2. B.Sc.(Computer Science) 2013 Syllabus

Program outcomes (PO)

PO1-To construct mathematical and statistical models to develop software for data analysis.
PO2-To prepare the students for minor electronic projects individual/team.
PO3-To make effective use of knowledge in the field of electronics for embedded system.
PO4 -To create a ground for data analysis, interpretation and logic building.
PO5-To imbibe knowledge of networking and hardware components for effective administration of ICT enabled learning.

Program Specific outcome (PSO)

PSO1-To learn and understand fundamentals of computer science like electronics, mathematics and statistics.
PSO2-To learn programming and database concepts through C, Postgres SQL, C++, PHP, Java, etc.
PSO3-To be aware of environment and sustainability.
PSO4-To implement concept of Object Oriented Software Engineering through UML.
PSO5-To develop mini electronics project in the area of embedded system.

Course Outcomes

MTC 101: Discrete Mathematics

1. To recall basic facts about mathematics and display knowledge of conventions
2. To understand terminology and recognize basic geometrical figures and graphical displays
3. A student should get a relational understanding of mathematical concepts

MTC 102: Algebra and Calculus

1. To understand basics of Relations and functions
2. To learn binary operations and groups
3. To know Continuity and Differentiability
4. To learn matrices and perform operations on them

MTC 103: Mathematics Practicals

1. To learn the use and implementation of topics in given situation
2. To learn to use computer software and graphing calculators wherever possible
3. To solve problems using softwares like Sclib, Maxima, mu-pad, etc. for solving

Statistics Paper I (Statistical Methods I)

1. To learn about raw data and methods of handling it to get information
2. To understand data behaviour and its relation to other data
3. To implement various techniques on data in real life situations

Statistics Paper II (Statistical Methods II)

1. To review theory of probability and learn advanced theory of probability
2. To understand Continuous Random Variable and probability distributions
3. To learn Concepts and definitions related to testing of hypothesis
4. To study simulation

Statistics Paper III (Practical)

1. To implement the theoretical concepts using scientific calculator and spreadsheet

ELC-101: Principles of Analog Electronics

1. To get familiar with basic circuit elements and passive components
2. To understand DC circuit theorems and their use in circuit analysis
3. To study characteristic features of semiconductor devices
4. To study elementary electronic circuits and applications
5. To understand basics of operational amplifiers.

ELC-102: Principles of Digital Electronics

1. To get familiar with concepts of digital electronics
2. To learn number systems and their representation
3. To understand basic logic gates, boolean algebra and K-maps
4. To study arithmetic circuits, combinational circuits and sequential circuits
5. To study comparative aspects of logic families.

ELC-103: Practical Course

Computer Science Paper I (CS-101): Problem Solving Using Computers and 'C' Programming

1. To develop Problem Solving abilities using computers
2. To learn basic principles of programming
3. To develop skills for writing programs using basic ‘C’ language constructs

Computer Science Paper II CS-102) File Organization and Fundamental of Databases

1. To understand data processing using computers
2. To teach basic organization of data using files

3. To understand creations, manipulation and querying of data in databases

Computer Science Practical Paper I (CS-103) Computer Science Practical Paper I

1. Design and implement a 'C' programs for simple problems
2. Understand appropriate use of data types and array structures
3. Understand use of appropriate control structures

Computer Science Practical Paper II (CS-104) Computer Science Practical Paper II

1. Understanding basic HTML designing
2. Writing C programs using complex data structures such as pointers, structures etc.

CS-211:Data Structures using ‘C’

1. To learn the systematic way of solving problem
2. To understand the different methods of organizing large amount of data
3. To efficiently implement the different data structures
4. To efficiently implement solutions for specific problems

CS-221:Object Oriented Concepts using C++

1. Acquire an understanding of basic object oriented concepts and the issues involved in effective class design
2. Write C++ programs that use object oriented concepts such as information hiding, constructors, destructors, inheritance etc

CS-212: Relational Database Management System

1. To teach fundamental concepts of RDBMS (PL/PgSQL)
2. To teach principles of databases
3. To teach database management operations
4. To teach data security and its importance
5. To teach client server architecture

CS-222:Software Engineering

1. To teach basics of System Analysis and Design.
2. To teach principles of Software Engineering
3. To teach various process models used in practice
4. To know about the system engineering and requirement engineering
5. To build analysis model

CS-223:Data structures Practicals and C++ Practicals

1. Design and implement Data structures and related algorithms

2. Understand several ways of solving the same problem.

CS-224:Database Practicals & Mini Project using Software Engineering techniques

1. Understanding the use of cursors, triggers, views and stored procedures
2. Understanding the steps of system analysis and design
3. Understanding Data requirements for a specific problem domain
4. Designing Database as per the Data requirements
5. Designing queries as per the functional requirements

MT-211:Mathematics Paper I-Sem I

1. To study general vector spaces and Eigenvalues
2. To learn linear transformations

MT-221:Mathematics Paper I-Sem II

1. To understand 2 and 3 dimensional transformation
2. To learn plane and space curves
3. To study Transportation Model and Its Variants
4. To learn decision analysis and game theory

MT-212:Mathematics Paper II-Sem I

1. To understand basics of errors and algebraic equations
2. To learn calculus of finite differences and interpolation
3. To learn numerical integration

MT-222:Mathematics Paper II-Sem II

1. To learn Modeling with Linear Programming
2. To understand simplex method and duality

MT-223:Practical Course in Mathematics

1. To revise scilab commands and learn scilab programming
2. To implement theoretical concepts using C programming

EL-211:Electronics Paper I-Sem I

1. To study the applications of logic gates.
2. To use K-maps for digital circuit design.
3. To study and understand basics of microprocessors
4. To understand fundamentals of multicore technology

EL-221:Electronics Paper I-Sem II

1. To study the basics of 8051 microcontroller
2. To study the Programming and interfacing techniques of 8051
3. To apply knowledge of 8051 to design different application circuits
4. To introduce the basic concepts of advanced Microcontrollers

EL-212:Electronics Paper II-Sem I

1. To understand basics of analog electronics
2. To study different types of sensors
3. To understand different types of signal conditioning circuits
4. To learn data conversion techniques
5. To apply knowledge of analog systems in different applications

EL-222:Electronics Paper II-Sem II

1. To understand basics of communication systems
2. To understand modulation, demodulation and multiplexing of signals.
3. To understand digital communication techniques
4. To introduce concepts in advanced wireless communication.

EL-223:Practical Course in Electronics

1. To use basic concepts for building various applications in electronics.
2. To understand design procedures of different electronic circuits as per requirement.
3. To build experimental setup and test the circuits.
4. To develop skills of analyzing test results of given experiments.

EN-211:Technical English - Sem I

1. To comprehend Literature components
2. To understand language components like vocabulary and grammar

EN-221:Technical English – Sem II

1. To comprehend Literature components
2. To learn and practice communication skills

CS-331:System Programming

1. To understand the design structure of a simple editor.
2. To understand the design structure of Assembler and macro processor for an hypothetical simulated computer.
3. To understand the working of linkers and loaders and other development utilities.
4. To understand Complexity of Operating system as a software.

CS-341:Operating System

1. To understand design issues related to process management and various related algorithms
2. To understand design issues related to memory management and various related algorithms
3. To understand design issues related to File management and various related algorithms

CS-332:Theoretical Computer Science

1. To have an understanding of finite state and pushdown automata.
2. To have a knowledge of regular languages and context free languages.
3. To know the relation between regular language, context free language and corresponding recognizers.
4. To study the Turing machine and classes of problems.

CS-342:Compiler Construction

1. To understand design issues of a lexical analyzer and use of Lex tool
2. To understand design issues of a parser and use of Yacc tool
3. To understand issues related to memory allocation
4. To understand and design code generation schemes

CS-333:Computer Networks-I

1. Understand different types of networks, various topologies and application of networks.
2. Understand types of addresses, data communication.
3. Understand the concept of networking models, protocols, functionality of each layer.
4. Learn basic networking hardware and tools.

CS-343:Computer Networks-II

1. Basic networking concepts.
2. Understand wired and wireless networks, its types, functionality of layer.
3. Understand importance of network security and cryptography.

CS-334: Internet Programming- I

1. Learn Core-PHP, Server Side Scripting Language
2. Learn PHP-Database handling.

CS-344:Internet Programming- II

1. Learn different technologies used at client Side Scripting Language
2. Learn XML,CSS and XML parsers.

3. Understand one PHP framework for effective design of web application.
4. Learn JavaScript to program the behavior of web pages.
5. Learn AJAX to make our application more dynamic.

CS-335:Programming in Java-I

1. To learn Object Oriented Programming language
2. To handle abnormal termination of a program using exception handling
3. To create flat files
4. To design User Interface using Swing and AWT

CS-345:Programming in Java-II

1. To learn database programming using Java
2. To study web development concept using Servlet and JSP
3. To develop a game application using multithreading
4. To learn socket programming concept

CS-336:Object Oriented Software Engineering

1. Understanding importance of Object Orientation in Software engineering
2. Understand the components of Unified Modeling Language
3. Understand techniques and diagrams related to structural modeling
4. Understand techniques and diagrams related to behavioral modeling
5. Understand techniques of Object Oriented analysis, design and testing

CS-346:Computer Graphics

1. To study how graphics objects are represented in Computer
2. To study how graphics system in a computer supports presentation of graphics information
3. To study how interaction is handled in a graphics system
4. To study how to manipulate graphics object by applying different transformations
5. To provide the programmer's perspective of working of computer graphics

CS-347:Practicals Based on CS-331 and CS341 – Sem I & Sem II

1. Design and implement System programs with minimal features to understand their complexity.
2. Design and implement simulations of operating system level procedures.

CS-348:Practicals Based on CS-335 and CS-344 – Sem I & Sem II and Computer Graphics using Java

1. Implement core Java programs to solve simple problems

2. Implement Client and Server end Java programs

CS-349:Practicals Based on CS-334 and CS-344 – Sem I & Sem II and Project

1. Implement Simple PHP programs to solve simple problems