program using Open MP and understand its performance.

C409.4: Develop distributed memory program using MPI and understand its performance.

C409.5: Implementations and comparison on Parallel Program Development.

C410 – Human Computer Interaction

C410.1: Able to describe an interactive design process and universal design principles to designing HCI systems and use HCI design principles, standards and guidelines.

C410.2: Able to analyze and identify user models, user support, socio-organizational issues, and stakeholder requirements of HCI systems.

C410.3: Able to analyze and discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments

C410.4: Ability to identify requirements and implement mobile solutions.

C410.5: Understand and be able to develop and design interactive web sites including multimedia content by applying current web design principles, guidelines and heuristics

C411 – Software Project Management

C411.1: Able to plan the project systematically and evaluate the project based on cost, risk.

C411.2: Able to select appropriate process model and estimate the project using various techniques and models.

C411.3: Able to produce activity and work plan, resource schedule and manages risks associated with the project.

C411.4: Able to monitor the progress of the project and control the changes through various techniques to achieve the target.

C411.5: Able to develop leadership skills for managing projects and people as well as working knowledge of ethics and professional responsibility to promote an effective organization.

C412 – Project Work

C412.1: Students will acquire the ability to make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project tasks

C412.2: Students will acquire the skills to critically analyze the problem, communicate effectively and to present ideas clearly and coherently to specific audience in both the written and forms.

C412.3: Students will acquire collaborative skills through working in a team to achieve common goals.

C412.4: Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it