INSTITUTE OF DISTANCE AND OPEN LEARNING
Gauhati University
Guwahati - 14

Syllabus for

BSc in Information Technology
(BSc-IT)

DURATION: The Course will be a 3 Years (6 Semesters) Course.

ELIGIBILITY:

1. Higher Secondary Pass in Science Stream
2. 3 Years Polytechnic Diploma.

COURSE STRUCTURE:

SEMESTER-I

Course No	Paper Name	Credit
ITOL-111	Fundamentals of Computer	3
ITOL-112	Digital Systems	3
ITOL-113	Communicative English	2
ITOL-114	Mathematics –I	3
ITOL-119	Laboratory (DOS and UNIX commands and Office Automation)	4

SEMESTER -II

Course No	Paper Name	Credit
ITOL-121	Introduction to Programming using C	3
ITOL-122	Environmental Studies	3
ITOL-123	Mathematics – II	3
ITOL-124/211	Computer Organization and Architecture	3
ITOL-129	Laboratory (ITOL-121)	4

SEMESTER -III

Course No	Paper Name	Credit
ITOL-212	Data structure using C	3
ITOL-213	Operating System	3
ITOL-214	System Analysis & Design	3
ITOL-215	Theoretical Foundation of Computing	3
ITOL-218	Laboratory(ITOL-212)	4

SEMESTER- IV

Course No	Paper Name	Credit
ITOL-222	Data Communication and Computer Networks	3
ITOL-223	Database Management System	3
ITOL-225	OOP using C++	3
ITOL-226	Numerical Analysis	3
ITOL-228	Laboratory (ITOL-223+ ITOL-225)	4

SEMESTER-V

Course No	Paper Name	Credit
ITOL-311	Computer Hardware & System Administration	2
ITOL-312	Programming in Java	3
ITOL-313	Web Technology	2
	Elective I	3
ITOL-318	Laboratory (ITOL-311)	2
ITOL-319	Laboratory (ITOL-312+ ITOL-313)	4

SEMESTER VI

Course No	Paper Name	Credit
	Elective II	4
ITOL-326	Project	10

Courses for Electives:

ITOL-501: Artificial Intelligence
ITOL-502: Data Mining
ITOL-503: E-Learning Technologies
ITOL-504: Object Oriented Design using UML
ITOL-505: Software Engineering
ITOL-506: Advanced Web Technology

DETAIL SYLLABUS:

SEMESTER – I

ITOL-111: FUNDAMENTALS OF COMPUTER

Full Marks: 100

What is Computer and its History, Generation of Computers, Classification of Computers; Components of a Digital Computer: CPU, Memory, I/O devices; Storage Devices, Backup System and it is use.

What is Computer Software and its need, Types of Computer Softwares; Computer languages, Generation of Computer Languages, Classification of Computer Languages; Computer Viruses.

ITOL-112: DIGITAL SYSTEMS

Full Marks: 100

Digital Computers and Digital Systems, Binary Numbers, Number Base Conversion, Octal and Hexadecimal Numbers, Complements, Binary Codes, Binary Storage and Registers, Binary Logic, Integrated Circuits

Boolean Operators, Boolean Algebra and its Rules, Dual and Complement of Boolean Expression, Sum of Product and Product of Sum, Conversion between Boolean Expression and Truth Table, Boolean Expression and their Simplification by Algebraic Method, Karnaugh Map.

Half Adder, Full Adder. Decoder, Encoder, Multiplexer, Demultiplexer.

Flip-Flops and its different types and Registers.

ITOL-113: COMMUNICATIVE ENGLISH

Full Marks:100

Scope and Meaning of Communication; Essentials of Good Communication- Listening and Reading Skills, Difference between the Spoken and the Written Form, Verbal and Non-Verbal Communications, Gestures and Body Language, Formal and Informal Communication; Levels of Communication - Upward/Downward/Horizontal Communication, Barriers of Communication.

Mechanisms of Effective Oral Communication- How to Speak a Language clearly, fluently and naturally; Pronunciation, Difference between Spelling and Pronunciation, Everyday Conversation (with elders, friends, strangers etc.); Group Discussion and Facing an Interview Board; Public Speaking(Addressing a Meeting, Debate etc.), Practical Exercises.

Mechanisms of Effective Written Communication – Punctuation, Sequencing of Ideas, Building Paragraph/Body, a Good Introduction and Conclusion; Word Buildings, Making Sentences from Phrases and Idioms; Writing and Presentation of Reports; Writing Notes, Memos and Short Notes; Writing Letters for Business and Office Use; Writing Complaints; Placing Orders ; Summery Writing.

Extensive Oral and Written Examples of various kinds of English used in the field of Science and Technology.

ITOL-114: MATHEMATICS –I

Full Marks: 100

Sets, Relations and Functions

Sets, relations, properties of binary relations, closures of relation, equivalence relations, equivalence classes and partitions. Partial ordering relations and lattices. Functions, one to one and onto, principles of mathematical induction.

Sequence and Series

Sequence of Real Numbers, Bounded Sequences, Convergent and Non-Convergent Sequences, Uniqueness of the Limit and Bounds of a Convergent Sequence, Cauchy Sequence, Cauchy's General Principle of Convergence (proof of the necessary part only), Subsequences, Convergence and Divergence of Monotonic Increasing and Decreasing Sequences, Algebraic Operations on Limit (statements of the theorems without proof), Infinite Series, Statements of Basic Properties of Infinite Series (without proof). Absolute and Conditional Convergence, Some useful test for Convergence and Divergence: Comparison Test, D'Alemberts Ratio Test.

Matrices

Row and column operations, vectors and matrices, partitioning of matrices, representing relations using matrices, Determinant of a square matrix, minor, cafactor, the Cayley Hamilton theorem, inverse of a matrix, product form of inverse. Rank of a matrix. Solutions of simultaneous linear equations, existence of solutions, solution by Gaussian elimination, Eigen values and Eigen vectors.

Trigonometry

Geometrical Representation of Complex Numbers- the Argand Plane, Polar Form of a Complex Number, Modulus, Amplitude and their various properties, De Moiver's Theorem and its Application, Expansion of cos(x), sin(x) and tan(x) in Positive Integral Powers of x

ITOL-119: PRACTICAL I(Operating System and Office Automation)

Full Marks:100

DOS commands
UNIX commands
MS-Word, MS-PowerPoint, MS-Excel, MS-access

SEMESTER – II

IT-121: Introduction to Programming using C

Full Marks:100

Algorithm, Flowchart, Pseudo Code.

Structure of a C program, Tokens, Storage Classes (Automatic, External, Static, Register), Variables, Constants and Identifiers, Syntax and Semantics Error.

Data types, Initialization of Variable during Declarations, Operators in C and their Precedence.

Conditional Statements: if, if-else, switch

Iterative Statements: while, do-while, for

Other Statements: break, continue, goto, return

What is Arrays, One Dimensional Array and Two-Dimensional Array, Declaration of Arrays, Operations on Arrays.

Function: Function Declaration and Definition, Parameters, Actual Parameter, Formal Parameter. Calling a Function: Call by Value, Call by Address. Passing an Array to a Function, Recursive Function.

What is Pointer, Declaration of Pointer Variables, Operations using Pointer Variables.

Structure and Union, Declaration, Operations using Structure.

ITOL-122: ENVIRONMENTAL STUDIES

Full Marks:100

The Multidisciplinary nature of environmental studies

Definition**,** Scope and Importance, Need for Public Awareness.

Natural Resources

Renewable and Non-Renewable Resources, Natural Resources and Associated Problems (Forest Resources, Water Resources, Mineral Resources, Food Resources, Energy Resources, Land Resources*)*, Role of an Individual in Conservation of Natural Resources.

Ecosystems

Definition , Structure and Function of and Ecosystem, Producers, Consumers and Decomposers , Energy Flow in the System , Ecological Succession , Food Chains, Food Webs and Ecological Pyramids and its types, Characteristic Features, Structure and Function of the different Ecosystem(Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem**:** Ponds, Streams, Lakes, Rivers, Oceans, Estuaries etc.)

Biodiversity and its conservation

Definition, Genetics, Species and Ecosystem Diversities, Bio-geographical Classification of India, Value of biodiversity (consumptive use, productive use, social, ethical, aesthetic and option values) , Biodiversity at global, national and local level, India as a mega-diversity nation, Hot-spots of biodiversity ,Threats to biodiversity(habitat loss, poaching of wild life, man-wild-life conflicts) , Endangered and endemic species of India.

Conservation of biodiversity (In-situ and ex-situ conservation of biodiversity)

Environmental pollution

Definition, Causes, effects and control measure of different environmental pollution (air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear pollution).

Solid waste management (Causes, effects and control measures of urban and industrial waste).

Role of individual in prevention of pollution, Pollution case studies.

Disaster management (floods, earthquake, cyclone and landslides).

Social issues and the Environment:

Urban problems related to energy, Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people, its problem and concern, case studies.

Environmental ethics (issues and possible solutions, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies), Waste land reclamation, Consumerism and waste product, Environment protection acts.

Air (prevention and control of pollution) acts, Wild life protection act, Forest conservation act, Issues involved in enforcement of environmental legislation, public awareness.

Human population and the environment

Population growth, variation among nations, Population explosion- family welfare programme, Environment and human health, Human rights, Value education, HIV/ AIDS Women and child welfare, Role of information technology in environment and human health, Case studies

ITOL-123: MATHEMATICS – II

Full Marks:100

Mathematical Statistics:

Collection of data, frequency distribution, measures of central tendency Mean, Media Mode, Mean Deviation, Standard Deviation and Dispersion, Skewness .Basic concept of Probability, Properties of probability, conditional probability. Baye's Theorem,Concepts on Discrete and Continuous random variables and Binomial distribution , Poisson distribution and Normal distribution and its properties.

Differential Calculus

Concept of Limits, Continuity and Differentiability, Differentiation, Rolle's Theorem and its Applications, Lagrange's Mean Value Theorem and its Applications and Taylor's Theorem. Partial Derivatives, Indeterminate Forms, Maxima and Minima for single and two Variables, Lagrange's Multiplier.

Integral Calculus

Elementary Methods and Properties of Integration**,** Definite Integrals and its Properties, Concept of Indefinite Integral, Application of Integral Calculus(length, area, volume), Idea of Multiple Integrals Fourier Series.

ITOL-124/211: COMPUTER ORGANIZATION AND ARCHITECTURE

Full Marks:100

Functional Units of a Computer, Basic Instructions, Interconnection of Functional Units, Bus Structure, Memory Locations, Memory Addresses, Memory Operations, Instruction and Instruction Sequencing (Straight Line Sequencing and Branching), Addressing Modes, Introduction to Assembly Language, Stack, Subroutine, I/O instructions.

Introduction, Inter Register Transfer, Arithmetic Micro-operation, Logic Micro-operation, Shift Micro-operation, Conditional Control Statements, Fixed Point Binary Data, Instruction Code, Design of a Simple Computer.

Processor organization, Design of Arithmetic and Logic Circuit, Status Register, Design of Accumulator.

Hardwired Control, Micro-programmed Control Block Diagram, Symbolic Micro-program, Micro-programmed CPU Organization.

Program Controlled I/O, Interrupts: enabling and disabling interrupts, handling interrupts from multiple sources (priority control), DMA. Structure and Working of Hard Disk, CDROM, Printer.

Semiconductor Memory, SRAM, DRAM, ROM and their Speed, Size and Cost; Cache Memory, Mapping Functions, Replacement Algorithms.

ITOL-129: Laboratory (ITOL-121) **Full Marks:100**

SEMESTER-III

ITOL-212: DATA STRUCTURE USING C

Full Marks: 100

Introduction:
Concept of Data and Data Types, Abstract data type

Arrays :

Definition , Types, memory representation, address translation functions for one & Two dimensional arrays, Different operations.

Linked Structure:

Singly linked list, Differences between linked list and arrays, doubly linked list, circular link list , insertion, deletion and traversal of elements in different linked lists.

Stacks and Queues

Definition of Stack and Queue, implementation of stack and queue using array and linked list structure, application of stack and queues, postfix conversion and evolution of arithmetic expressions, priority queue

Binary trees:

Tree, Definition of binary tree and properties, memory representation, Binary search tree (construction, insertion, deletion and search), Trees traversal algorithms : Preorder, Postorder and Inorder(recursive and non-recursive), Breadth First Search, Depth First Search, Balanced trees, Threaded trees

Searching :

Linear and binary search algorithms, performance and complexity, Hashing

Sorting:

Different sorting algorithms and its performances and complexities (Bubble sort, insertion sort, selection sort, radix sort. merge sort, quick sort, heap sort)

File Structure:

Sequential, Index sequential file structure

ITOL-213: OPERATING SYSTEM

Full Marks:100

Introduction:

What is an operating system, batch systems, single user and multi user system, multiprogramming, time-sharing systems, personal computer systems, parallel systems or multiprocessing, distributed systems, real-time systems.

Processes Management:

Process , Thread, design issues of thread, user space thread and kernel space thread. Usage of thread. Process states, Implementation of process:- process table, Race condition, Critical-Section, mutual exclusion.

Process scheduling, preemptive and non preemptive scheduling. Scheduling Algorithms, Goals of scheduling algorithms

What is Deadlocks, System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery.

Memory management:

Allocation, Address binding (relocation), and protection, Swapping, paging, segmentation

Virtual memory - logical versus physical address space, paging, page fault, page table and its entries, demand paging, multi level page table.

File system:

Definition, file naming, file types(directory, regular, device), sequential access and random access files, file attributes, operations on file, free space management, directory management, path name(relative and absolute), operation on directories, mounting, contiguous allocation linked list allocation, FAT, i-nodes, directories in UNIX

I/O management:

Basic principles and overall structure of I/O management subsystem, Device controllers, block I/O, character I/O, DMA and interrupt driven I/O, interrupt handlers, device driver, device independent I/O software and user space I/O software.

ITOL-214: System Analysis & Design

Full Marks:100

Concept of System, Characteristics, Elements and Types of a System, The System Development Life Cycle, Considerations for Candidate System. System Analysis, The Role of System Analyst. System Planning and Initial Investigation, Information Gathering and Information Gathering Tools.

Structured Analysis, Data Flow Diagram(DFD), Data Dictionary, Decision Tree, Pseudo Codes, Decision Tables, System Performance Definition, Feasibility Study, Cost/Benefit Analysis.

The Process and Stages of System Design, Design Methodologies, Development Activities. Input Design, Output Design, Types of Forms, Basics of Form Design, Layout Considerations and Forms Control.

File Structure, File Organization, System Testing and its Requirement, Trends in Testing, Training and Documentation.

Implementation and Maintenance of Software, Post Implementation review. Selection of Hardware and Software, System Security, Disaster Recovery Planning.

ITOL-215: THEORETICAL FOUNDATION OF COMPUTING

Full Marks: 100

Finite Automata and Regular Expression, DFA, NFA, NFA with ε-moves, Equivalence of DFA and NFA, pumping lemma, Reduction of the number of states in a finite automata

Concept of languages and grammar, Regular expressions, Kleene closure, Algebra of regular expression, Regular Languages, Regular grammars

Context free languages

Definition, Context-free grammars, leftmost and rightmost derivations, derivation trees, Parsing and Ambiguity in grammars and languages, Simplification of Context free Grammars- removing useless productions, empty-productions and unit-productions, Normal forms- Chomsky and Greibach normal forms, Non context free languages , Closure properties of CFL, pumping lemma for CFL

Pushdown Automata (PDA)

Definition, Deterministic PDA and Deterministic Context free Languages, Equivalence of CFG and PDA

IT-218: Laboratory(ITOL-212) **Full Marks: 100**

SEMESTER – IV

ITOL-222: DATA COMMUNICATION AND COMPUTER NETWORKS

Full Marks:100

Introduction to Computer Networking:

Overview of Computer Network, The uses of computer network, Network Topologies, Layered Architecture, Relationship of Service to Protocol, Interface between layers, Connection oriented vs. Connectionless service The OSI reference model, TCP reference model, General Comparison between OSI and TCP/IP

The maximum data rate of a channel, Guided and wireless transmission media, satellite communication and their relative merits and demerits, Nyquist law, Shenno's Law, Interconnecting Devices: Repeaters, hubs, bridges, switch, routers and gateways, their functions and difference

Medium Access sub layer:

Channel allocation Static and Dynamic, Pure and slotted ALOHA, Persistent and non Persistent CSMA, CSMA/CD, cable type and length and other characteristics, IEEE 802.3 Ethernet frame format

Data Link layer:

Data Link layer design issues: services provided to the network layer, framing, error control, flow control, link management. Error detection and correction.

Network Layer:

Virtual circuit vs datagram subnet, Establishment of connection in connection oriented services, Routing Algorithms: distance vector routing, link state routing, Flow control, Definition of congestion and quality of service.Internet protocols (IP) address structure and frame format.

Transport Layer:

Works of the transport layer, Basic functionality of transport layer, connection establishment, connection release, end to end flow control, Concept of Socket and Port.

The TCP and UDP protocols.

The Application Layer:

Client Server Model, Concept of DNS, Telnet, WWW , HTTP, URL, Electronic mail.

IT-223: DATABASE MANAGEMENT SYSTEM

Full Marks:100

Introduction:

What is DataBase, Differences between Traditional File Approach and DataBase, Components of Data Base system, Advantages of DBMS, DBMS architecture, Data independence, ANSI/SPARC 3 level architecture.

Data Model:
Network data model, hierarchical data model

Relational Models:
Entity, attribute, tuple, relationship , Fundamental integrity rules: entity integrity, referential integrity, Relational algebra

Structured Query Language (**SQL):**
DDL, DML, DCL

Data modeling:
E-R model concept

Database design:
Functional dependencies, different types of keys, Normalization (1NF, 2NF, 3NF, BCNF), multivalued and join dependencies, 4NF and 5NF, Domain key normal form.

Data Base transaction:
Database concurrency, ACID properties, database backup and recovery

ITOL-225: OOP Using C++

Full Marks:100

Principles of object-oriented programming:-Object-Oriented Programming Paradigm, Basic Concepts of Object- Oriented Programming, Benefits of OOPs, Object-Oriented Languages, Applications of OOP.

Structure of C++ Program, Tokens, expressions and control structures:- Introduction, Tokens, Keywords, Identifiers Basic Data types, User Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, C++ Statements, Operator Precedence, Control Structures.

Classes and objects:- Specifying a Class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member

Function, Arrays within a Class, Memory Allocation for Objects, Static Data Member, Static Member Functions, Arrays of Objects, Object as Function Arguments. Constructors and destructors:-Introduction, Constructors, Parameterized Constructors, Multiple Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructors, Dynamic Constructors, Destructor.

Functions in c++:- The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Argument, Const. Arguments, Function Overloading, Friend and Virtual Function.
Operator overloading and type conversions :-Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators Using Friends, Manipulation of strings using Operators, Rules for Overloading Operators, Type conversions.

Inheritance: extending classes Introduction, Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance. Pointers, virtual functions and polymorphism: - Compile time Polymorphism, run time polymorphism, Pointers to Objects, This Pointer, and Pointers to Derived Classes, Virtual Functions.

ITOL-226: NUMERICAL ANALYSIS

Full Marks:100

Representation of numbers:

Floating point representation, single and double precision, round off errors and truncation errors.

Solution of non-linear equation:

Bisection method, Newtons method, Regula Falsi method, secant method, fixed point algorithm.

Solution of simultaneous linear equation:

Basic elimination method, Gaussian elimination method, Gauss Jordan method, method of successive approximation.

Ordinary differential equation:

Euler's method, Runge Kutta method

Interpolation:

Newton's interpolation, Lagrange's interpolation

Numerical integration:

Trapezoidal rule, Simpson rule, Newton's Cotes method.

ITOL-228: Laboratory (ITOL-223+ ITOL-225) **Full Marks: 100**

SEMESTER–V

ITOL-311: Computer Hardware & System Administration

Full Marks: 50

UNIT I: Evolution of computer system, Modern computer, Classification of computer, Personal Computer hardware: Monitor, Keyboard, Mouse, Scanner, printer, speaker

UNIT II: Hard Disk Drive: logical structure and file system, FAT, NTFS. Hard disk tools: Disk cleanup, error checking, defragmentation, scanning for virus, formatting, installing additional HDD. New trends in HDD. Floppy Disk Drive

UNIT III: Optical Media, CDROM, theory of operation, drive speed, buffer, cache, CD-r,

CD-RW, DVD ROM, DVD technology, preventive maintenance for DVD and CD

drives, New Technologies. Driver installation, Writing and cleaning Cd and DVD.

UNIT IV: Processor: Intel processor family. Latest trends in processor, Motherboard,

Sockets and slots, power connectors. Peripheral connectors. Bus slots, USB, pin

connectors. Different kinds of motherboards. RAM, different kinds of RAM. RAM

upgradation.

UNIT V: SMPS. BIOS. Network Interface Card, network cabling, I/O Box, Switches, RJ 45 connectors, Patch panel, Patch cord, racks, IP address.

Major components of the Linux operating systems. File system, setting user and group ownership of files and directories and access permissions, basic commands for starting and stopping processes, basic process attributes and their role in access control, mounting and unmounting file systems and partitions.

Linux system monitoring and logging. Examining the list of running processes on the system and understand the data presented there. Monitoring memory usage and disk space usage on the system. Customizing system log configuration.

The rules governing IP address classes and netmasks, Configuring the resolver library to arrange for TCP/IP name service, Bringing interfaces up and down, and set their IP addresses and netmasks,

Books:

1. Red Hat Linux: Proffitt: PHI
2. UNIX Network Programming- Vol-I and Vol-II: Stevens: PHI
3. Introduction to System Administration: IBM series: PHI

ITOL-312: Java Programming

Full Marks: 100

Introduction to Java - Features of Java - Object Oriented Concepts - Lexical Issues - Data Types - Variables - Arrays - Operators - Control Statements.

Classes - Objects - Constructors - Overloading method - Access Control- Static and fixed methods - Inner Classes - String Class - Inheritance - Overriding methods - Using super- Abstract class.

Packages - Access Protection - Importing Packages - interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Messaging - Runnable Interface - Inter thread Communication - Deadlock - Suspending, Resuming and stopping threads - Multithreading.

I/O Streams - File Streams - Applets - String Objects - String Buffer - Char Array - Java Utilities - Code Documentation.

Networks basics - Socket Programming - Proxy Servers - TCP/IP Sockets - Net Address - URL - Datagrams - Working with windows using AWT Classes - AWT Controls - Layout Managers and Menus.

ITOL-313: WEB TECHNOLOGY

Full Marks:50

Overview

History of Internet, Internet services: telnet, e-mail, ftp, WWW. Equipments required for an Internet Connection, Opening an e-mail account, Reading and Writing e-mail., ftp, www

URL, Surfing the Internet., Search Engine, uploading and downloading.

Web Browsers*:*

functions and working principle of web browsers; plug-ins & helper applications; conceptual architecture of typical web browsers (like Mozilla).

Introduction to Client/Server Computing:

client-server computing basics; types of Client/Server systems; middleware; N-tired systems: 2-tier/3-tier/4-tier systems; Fat Clients versus Fat Servers.

Web Servers:

Web services and web server functionality; web server composition; Conceptual architecture of a typical web server (like Apache).

Introduction to HTML

Hypertext Markup Language (HTML), Writing a web page in HTML, Different Tags, hyperlinks, tables, text formatting in web pages, Using graphics and multimedia in web pages; image maps., Use of frames and forms.

Client-Side Scripting

A brief introduction of client side scripting, different types of client side scripting language. Case study with Javascript [Constants, variables, operators, expressions, statements. Use of user-defined and built-in functions, Client-side Form validation using JavaScript, Using properties and methods of built-in objects.]

Server-Side Scripting

A brief introduction of server side scripting, different types of server side scripting languages. Difference between client side and server side scripting.

IT-318: Laboratory (ITOL-311) **Full Marks: 50**

IT-319: Laboratory (ITOL-312 + ITOL-313) **Full Marks: 100**