B. Sc. IT Learning Objectives & Learning Outcomes

S.Y.B.Sc. (IT) (Sem III)

SN	LEARNING OBJECTIVES	LEARNING OUTCOMES
	Python Programming	
1.	To explain a basic introduction to object-oriented and procedural programming using Python.	Students will be able to understand why Python is a useful scripting language for developers.
2.	To acquire knowledge and programming skills in python to solve problems in different domains	Students will learn how to design and program Python applications.
	Data Structures	
1.	To enable students to understand the representation and use of primitive data types, built in data structures and allocation used in memory.	Students will be able to understand the representation and use of primitive data types, built in data structures and allocation used in memory.
2.	To enable students to understand the concept of stack, queue, link list, tree, graph, memory allocation, garbage collection and applications of Data Structures.	Students will be able to understand the concept of stack, queue, link list, tree, graph, memory allocation, garbage collection and applications of Data Structures.
	Computer Networks	
1.	To help students acquire basic knowledge about data communications and computer networking.	Students will be able to acquire basic knowledge of the taxonomy and terminology related to computer networking and enumerates the layers of OSI model and TCP/IP model.
2.	To assist student to learn about the different models and devices related to networks	Students will be able to acquire basic knowledge about routing and classification the routing protocols and analysis of assignment of the IP addresses for the given network.
	Database Management Systems	
1.	To help students to learn database management system with an emphasis on how to organize, maintain and retrieve information from a DBMS.	Students will be able to able to differentiate Database management system and file processing system.
2.	To help students to learn about ER Diagram and their relationships.	Students will be able to make an ER Diagram using online softwares
3.	To help students learn the concepts of integrity and security.	Students will be able to able to understand the concepts of integrity, security and normalization approach.
	Applied Mathematics	
1.	Students will be taught the basic concepts of matrices and complex numbers.	Student will be able to understand basic concepts of matrices and complex numbers.

2.	Students will be taught to solve linear and higher order differential equations.	Student will be able to solve linear and higher order differential equations.
3.	Students will be taught the concepts of Laplace and inverse Laplace transform and solve differential equations by using Laplace and inverse Laplace transform.	Student will be able to understand concepts of Laplace and inverse Laplace transform and solve differential equations by using Laplace and inverse Laplace transform.
4.	Students will be taught to solve multiple integral and find area and volume of regions by using multiple integration.	Student will be able to solve multiple integral and find area and volume of regions by using multiple integration.
	Python Programming Practical	
1.	To demonstrate the principles of object-oriented programming in well-written modular code.	Students will learn the concepts like Basics of Python programming, Decision Making and Functions in Python, Object Oriented Programming using Python, Files Handling in Python, GUI Programming and Databases operations in Python, Multithreading and Exception Handling
2.	To enable students to solve problems requiring the writing of well-documented programs in the Python language.	Student will be able to understand the syntax and semantics of Python Programming
	Data Structures Practical	
1.	To help students to learn programming various inserting, deleting, sorting, searching, traversing mechanisms with various data structures.	Student will be able to learn programming various inserting, deleting, sorting, searching, traversing mechanisms with various data structures.
	Computer Networks Practical	
1.	To enable students to simulate the working of a network topology	Student will learn to simulate the working of various routing protocols.
2.	To enable students to analyze packets in a network.	Student will learn to use tools like packet analyzers for analyzing packets in a network.
	Database Management Systems Practical	
1.	To make students learn basic SQL queries to retrieve, delete, update and insert the data in database.	Student will be able to execute queries using Oracle Express Edition 11G.
2.	To make students learn to develop skills for query processing and optimization.	Student will be able to write queries in SQL to retrieve any type of information from a data base.
3.	To make students learn to identify the basic issues of transaction processing.	Student will be able to able to identify the use of transaction processing in real world.
	Mobile Programming Practical	
1.	Students will be taught to build basic mobile applications using CORDOVA.	Student will be able to build basic mobile applications using CORDOVA.
2.	Students will be taught to add plugins like Battery-Plugin, Camera-Plugin, Contacts,	Student will be able to add plugins like Battery-Plugin, Camera-Plugin, Contacts, Plugin etc in

	Plugin etc in their mobile applications.	their mobile applications.

S.Y.B.Sc. (IT) (Sem IV)

SN	LEARNING OBJECTIVES	LEARNING OUTCOMES
	Core Java	
1.	To provide knowledge about basic Java language syntax and semantics to write Java programs.	Student will be able to understand how to design, implement, test, debug, and document programs using basic Java language syntax and semantics.
2.	To assist students to understand the fundamentals of object-oriented programming in Java to design GUI applications	Student will be able to implement object oriented programming concepts effectively.
3.	To teach how to design a graphical user interface (GUI) using applets and AWT in Java.	Student will be able to demonstrate how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved
	Introduction to Embedded Systems	
1.	To acquire knowledge about the basic working of a microcontroller system and its programming using high level languages.	Student will be able to understand the difference between the general computing system and the embedded system and also recognize its classification.
2.	To provide experiential learning to integrate hardware and software for microcontroller application systems.	Student will learn to integrate hardware and software for microcontroller application systems.
	Computer Oriented Statistical Techniques	
1.	Students will be taught to apply t-test and Chi-Square test for independence and Goodness of fit.	Student will be able to analyze ungrouped and grouped data using measures of location and dispersion.
2.	Students will be taught to perform test of hypothesis as well as calculate	Student will be able to perform test of hypothesis as well as calculate

	confidence interval for a population parameter for single sample and double sample.	confidence interval for a population parameter for single sample and double sample.
3.	Students will be taught to analyze ungrouped and grouped data using measures of location and dispersion.	Student will be able to apply Student's t-test and Chi-Square test for independence and Goodness of fit.
4.	Students will be taught to compute and interpret results of bivariate and multivariate regression and correlation analysis for forecasting.	Student will be able to compute and interpret results of bivariate and multivariate regression and correlation analysis for forecasting.
Software Engineering		
1.	Students will be provided with the knowledge of basic Software engineering methods and practices, and their appropriate application.	Student will be able to understand the different process models and project management concepts.
2.	Students will be taught software engineering layered technology and Process framework.	Student will be able to develop skills for cost estimation for software development and understand the software risks
3.	Students will be given a general understanding of software process models such as the waterfall and evolutionary models.	Student will be able to enhance teamwork ability in project scheduling and apply the concepts of software quality assurance.
4.	To make the students understand software requirements and the SRS documents.	Student will be able to make a SRS for a real time project.
Computer Graphics and Animation		
1.	To make students learn the use of components of graphics system.	Student will be able to able to learn basic concepts used in computer graphics.
2.	To make students learn to convert the basic geometrical primitives and transform the shapes to fit them as per the picture definition.	Student will be able to to implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.
3.	To make students comprehend and analyze the fundamentals of animation	Student will be able to describe the importance of viewing and projections in 2D and 3D and also to define the fundamentals of animation, virtual reality and its related technologies.
Core Java Practical		
1.	To teach basic and Object-Oriented programming concept using basic syntaxes of control Structures, strings	Student will be able to understand the fundamentals of object-oriented programming in Java, including

	and function for developing skills of logic building activity.	defining classes, objects, invoking methods etc., exception handling mechanisms and understanding the principles of inheritance, packages and interfaces.
2.	To help students to learn AWT and Applet packages for effective GUI creation and Event handling capabilities.	Student will be able to learn experience of designing, implementing, testing, and debugging graphical user interfaces in Java using applet and AWT that respond to different user events.
Introduction to Embedded Systems Practical		
1.	Students will be provided with the knowledge to understand the Embedded systems design, Embedded programming and their operating system	Student will be able to understand the architecture and concepts of 8051 Microcontrollers.
2.	To make students learn embedded C programming in a microcontroller.	Student will be able to gain knowledge about the basic working of a microcontroller system and its programming in embedded C language.
Computer Oriented Statistical Techniques Practical		
1.	Students will be taught the basic syntax of R programming.	Student will be able to understand basic syntax of R programming.
2.	Students will be taught to analyze data using statistical functions in R.	Student will be able to analyze data using statistical functions in R.
3.	Students will be taught to import, review, manipulate and summarize data-sets in R.	Student will be able to import, review, manipulate and summarize data-sets in R.
4.	Students will be taught to perform appropriate statistical tests using R.	Student will be able to perform appropriate statistical tests using R.
Software Engineering Practical		
1.	To make students understand different UML diagrams.	Student will be able to understand different UML diagrams.
2.	To enable students to draw UML diagrams for developing software.	Student will be able to draw UML diagrams for developing software.
	Computer Graphics and Animation Practical	
1.	Students will be taught to create animation	Students will be able to write programs in C and C++ using graphics software.
2.	To make students learn screen coordinates and their pixel values using screen axis.	Students will be able to create animations using computer graphics.

3.	To make students learn screen co-ordinates and their pixels values using screen axis and design different shapes on screen using real world object coordinates.	Students will be able to learn screen co-ordinates and their pixels values using screen axis and design different shapes on screen using real world object coordinates.