M. Sc (Information Technology)

Programme Outcomes

The program focuses on the skill enhancement of students in which following skill component are enhanced.

- Will have the ability to communicate computer science concepts, designs, and solutions effectively and professionally. Apply knowledge of computing to produce effective designs and solutions for specific problems. Identify, analyze, and synthesize scholarly literature relating to the field of computer science; and use software development tools, software systems, and modern computing platforms.
- Work in a collaborative manner with others in a team, contributing to the management, planning and implementation of a computer system.
- Independently propose a small scale research project, plan its execution, undertake its development, evaluate its outcome and report on its results in a professional manner.
- Advance knowledge through innovation and knowledge creation. Pursue life-long learning in practice. Interpret and present theoretical issues and empirical findings
- Gains understanding about techniques, technologies and methods used in managing and implementing information technology systems.
- Widens and deepens understanding of computing technologies and covers high level concepts that enable the effective management and planning of IT project and services.
- High level strategy and design in-depth technical specializations, management and planning of IT project and services.

This program fit the students for following job role:-

- Software Developer
- Hardware Engineer
- Database Engineer
- Web Developer

COURSE OUTCOMES

COURSE NAME: Introduction of Information Technology

CLASS –M. Sc (IT) SEMESTER – I

Course Outcomes

After studying this course, students should be able to:

- Have basic knowledge of computer hardware and software;
- Understand business areas to which computers may be applied;

- Provide an introduction to business organisation and information systems;
- Develop the skills in communication, verbal and written, which play an important part in business computing and information processing;

COURSE NAME: Computer Programming using C

CLASS –M. Sc (IT) SEMESTER – I

Course Outcomes

After successful completion of the course students will be able to

- Write, compile and debug programs in C language.
- Use different data types, operators and console I/O function in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.
- Comprehend the concepts of structures and classes: declaration, initialization and implementation.
- Apply basics of object oriented programming, polymorphism and inheritance.
- Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data files.

COURSE NAME: Computer Organization and Architecture

CLASS –M. Sc (IT) SEMESTER – I

Course Outcomes

After successful completion of the course students will be able to

- Understand the basics of computer hardware and how software interacts with computer hardware
- Analyze and evaluate computer performance
- Understand how computers represent and manipulate data
- Understand computer arithmetic and convert between different number systems
- Assemble a simple computer with hardware design including data format, instruction format, instruction set, addressing modes, bus structure, input/output, memory, Arithmetic/Logic unit, control unit, and data, instruction and address flow
- Use Boolean algebra as related to designing computer logic, through simple combinational and sequential logic circuits

COURSE NAME: Mathematical Foundation of Computer Science

CLASS –M. Sc (IT) SEMESTER – I

Course Outcomes

After successful completion of the course students will be able to

- Be familiar with the basic terminology of functions, relations, sets and demonstrate knowledge of their associated operations.
- Be able to solve advanced mathematical problems, apply various methods of mathematical proof, and communicate solutions in writing
- Become capable to comprehend advanced mathematics, and present the material orally and in writing
- Utilize the knowledge of computing and mathematics appropriate to the discipline.
- Evaluate mathematical principles and logic design

COURSE NAME: Operating Systems

CLASS –M. Sc (IT) SEMESTER – I

Course Outcomes

After successful completion of the course students will be able to

- Learn the mechanisms of OS to handle processes and threads and their communication Use different data types, operators and console I/O function in a computer program.
- Learn the mechanisms involved in memory management in contemporary OS.
- Gain knowledge on distributed operating system concepts that includes architecture, deadlock detection algorithms and agreement protocols.
- Understand different approaches to memory management.
- Understand the structure and organization of the file system

Semester-2
COURSE NAME: Object Oriented Programming Using C++

CLASS –M. Sc (IT) SEMESTER – 2

Course Outcomes

After successful completion of the course students will be able to

- Write, compile and debug programs in C++language.
- Use different data types, operators and console I/O function in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.
- Comprehend the concepts of structures and classes: declaration, initialization and implementation.
- Apply basics of object oriented programming, polymorphism and inheritance.
- Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data files.

COURSE NAME: Data and File Strucures

CLASS - M. Sc (IT) SEMESTER – 2

Course Outcomes

After successful completion of the course students will be able to

- Be familiar with basic data structure of algorithms.
- Design and analyze programming problem statements
- Choose appropriate data structures and algorithms and use it to design algorithms for a specific problem.
- Handle operations like searching, insertion, deletion and traversing mechanism
- Come up with analysis of efficiency and proofs of correctness

COURSE NAME: Visual Basic

CLASS –M. Sc (IT) SEMESTER – 2

Course Outcomes

After successful completion of the course students will be able to

- Design, create, build, and debug Visual Basic applications.
- Explore Visual Basic's Integrated Development Environment (IDE).
- Write and apply decision structures for determining different operations.
- Understand and identify the fundamental concepts of object-oriented programming.
- Perform tests, resolve defects and revise existing code.

COURSE NAME: RDBMS and Oracle

CLASS –M. Sc. (IT) SEMESTER – 2

Course Outcomes

After successful completion of the course students will be able to

- Gain the knowledge and understanding of Database analysis and design.
- Understand the use of Structured Query Language (SQL) and learn SQL syntax.
- Gain the knowledge of the processes of Database Development and Administration using SQL and PL/SQL.
- Understand the functional dependencies and design of the database
- Understand the concept of Transaction and Query processing

Semester-3

COURSE NAME: Web Technology

CLASS – M. Sc (IT) SEMESTER – 3

Course Outcomes

After studying this course, students should be able to:

- Understand, analyze and apply the role of languages like HTML, DHTML, CSS, XML, Javascript, VBScript, ASP, PHP and protocols in the workings of the web and web applications
- Analyze a web project and identify its elements and attributes in comparison to traditional projects.
- Create web pages using HTML, DHTML and Cascading Styles sheets.
- Analyze and build interactive web applications using ASP and ASP.NET.
- Build web applications using PHP, XML documents and XML Schema, and consume web services.

COURSE NAME: Java Programming

CLASS –M. Sc (IT) SEMESTER – 3

Course Outcomes

After studying this course, students should be able to:

- **Knowledge and Understanding:**
  - Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
  - Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
- **Intellectual(Cognitive/ Analytical) Skills:**
  - Evaluate how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
  - Understand and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
- **Practical Skills:**
  - Design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions.
  - The importance of Classes & objects and will be able to implement it along with constructors, Arrays and Vectors.
  - Develop computer-based systems.

COURSE NAME: Software Engineering

CLASS –M. Sc (IT) SEMESTER – 3

Course Outcomes

After studying this course, students should be able to:

- Plan a software engineering process life cycle, including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements.
- Able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project.
- Analyze and translate a specification into a design, and then realize that design practically, using an appropriate software engineering methodology.
- Know how to develop the code from the design and effectively apply relevant standards and perform testing, and quality management and practice.
- Able to use modern engineering tools necessary for software project management, time management and software reuse.

COURSE NAME: Computer Networks

CLASS –M. Sc (IT) SEMESTER – 3

Course Outcomes

After studying this course, students should be able to:

- Understand basic computer network technology.
- Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
- Describe data link protocols, multi-channel access protocols and IEEE 802 standards for LAN.
- Describe routing and congestion in network layer with routing algorithms and classify IPV4 addressing scheme.
- Discuss the elements and protocols of transport layer

Semester4
COURSE NAME: Computer Graphics

CLASS –M. Sc (IT) SEMESTER – 4

- Demonstrate an understanding of contemporary graphics hardware.
- Create interactive graphics applications in C++ using one or more graphics application programming interfaces.
- Functions to implement graphics primitives.
- Demonstrate geometrical transformations.
- Demonstrate an understanding of the use of object hierarchy in graphics applications.

Course Outcomes

After studying this course, students should be able to:

COURSE NAME: Linux Administration

CLASS –M. Sc (IT) SEMESTER – 4

Course Outcomes

After studying this course, students should be able to:

- Understand the basic set of commands and editors in Linux operating system.
- Perform shell programming in Linux operating system
- Demonstrate the role and responsibilities of a Linux system administrator.
- Distinguish various filter and server commands

COURSE NAME: Modern Information Systems

CLASS –M. Sc (IT) SEMESTER – 4

Course Outcomes

After studying this course, students should be able to:

- Relate the basic concepts and technologies used in the field of management information systems;
- Compare the processes of developing and implementing information systems.
- Outline the role of the ethical, social, and security issues of information systems.
- Translate the role of information systems in organizations, the strategic management processes, with the implications for the management.
- Apply the understanding of how various information systems like DBMS work together to accomplish the information objectives of an organization.

COURSE NAME: Artificial Intelligence

CLASS –M. Sc (IT) SEMESTER – 4

Course Outcomes

After studying this course, students should be able to:

- Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
- Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
- Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
- Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool.
- Demonstrate proficiency in applying scientific method to models of machine learning.
- Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.