



COURSE OBJECTIVES & OUTCOMES

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

B.Sc. (I.T.)

PROGRAM & PROGRAM SPECIFIC OUTCOMES

On successful completion of this program the student will be able to:

- Identify information technology related problems, analyze them and design the system or provide solution to the problem.
- Apply current technical concepts and` practices in the core information technologies of human computer interaction, information management, programming, networking and web systems and technologies.
- Use the system Analysis Design Paradigm to critically analyze a problem.

SEMESTER I

Course Code: USIT101 Imperative Programming OBJECTIVES

The Objective of the course is to enable students to gain an understanding of the basic structure of programming languages like data types, control structures, naming conventions. The aim is also to acquaint students with different language paradigms like functional and imperative.

OUTCOMES

On successful completion of this course the learner will

- Gain an understanding of the basic structure of programming languages like data types, control structures, naming conventions.
- Understand different language paradigms like functional, imperative.

Course Code: USIT102 Digital Electronics OBJECTIVES

- The Objective of the course is to enable students to :
- Gain knowledge about the different techniques to synthesize digital circuits at logic level using combinational circuits, sequential circuits.
 - Understand optimization of logic circuits and technology mapping.

OUTCOMES

On successful completion of this course the learner will

- Know different techniques to synthesize digital circuits at logic level using combinational circuits, sequential circuits.
- Understand optimization of logic circuits, technology mapping.

Course Code: USIT103 Operating Systems OBJECTIVES

- The Objective of the course is to enable students to :
- Understand process and synchronization and scheduling of processes.

- Use system calls for managing processes, memory and the file system.
- Understand the data structures and algorithms used to implement an OS.

OUTCOMES

On successful completion of this course the learner will

- Understand what a process is and how processes are synchronized and scheduled.
- Be able to use system calls for managing processes, memory and the file system.
- Understand data structures and algorithms used to implement an OS.

Course Code: USIT104

Discrete Mathematics

OBJECTIVES

The Objective of the course is to enable students to :

- Understand the concept of logic theory, Proving using induction.
- Gain knowledge on the use and implementation of basic concept of set theory as well as functions and their properties.
- Understand the concept of recursion, equivalence relations, properties of graphs and trees.

OUTCOMES

On successful completion of this course the learner will

- Understand the concept of logic theory,
- Be able to prove using induction.
- Be able to use basic concept of set theory as well as functions and their properties.
- Understand the concept of recursion, equivalence relations, properties of graphs and trees.

Course Code: USIT105

Communication Skills

OBJECTIVES

The Objective of the course is to enable students to :

- Understand communication, and its importance in management skills.
- Understand the interpersonal communication process

- Gain knowledge about the importance and appropriate use of written and oral communication.

OUTCOMES

On successful completion of this course the learner will

- Understand communication, and its importance in management skills.
- Understand the interpersonal communication process
- Know the importance and appropriate use of written and oral communication.

SEMESTER II

Course Code: USIT201

Object Oriented Programming

OBJECTIVES

The Objective of the course is to enable students to :

- Understand concept of object oriented programming and advanced C++
- Understand the difference between object oriented and procedural programming.
- Program using advanced C++ features

OUTCOMES

On successful completion of this course the learner will

- Understand object oriented programming and advanced C++ concepts
- Be able to explain the difference between object oriented programming and procedural programming
- Be able to program using more advanced C++ features such as composition of objects, operator overloads, dynamic memory allocation

Course Code: USIT202

Microprocessor Architecture

OBJECTIVES

The Objective of the course is to :

- To introduce students with the architecture and operations of typical microprocessors
- To familiarize the students with the programming and interfacing of microprocessors
- To provide strong foundation for designing real world applications using microprocessors

OUTCOMES

On successful completion of this course the learner will

- Understand the architecture and operations of typical microprocessors
- Know the programming and interfacing of microprocessors
- Design real world applications using microprocessors

Course Code: USIT203

Web Programming

OBJECTIVES

The Objective of the course is to orient students :

- About internet and WWW, basics of HTML and formatting using CSS.
- To create navigational aids, table formatting, inserting multimedia and forms.
- About Basics of JavaScript along with event handling.
- About Basics of PHP and database connectivity using PHP.

OUTCOMES

On successful completion of this course the learner will

- Understand about internet and WWW, basics of HTML and formatting using CSS.
- Be able to create navigational aids, table formatting, inserting multimedia and forms.
- Understand the basics of JavaScript along with event handling.
- Know the basics of PHP and database connectivity using PHP.

Course Code: USIT204

Numerical and Statistical Methods

OBJECTIVES

The Objective of the course is to enable students to learn:

- Formulation of mathematical models based on scientific principles to simulate the behaviour of a simple physical system.
- Approximating roots through iteration method and implementation in programming language.
- Integration and differentiation through iterative method.

OUTCOMES

On successful completion of this course the learner will

- Understand how mathematical models can be formulated on the basis of scientific principles to simulate the behaviour of a simple physical system.
- Learn approximate roots through iteration method and implementation in programming language.
- Learn integration and differentiation through iterative method.

Course Code: USIT205

Green Computing

OBJECTIVES

The Objective of the course is to enable students to :

- Attain economic viability and improve the way computing devices are used.
- Understand Green computing practices
- Understand the importance of Green Computing in design and manufacturing stages of EEE.

OUTCOMES

On successful completion of this course the learner will

- Understand the use of computing devices in a way as to attain economic viability
- Understand how Green computing practices include the development of environmentally sustainable production practices, energy efficient computers and improved disposal and recycling procedures.
- Understand the importance of Green Computing in the design and manufacturing stages of EEE.

SEMESTER III

Course Code: USIT301

Python Programming

OBJECTIVES

The Objective of the course is to:

- Train students for basic writing and running Python scripts.
- Teach students advanced features such as File operations, regular expressions, working with binary data and using the extensive functionality of Python programming with GUI interface.

OUTCOMES

On successful completion of this course the learner will

- Understand the basics of writing and running Python scripts.
- Learn advanced features such as File operations, regular expressions, working with binary data and using the extensive functionality of Python programming with GUI interface.

Course Code: USIT302

Data Structures

OBJECTIVES

The Objective of the course is to enable students to :

- Gain understanding of the basic concepts of data structures and algorithms and searching and sorting techniques.
- Understand basic concepts of stacks, queues, lists, trees and graphs.
- Write algorithms and solve problems with the help of fundamental data structures.

OUTCOMES

On successful completion of this course the learner will

- Understand the basic concepts of data structures and algorithms
- Understand concepts about searching and sorting techniques.
- Understand basic concepts about stacks, queues, lists, trees and graphs.
- Understand about writing algorithms and step by step approach in solving problems with the help of fundamental data structures.

Course Code: USIT303

Computer Networks

OBJECTIVES

The Objective of the course is to enable students to :

Acquire learning of concepts and fundamentals of data communication and computer networks organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems. The course is further aimed at introducing students to practical implementation of different routing protocols.

OUTCOMES

On successful completion of this course the learner will

- Learn about the concepts and fundamentals of data communication and computer networks organization and implementation,
- Develop a theoretical understanding of data communication and computer networks,
- Know installation, monitoring, and troubleshooting of current LAN systems.
- Be able to implement different routing protocols.

Course Code: USIT304

Database Management Systems

OBJECTIVES

The Objective of the course is to introduce students to database management systems, with an emphasis on organizing, maintaining and retrieving information from a DBMS.

OUTCOMES

On successful completion of this course the learner will

- Understand database management systems
- Understand how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.

Course Code: USIT305

Applied Mathematics

OBJECTIVES

The Objective of the course is to enable students to understand main concepts of calculus, derivatives and integrals.

OUTCOMES

On successful completion of this course the learner will

- Understand main concepts of calculus, derivatives and integrals.

SEMESTER IV

Course Code: USIT401

Core Java

OBJECTIVES

The Objective of the course is to enable students to :

- Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- Be aware of the important topics and principles of software development.
- Have the ability to write a computer program to solve specified problems.
- Be able to use the Java SDK environment to create, debug and run simple Java programs.

OUTCOMES

On successful completion of this course the learner will

- Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- Be aware of the important topics and principles of software development.
- Be able to write a computer program to solve specified problems.

- Be able to use the Java SDK environment to create, debug and run simple Java programs.

Course Code: USIT402

Introduction To Embedded Systems

OBJECTIVES

The Objective of the course is to enable students to :

- Gain knowledge about the basic functions of embedded systems.
- Learn different components of embedded systems.
- Learn detailed description of the life-cycle for designing multi-objective and multi-discipline embedded systems.
- Design and develop embedded systems with 8051 microcontrollers and embedded C language.

OUTCOMES

On successful completion of this course the learner will

- Acquire knowledge about the basic functions of embedded systems.
- Learn different components of embedded systems.
- Learn detailed description of the life-cycle for designing multi-objective and multi-discipline embedded systems.
- Be able to design and develop embedded systems with 8051 microcontrollers and embedded C language.

Course Code: USIT403

Computer Oriented Statistical Techniques

OBJECTIVES

The Objective of the course is to enable students to learn:

- Measures of central tendencies with the help of R programming.
- Moments, skewness, kurtosis and importing data in R with the help of Excel/CSV file.
- Curve Fitting and Correlation Theory and Small Sampling Theory.
- Statistical Estimation with the help of hypothesis.

OUTCOMES

On successful completion of this course the learner will

- Understand measures of central tendencies with the help of R programming.
- Learn Moments, skewness, kurtosis and importing data in R with the help of Excel/CSV file.
- Learn Curve fitting and correlation Theory and small sampling theory.
- Understand statistical estimation with the help of hypothesis.

Course Code: USIT404

Software Engineering

OBJECTIVES

The Objective of the course is to enable students to :

- To learn the concepts and methods required for the construction of a large scale software system.
- To develop a broad understanding of the discipline of software engineering.
- To gain the knowledge of techniques for the analysis, design and cost estimation of software.

OUTCOMES

On successful completion of this course the learner will

- Learn the concepts and methods required for the construction of a large scale software system.
- Develop a broad understanding of the discipline of software engineering.
- Understand techniques for the analysis, design and cost estimation of software.

Course Code: USIT405

Computer Graphics and Animation

OBJECTIVES

The Objective of the course is to:

- To provide an extensive introduction about computer graphics system, algorithms and transformation techniques
- To make students understand the clipping and viewing techniques along with wireframe models and shading techniques

- To be able to discuss the application of computer graphics in the area of visualisation, games and business applications
- Enable students understand the basic pipeline of graphics and implement various algorithms to scan convert the basic geometric shapes, fill shapes with color, clipping and transformation

OUTCOMES

On successful completion of this course the learner will

- Know about computer graphics system, algorithms and transformation techniques
- Understand the clipping and viewing techniques along with wireframe models and shading techniques
- Understand the application of computer graphics in the area of visualisation, games and business applications
- Understand the basic pipeline of graphics and implement various algorithms to scan convert the basic geometric shapes, fill shapes with color, clipping and transformation

SEMESTER V

Course Code: USIT501

Software Project Management

OBJECTIVES

The Objective of the course is to enable students to :

- Understand the fundamental principles of Software Project management and acquire knowledge of responsibilities of project manager.
- Be familiar with different methods and techniques of project management.
- Gain knowledge of issues and challenges emerging during Software project Management.
- Gain understanding on reasons for majority of software projects failure and on ways in which the failure probability can be reduced.
- Be able to do the Project Scheduling, tracking, Risk analysis, Quality management and Project Cost estimation using different techniques.

OUTCOMES

On successful completion of this course the learner will

- Understand the fundamental principles of Software Project management &

- Have knowledge of responsibilities of project manager and how to handle these.
- Be familiar with the different methods and techniques used for project management.
- Know the issues and challenges faced while doing Software project Management
- Understand reasons for failure of software projects fails and how to reduce failure probability
- Be able to do the Project Scheduling, tracking, Risk analysis, Quality management and Project Cost estimation using different techniques.

Course Code: USIT502

Internet Of Things

OBJECTIVES

The Objective of the course is to enable students to :

- Understand the definition and significance of the Internet of Things.
- Understand IoT Market perspective and to implement data and knowledge management.
- Learn about the Practical use of devices in IoT Technology and Home Automation in IoT.

OUTCOMES

On successful completion of this course the learner will

- Develop an understanding of the definition and significance of the Internet of Things.
- Understand IoT Market perspective and to implement data and knowledge management.
- Know the practical use of devices in IoT Technology.
- Understand home automation in IoT.

Course Code: USIT503

Advanced Web Programming

OBJECTIVES

The Objective of the ASP.NET training course is to enable students to :

- Learn creating a simple Active Server Page ASP.NET application that delivers dynamic content to the Web.
- Understand the ASP.NET concepts such as Web Forms and handling events, Web Controls and input validation. Students will also learn to use

the new web application architecture and Web Services, and debug in the new integrated development environment.

- Develop web application with ASP.Net with database connectivity.

OUTCOMES

On successful completion of this course the learner will

- Be able to create a simple Active Server Page ASP.NET application that delivers dynamic content to the Web.
- Understand Web Forms and handling events,
- Understand Web Controls and input validation, using the new web application architecture and Web Services, and debugging in the new integrated development environment.
- Develop web application with ASP.Net with database connectivity.

Course Code: USIT504

Artificial Intelligence

OBJECTIVES

The Objective of the course is to:

- Present an overview of artificial intelligence (AI) principles and approaches.
- Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents: Search, Knowledge representation, inference, logic, and learning.
- Also provide an opportunity to students to implement an AI system in a team environment.

OUTCOMES

On successful completion of this course the learner will

- Develop an overview of artificial intelligence (AI) principles and approaches.
- Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents: Search, Knowledge representation, inference, logic, and learning.
- Implement a small AI system in a team environment.

Course Code: USIT506

Enterprise Java

OBJECTIVES

<p>The Objective of the course is to enable students to :</p> <ul style="list-style-type: none"> • Provide necessary knowledge to design and develop dynamics, database-driven application using J2EE. • Learn connecting any JDBC compliant database and be able to implement the techniques for business application development
OUTCOMES
<p>On successful completion of this course the learner will</p> <ul style="list-style-type: none"> • Have the knowledge to design and develop dynamics, database-driven application using J2EE. • Know how to connect any JDBC compliant database • Able to implement the techniques for business application development.
<p>Course Code: USIT5P1 Project Dissertation OBJECTIVES</p>
<p>The Objective of the Project Dissertation is to enable students to create software projects based on the technology they learned.</p>
OUTCOMES
<p>On successful completion of this course the learner will be able to create software projects based on the technology they learned.</p>

SEMESTER VI
<p>Course Code: USIT601 Software Quality Assurance OBJECTIVES</p>
<p>The Objective of the course is to enable students to learn:</p> <ul style="list-style-type: none"> • Systematic approach to the development, operation, maintenance and retirement of software. • To use available resources to develop software, reduce cost of software and how to maintain quality of software. • Methods and tools of testing and maintenance of software.

OUTCOMES

On successful completion of this course the learner will

- Understand development, operation, maintenance, and retirement of software.
- Understand how to develop software, reduce cost of software and how to maintain quality of software.
- Know the methods and tools of testing and maintenance of software.

Course Code: USIT602

Security in Computing

OBJECTIVES

The Objective of the course is to enable students to:

- Learn the need for, and the technology, algorithms, and standards used in providing computer and communications security.
- Understand the concepts of computer security, cryptography, digital certificates, secure protocols, detection and other security techniques.
- Configure secure networks using different network security protocols.

OUTCOMES

On successful completion of this course the learner will

- Learn the need for, and the technology, algorithms, and standards used in providing computer and communications security.
- Understand the concepts of computer security, cryptography, digital certificates, secure protocols, detection and other security techniques.
- Be able to configure secure networks using different network security protocols.

Course Code: USIT603

Business Intelligence

OBJECTIVES

The Objective of the course is to:

- Familiarize students with key concepts and issues related to business intelligences and decision support systems.
- Provide understanding of concepts like data warehouses, design methods, data extracting, transforming and loading processes and OLAP systems.

- Enable students to employ basic BI tools and mathematical models.

OUTCOMES

On successful completion of this course the learner will

- Understand key concepts and issues related to business intelligences and decision support systems.
- Understand concepts like data warehouses, design methods, data extracting, transforming and loading processes and OLAP systems.
- Learn to use basic BI tools, mathematical models.

Course Code: USIT604

Principles of Geographic Information Systems

OBJECTIVES

The Objective of the course is to enable students to :

- Explore mapped data
- Relate GIS with remote sensing technologies
- Analyze spatial data, using GIS analysis tools
- Develop and manage geo databases
- Apply Python as a GIS computer language
- Create maps, images and apps to communicate spatial data in a meaningful way to others

OUTCOMES

On successful completion of this course the learner will

- Understand how to explore mapped data
- Know how to relate GIS with remote sensing technologies
- Analyze spatial data, using GIS analysis tools
- Develop and manage geo databases
- Apply Python as a GIS computer language
- Create maps, images and apps to communicate spatial data in a meaningful way to others

Course Code: USIT607

Cyber Laws

OBJECTIVES

The Objective of the course is to enable students to :

- Understand, explore and acquire a critical understanding of Cyber Law.
- Develop competencies for dealing with frauds and deceptions and other Cyber Crimes.
- Understand relationship between Commerce and Cyberspace

Acquire in-depth knowledge of Information Technology Act and legal framework of Right to Privacy, data security and data protection

OUTCOMES

On successful completion of this course the learner will

- Understand, explore, and acquire a critical understanding of Cyber Law.
- Develop competencies for dealing with frauds and deceptions (Confidence Tricks, Scams) and other cybercrimes.
- Understand the relationship between Commerce and Cyberspace
- Understand Information Technology Act and legal framework of right to privacy, data security and data protection

Course Code: USIT6P1

Project Implementation

OBJECTIVES

The Objective of the Project work is to enable students to develop a software. Application of all the languages and technologies they have learned.

OUTCOMES

On successful completion of this Project Work the learner will

- Be able to develop software.
- Learn application of all the languages and technologies they have learned.