Course Outcome B. Sc-IT

Sr. No.	Name of the Course	Outcome
Semester I		
1.	Imperative Programming	● Introduction to programming languages and fundamentals of C. ● Introduction to different Operators, Expressions, Data Input and output functions. ● To understand the use of conditional, looping statement and functions
2.	Digital Electronics	● Have a thorough understanding of the fundamental concepts and techniques used in digital electronics ● Ability to identify basic requirements for a design application and formulate most suitable solution ● Ability to understand, analyze and design various combinational and sequential circuits
3.	Operating Systems	● Students will be able to compare processes, solve sums based on scheduling algorithms and compare their output. ● Implementing the memory management, virtual memory and file systems management in a virtual system. ● Able to compare different types of operating systems
4.	Discrete Mathematics	● Enable the students to understand and create mathematical arguments and solving them with logical skills. ● Enable the students to learn Number Theory, ● Enable the students to learn Set Theory, Graph Relations, functions which are used in cryptography and data structures, basic concepts of Graph Theory
5.	Communication Skills	● Introduce aspects of communication essential for business communication. ● Train learners in written aspects of organizational communication ● To enhance learners' oral communication and prepare them for business interviews and professional group communication.

Semester II		
1.	Object oriented Programming	● Differentiate between POP and OOP ● Build C++ application programs using OOP principles and proper program structuring. ● Demonstrate the concepts of polymorphism. ● Implement Inheritance and learn code reusability. ● Design Templates and File Handling
2.	Microprocessor Architecture	● Understand 8085 Microprocessor Architecture. ● External pin diagram and pin functions of IC 8085. Understand the difference between microprocessor and CPU. ● Learn concepts associated with interfacing a microprocessor to memory and I/O devices ● To understand how to control components of computer system through use of hardware and software interrupts
3.	Web Programming	● To understand various terminologies of Internet, simple application of HTML5 ● To design web pages using advanced HTML5 ● To design dynamic web pages using JavaScript. ● To develop simple, responsive web pages using PHP ● To build web pages using PHP & MySQL.
4.	Numerical and Statistical Methods	● Understand various Engineering problems, various types of errors which occur in real life and representation of any function as a series of non-linear coefficients. ● Determine the roots of any polynomial and also estimate the future as well as intermediate value depending on the prerequisite values (Past values) ● Determine the solution of multiple equations and Integrate any linear or nonlinear functions within the given intervals. ● Prediction of the future values depending on the present as well as past values and also to optimize the given situation.
5.	Green Computing	● Understand the relation and impact of environmental perspectives and IT. ● Use and give an account of standards and certifications related to sustainable IT products ● Use methods and tools to measure energy consumption. ● Evaluate effectiveness of IT use in relation to environmental perspectives ● How the choice of hardware and software can facilitate a more sustainable operation

Semester III		
1.	Python Programming	● Students will be able to develop small applications using basic concepts, values & expressions, various control & conditional statements and Looping. ● To use and implement built-in functions and User defined Functions along with different string methods. ● Will be able to use new data types such as Lists, Tuples and dictionaries, Create and handle Exceptions and how to deal with files. ● Can create class and objects, Implement use of regular expression and multithreaded programming. ● Students will be able to develop GUI applications with database connectivity
2.	Data Structures	● To access how the choices of data structure & algorithm methods impact the performance of program. ● To Solve problems based upon different data structure & also write programs. ● Choose an appropriate data structure for a particular problem.
3.	Computer Networks	● To understand the fundamental concepts of computer networking and provide the knowledge of different protocols at different layers of models. ● Learn how the data is transferred between the computers over the network
4.	Database Management Systems	● Students will be able to understand the architecture and functioning of database management systems as well as associated tools and techniques, principles of data modelling using entity relationship ● To 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
5.	Applied Mathematics + Practical Mobile Programming	● Apply Matrix theory to different applications ● Understand complex number and its different applications ● Apply Laplace transform to different applications ● Apply Inverse Laplace transform to different applications. ● Apply multiple integrals to various applications

Semester IV		
1.	Core Java	● To learn program structure and basic concepts of java ● To understand and apply OOP techniques to solve real world problems. ● To Use and create packages and interfaces in a Java program. ● To Implement Multithreading & exception handling techniques in java
2.	Introduction to Embedded Systems	● Understand the basic concepts of embedded systems ● Familiarize with characteristics and attributes of embedded systems ● Demonstrate knowledge and understanding hardware software codesign techniques for microcontroller based embedded systems ● Program microcontrollers in C using IDE and debugging techniques ● Design, Development and planning of embedded systems based projects
3.	Computer Oriented Statistical Techniques	● Install and use R for siple programming tasks. ● Extend the functionality of R by using add-on packages ● Extract data from files and other sources and perform various data manipulation tasks on them. ● Code statistical functions in R.
4.	Software Engineering	● To learn basic concepts related to requirement engineering, different software development models, SRS documents. ● To understand types of critical systems and learn about system models. ● To design and manage the software, different software architectural styles ● To learn about process improvement and different types of software engineering
5.	Computer Graphics and Animation	● To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations. ● To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations. ● Develops theory of 2D, 3D transformation and describes various types of 2D, 3D transformations

Semester V		
1.	Software Project Management + Practical	● To realise Project Management life cycle. To understand the various steps in Programme Management and Project Planning. ● To calculate the Software Effort Estimation. ● To do Project Planning and Risk assessment ● To think and analyse how Monitoring and Control can be implemented for various software projects. ● To realize the importance of Working in Team
2.	Internet of Things + Practical	● Apply the concepts of IoT. ● Understand IoT with different applications. ● Understand the prototype design for IoT
3.	Advanced Web Programming + Practical	● Students will be able to create console applications using the basic concepts, expressions, various conditional statements and loops of C#. ● To use and implement ASP.NET Form Fundamentals to design web forms. ● Students will be able to learn and implement the concepts of exception handling & State management. ● Students will be able to implement database drivers, and design web applications using ADO.NET. Co5: To develop web applications using XML & AJAX.
4.	Artificial Intelligence + Practical	● Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents. ● Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them. ● Design good evaluation functions and strategies for game playing.
5.	Linux System Administration +Practical	● Duties of System Administrator, working on Command Line, understanding system administrator tasks, managing software ● Configuring and managing storage, connecting to network, working with users, groups and permissions ● Securing server with iptables, setting up cryptographic services, configuring server ● Bash shell scripting, high-availability clustering, setting up an installation server

6.	Enterprise Java + Practical	● Provide the ability to design console based, GUI based and web based applications. ● To understand integrated development environment to create, debug and run multi-tier and enterprise-level applications ● Understand the concepts related to Java Technology ● Explore and understand use of Java Server Programming
7.	Next Generation Technologies +Practical	● Explain the motivation for big data systems and identify the main sources of Big Data in the real world. ● Demonstrate an ability to use frameworks like NOSQL to efficiently store retrieve and process Big Data for analytics.
Semester VI		
1	Software Quality Assurance + Practical	● To understand the importance of Software Quality ● To understand the fundamentals of testing ● To compare different types of testing ● To analyse Software verification and Validation and V-test model ● To compare different levels of testing and various special tests ●
2	Security in Computing + Practical	● Introduction and basic design principles of security and its Models ● Symmetric Key Cryptography, Storage Security and Database Security ● Designing Secure Networks using the connecting devices – Switches and Routers ● Intrusion Detection and Prevention Systems, Operating System Security Models ● Concept of Virtual Machine and Cloud Computing, Designing Secure Web Applications ●
3	Business Intelligence + Practical	● To understand active forms of support for decision making based on the systematic adoption of mathematical models. ● To understand applications of data mining and business intelligence. ● To create the phases of a data mining process and their objectives and the activities of data preparation. ● To develop models using classification and clustering methods

4	Principles of Geographic Information Systems + Practical	● Real world and its representation of it using GIS ● Understanding and managing data and Processing Systems ● Analyzing Spatial Referencing and Positioning ● Analyzing Spatial data ● Implementing Maps ● Constructing and analysing maps based on particular area
5	Enterprise Networking + Practical	● Understand the customer requirements and Apply a Methodology to Network Design Structure and Modularize the Network ● Design Basic Campus and Data Center Network. Design Remote Connectivity ● Design IP Addressing and Select suitable Routing Protocols for the Network ● Compare Openflow controllers and switches with other enterprise networks ●
6	IT Service Management + Practical	● To learn the basics of ITSM, Life Cycle of ITSM and principles of Service Strategy ● To understand fundamentals of service design, principles, processes and challenges faced during service design ● Understand fundamentals of service transition, principles, processes and challenges faced during service transition ● To understand principles, process of Continual Service Improvement and implementation of Continual Service Improvement ●
7	Cyber Laws +Advanced Mobile Programming	● To learn about Power of Arrest Without Warrant Under the IT Act, 2000, Cyber Crime and Criminal justice: Penalties, Adjudication and appeals Under the IT Act, 2000. ● To learn about Contracts in the Infotech World and Jurisdiction in the Cyber World. ● Implementation of Copyright Protection in the Cyber world. ● E-Commerce Taxation: Real Problems in the virtual World along with Digital Signatures, Certifying Authorities and E-Governance