F.Y.B.Sc.IT Sem.-I (w.e.f. 2016-17)

1. Imperative Programming

Course Objectives

- Introduction of Types of Programming languages
- Understand the Structure, Compilation and Execution of a Program
- Learn the Operators and Expressions, Data Input and output, Conditional Statements and Loops, Functions of C Language
- Understand with example what are Preprocessor, Arrays, Pointers, Structures and Unions

2. Digital Electronics

Course Objectives

- This subject introduces basic electronic devices and integrated circuits (ICs) used in computer world.
- The study includes Number System, Binary Arithmetic, Boolean algebra and logic Gates, Minterm, maxterm and Karnaugh Map.
- Also it includes combinational Logic circuits, Arithmetic circuits, Multiplexer, Demultiplexer, ALU, Encoder and Decoder.
- It includes study of sequential circuits i.e. Flip-flops.
- To study Counters and Shift Registers.

3. Operating Systems

Course Objectives

- Introduction to Operating System
- Details of Processes and Threads, Memory Management
- Details of File Systems, Input-Output
- Introduction to Deadlocks, Virtualization and Cloud, Multiple Processor Systems
- Case Study on LINUX and ANDROID, Windows

4. Discrete Mathematics

Course Objectives

- To understand the concept of Set Theory, The Logic of Compound Statements, Counting and Probability.
- To provide the concept of Sequences, Mathematical Induction, Recursion and Functions.

- To understand the concept of Relations, Graphs and Trees.

5. Communication Skills
Course Objectives

- To study the Seven's Cs of effective Communication and understanding Business Communication.
- To understand the Business Message and Documents and developing Oral Skill for business.
- To learn the applicability of specific Communication Need.
- To provide an Insight knowledge about the Presentation Process.

F.Y.B.Sc.IT Sem.-II (w.e.f. 2016-17)

1. Object oriented Programming
Course Objectives

- This course provides an introduction to object oriented programming (OOP)
- Its main objective is to teach the basic concepts and techniques which form the object oriented programming paradigm
- The model of object oriented programming: abstract data types, encapsulation, inheritance and polymorphism
- To understand Fundamental features of an object oriented language: object classes and interfaces, exceptions,
- To clear the concept of File handling and Templates.

2. Microprocessor Architecture
Course Objectives

- It is a study of 8085 microprocessor. It is an 8-bit microprocessor.
- To study internal instruction set of 8085 microprocessor in detail along with its architecture and memory interface.
- To study Code conversion, BCD arithmetic and 16-bit data operations
- To study interrupts.
- After this study of 8-bit microprocessor, Pentium, Pentium Pro microprocessors and core – 2 and later microprocessors like i3, i5 and i7 are included in the syllabus.
- To study of SUN SPARC microprocessor is also included.

3. Web Programming
Course Objectives

- Introduction to internet and its applications
- Creating HTML5 Page layout and navigation
- Creating HTML5 Tables, Forms and Media
- Understand the Java Script, Operators, Events and Event Handlers
- Understand the Advanced PHP and MySQL

4. Numerical and Statistical Methods
Course Objectives

- To provide the concept of solutions of Algebric and Transcendental Equations.
- To understand the concept of Least-Squares Regression and Linear Programming.
- To provide the concept of Random Variables.

5. Green Computing
Course Objectives

- The main objective of this subject is to learn and discuss the problems, carbon footprints and best possible way to overcome it in future.
- To familiarize students with the Global initiatives taken by different countries for developing a "Green ICT".
- To enhance the minimum usage of power and best possible way to reduce the cooling cost by taking respective measures.
- Making students understand the way of working in different perspective and explaining the importance of "Going Paperless".
- Ensuring the students the importance of Recycling majorly by Hardware considerations.
- The main objective of this subject is to Green your Information systems and staying Green without causing any damage to the Environment by saving the resources.

S.Y.B.Sc.IT Sem.-III(w.e.f. 2017-18)

1. Python Programming
Course Objectives

- Introduction of The Python Programming Language
- Understand Variables and Expressions, Conditional Statements, Functions and Strings of Python
- Create Lists, Tuples and Dictionaries
- Understand Handling of Files and Exceptions
- Create Classes, Objects and Multithreaded Programming
- Creating the GUI Form and Adding Widgets

2. **Data Structures**
Course Objectives

- Introduction Data Structure
- Details of Array, Linked List: Stack , Queue , Sorting and Searching Techniques
- Details of Tree, Advanced Tree Structures
- Details of Hashing Techniques
- Information of Graph, Applications of the Graph

3. **Computer Networks**
Course Objectives

- The main objective is to provide the detailed introduction to the Data Communication, Network Models, Physical Layer, Network Layer, Transport Layer and Analog and Digital Transformation.
- To enhance the utilization of bandwidth by studying the Multiplexing and spectrum spreading, transmission media and various types of switching.
- For making students understand the controls such as Data link Control, Media Access Control Types of wireless LANs, Virtual LANs and connecting devices.

4. **Database Management Systems**
Course Objectives

- Understand the role of a database management system in an organization.
- Understand basic database concepts, including the structure and operation of the relational data model.
- Construct simple and moderately advanced database queries using Structured Query Language (SQL).
- Understand and successfully apply logical database design principles, including E-R diagrams and database normalization.
- Understand the concept of a database transaction and related database facilities, including concurrency control, journaling, backup and recovery, and data object locking and protocols.
- Understand the role of the database administrator.

5. **Applied Mathematics**
Course Objectives

- To study Matrices, Complex Numbers, Equations of the first order and of the first degree, Differential equation of the first order and of a degree higher than the first, Linear differential Equations with constant coefficients.
- To study Laplace transform and Inverse Laplace transform.
- To study Multiple Integrals, Applications of integration.
- To study Beta and Gamma functions, Differentiation under the Integral sign and Error functions.

S.Y.B.Sc.IT Sem.-IV(w.e.f. 2017-18)

1. Core Java

Course Objectives

- Details of Data types, Control Flow Statements, Iterations, Classes
- Details of Inheritance, Packages, Enumerations, Arrays
- Details of Multithreading, Exceptions
- Details of Byte streams, Event Handling , Abstract Window Toolkit,
- Details of Layouts

2. Introduction to Embedded Systems

Course Objectives

- Introduction of Embedded Systems and general purpose computer systems
- Understand Characteristics and quality attributes of embedded systems
- Learn Embedded Systems – Application and Domain Specific
- Designing Embedded System with 8051 Microcontroller
- Understand Real Time Operating System (RTOS)

3. Computer Oriented Statistical Techniques

Course Objectives

- To study various methods from the field of statistics in this subject.
- Starting from calculation of Mean, Median, Mode and other measures of central tendency, the standard deviation and other measures of dispersion are studied.
- It continues with Moments, skewness and kurtosis along with Elementary Probability Theory, Elementary Sampling Theory. Statistical Estimation Theory including statistical Hypotheses, Test of Hypotheses and significance, Type I & Type - II errors, Level of significance, Two tailed and one tailed tests are studied.
- It continues with small sampling theory, curve fitting and Method of least squares and correlation theory.
- To study practically the Statistical Techniques in computers using R language.

4. Software Engineering

Course Objectives

- Introduction to Software Requirements. Software Processes
- Details of Software Development Process Models, Agile software development
- Details of Socio-technical system,Critical system, Requirements Engineering Processes
- Details of System Models, Architectural Design, User Interface Design
- Details of Project Management , Quality Management, Software Testing

5. **Computer Graphics and Animation**
Course Objectives

- To acquire appropriate knowledge about the Computer Graphics, Algorithms used for scan conversion and the Transformation of 2D and 3D scaling and Metrics.
- To enhance the teaching of viewing 3D, techniques and Algorithms of visible surface and Plane curves and surfaces.
- To make students understand the principles of computer animation, Image manipulation and storage.

T.Y.B.Sc.IT Sem.-V (w.e.f. 2018-19)

1. **Software Project Management**
Course Objectives

- To guide entire project management process in the field of software.
- To introduce Project Evaluation, Programme management and project planning.
- To study Selection of an Appropriate project approach. To study software cost estimation and Activity Planning, Risk management and resource allocation.
- To study Monitoring and control, Managing contracts and Organizational behaviour. To study working in teams.
- To discuss the important feature Software Quality. And lastly it ends with Project Closeout.

2. **Internet of Things**
Course Objectives

- Introduction to The Internet of Things: An Overview
- Details of Design Principles for Connected Devices, Internet Principles
- Details of Thinking About Prototyping, Prototyping Embedded Devices
- Details of Prototyping the Physical Design. , Prototyping Online Components
- How to use Techniques for Writing Embedded Code, Business Models
- Details of Moving to Manufacture, Ethics

3. **Advanced Web Programming**
Course Objectives

- Introducing .NET: The .NET Framework
- Types, Objects, and Namespaces of C#

- Web Form Fundamentals of ASP.NET
- Error Handling, Logging, and Tracing: using C# with ASP.NET
- ADO.NET Fundamentals of ASP.NET
- Understand the ASP.NET AJAX controls
- Details about XML classes and Validation

4. Linux System Administration
Course Objectives

- Understand the role and responsibilities of a Linux system administrator.
- To learn file processing, process management, IO management, queues management, networking, storage backup, account management, proper system start-up and shutting down, as well as other tasks.
- Install and configure the Linux operating system and different types of servers.
- Manage the resources and security of a computer running Linux at a basic level
- Make effective use of Unix utilities, and scripting languages
- Configure and manage simple TCP/IP network services on a Linux system.

5. Enterprise Java
Course Objectives

- To understand the concept and architecture, server and containers, lifecycle and working of Java EE and its database connectivity.
- To introduce various technologies, methods, cookies, session, working with I/O Non-blocking.
- To provide introduction to Java server pages its action elements, implicit objects, scope and EI expressions.
- To enhance the working with different types of Java Enterprise Beans such as session beans, message driven beans, interceptors, java naming and directory interface (JNDI).
- To familiarize with the mapping of Persistence, Object/Relation, Introduction to Java Persistence API, Introduction to Hibernate application.

T.Y.B.Sc.IT Sem.-VI (w.e.f. 2018-19)

1. Software Quality Assurance
Course Objectives

- Introduction to Quality, Software Quality Fundamentals of testing
- Details of Principles of Software Testing, Unit Testing, Equivalence Class Testing
- Details of Path Testing, Data Flow Testing, Software Verification and Validation

- Details of V-test Model, Levels of Testing
- Details of Special Tests

2. Security in Computing
Course Objectives

- To study overview of security in computing, Risk analysis, Secure design principles.
- To study Authentication & authorization, Encryption, Storage security, Database security and secure network design.
- To study Network device security, Firewalls and Wireless Network security.
- To study Intrusion detection and prevention system, Voice over IP (VoIP) and PBX security, Operating system security models are included.
- To study Virtual Machines and Cloud Computing, Secure application design and Physical security.

3. Business Intelligence
Course Objectives

- Identify the major frameworks of computerized decision support: decision support systems (DSS), data analytics and business intelligence (BI).
- Explain the foundations, definitions, and capabilities of DSS, data analytics and BI.
- List the definitions, concepts, and architectures of data warehousing.
- Demonstrate the impact of business reporting, information visualization, and dashboards.
- Explain data mining, neural networks, support vector machines, text analytics, text mining, sentiment analysis, web mining, web analytics, social analytics, and social network analysis.
- Outline the definitions, concepts, and enabling technologies of big data analytics.

4. Enterprise Networking
Course Objectives

- To introduce the General Network Design, architecture, Methodology, models and lifecycle phases.
- To provide knowledge of various Enterprise wired and wireless LAN/ WAN and Data centre designs such as its architecture, types of rules, Layers and switches used, storage and application load balancing.
- To enhance the different types of address, classes and its protocols, headers, strategies, configuration and also managing security and polices of the network.

5. IT Service Management

Course Objectives

- Introduction of IT Service Management
- Understand the Service Strategy Principles
- Detail Fundamentals of Service Design and its Processes
- Detail Fundamentals of Service Transition and its Processes
- Understand Service Operation Principles and its Processes
- Understand Continual Service Improvement(CSI) Principles