

# **Program: M.Sc IT**

## **Program Specific Outcomes**

- PSO1: At the end of the program, the student should be able to Understand the concepts and applications in the field of Information Technology like Web designing and development, Mobile application development, and Network and communication technologies.
- PSO2: Apply the learning from the courses and develop applications for real world problems.
- PSO3: Understand the technological developments in the usage of modern design and development tools to analyze and design for a variety of applications.
- PSO4: Communicate in both oral and written forms, demonstrating the practice of professional ethics and the concerns for social welfare.
- PSO5: Competent and complete software professional to meet the requirement of corporate world and Industry standard to provide solutions to industry, society and business.
- PSO6: Analyst who can apply latest technologies who can analyze and synthesize computing systems through quantitative and qualitative techniques to solve problems in the areas of Information Technology.
- PSO7: A thorough and practical expert in the use of state of the art techniques for developing Software based systems.
- PSO8: Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.

## **Course Outcome**

### **Semester I**

#### **Course: Introduction to Information Technology**

This course is meant to prepare students for work in industry in the information processing fields as well as prepare students for business and computer-related courses. Have basic knowledge of computer hardware and software.

- CO1. Understand business areas to which computers may be applied.
- CO2. Provide an introduction to business organization and information systems.
- CO3. Develop the skills in communication, verbal and written, which play an important part in business computing and information processing.

## **Course: Computer Programming using C**

This course is designed to explore computing and to show students the art of computer programming. Students will be able to learn Understand programming using C concepts for writing good programs.

- CO1. Use different data types, operators and console I/O function in a computer program.
- CO2. Design programs involving decision control statements, loop control statements and case control structures.
- CO3. 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.
- CO4. Apply basics of object oriented programming, polymorphism and inheritance.
- CO5. Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data file

## **Course: Computer Organization and Architecture**

This course will introduce students to the fundamental concepts underlying modern computer organization and architecture. On completion of this course, the students will be able to understand the basics of computer hardware and how software interacts with computer hardware

- CO1. Analyze and evaluate computer performance
- CO2. Understand how computers represent and manipulate data
- CO3. Understand computer arithmetic and convert between different number systems
- CO4. 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: Mathematical Foundation of Computer Science**

The purpose of this course is to provide a clear understanding of the concepts that underlying fundamental concepts and tools in discrete mathematics with emphasis on their applications to computer science. It emphasizes mathematical definitions and proofs as well as applicable method. Be familiar with the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations.

- CO1. Master to solve advanced mathematical problems, apply various methods of mathematical proof, and communicate solutions in writing
- CO2. Master to comprehend advanced mathematics, and present the material orally and in writing

CO3. Utilize the knowledge of computing and mathematics appropriate to the discipline.

CO4. Evaluate mathematical principles and logic design.

### **Course: Operating Systems**

This course is designed to explore the unifying concept of the operating system as a collection of cooperating sequential processes.

CO1. Learn the mechanisms of OS to handle processes and threads and their communication

CO2. Use different data types, operators and console I/O function in a computer program.

CO3. Learn the mechanisms involved in memory management in contemporary OS.

CO4. Gain knowledge on distributed operating system concepts that includes architecture, deadlock detection algorithms and agreement protocols.

CO5. Understand different approaches to memory management.

CO6. Understand the structure and organization of the file system.

## **Semester II**

### **Course: Object Oriented Programming Using C++**

CO1. Familiarization with a widely used programming concept – Object Oriented Programming.

CO2. Develop logical thinking.

CO3. Skill to write codes in C++ by applying concept of OOP, such as Objects, Classes, Constructors, Inheritance etc., to solve mathematical or real world problems.

CO4. Ability to isolate and fix common errors in C++ programs.

### **Course: Data and File Structures**

CO1. Able to use data structure in optimal way resulting efficient algorithms,

CO2. Able to design and analyse complex algorithms.

CO3. Able to design multiple algorithm to solve same problem.

### **Course: Visual Basic**

- CO1. Explain the concepts of windows programming.
- CO2. Connect VB application with database.
- CO3. Write pseudo code for windows program.
- CO4. Develop program using Visual Basic.
- CO5. Develop real time applications using VB.

### **Course: RDBMS and Oracle**

- CO1. Familiarization with Relational Database Management System.
- CO2. Comprehensive knowledge of database models.
- CO3. Ability to design database using Oracle.

## **Semester III**

### **Course: Web Technology**

- CO1. Students can develop a dynamic webpage using java script and HTML.
- CO2. Students will be able to write a well formed / valid XML document.
- CO3. Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table.
- CO4. Students will be able to write a server-side java application called Servlet to catch form data sent from client, process it and store it on database.
- CO5. Students will be able to write a server side java application called PHP to catch form data sent from client and store it on database.

## **Course: Java Programming**

- CO1. Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
- CO2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
- CO3. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
- CO4. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
- CO5. Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events.
- CO6. Identify, Design & develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture

## **Course: Software Engineering**

- CO1. Define various software application domains and remember different process model used in software development.
- CO2. Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
- CO3. Convert the requirements model into the design model and demonstrate use of software and user-interface design principles.
- CO4. Justify role of SDLC in Software Project Development and they can evaluate importance of Software Engineering in PLC.
- CO5. Generate project schedule and can construct, design and develop network diagram for different type of Projects. They can also organize different activities of project as per Risk impact factor.

## **Course: Computer Networks**

- CO1. Describe the functions of each layer in OSI and TCP/IP model.
- CO2. Explain the functions of Application layer and Presentation layer paradigms and Protocols.

- CO3. Describe the Session layer design issues and Transport layer services.
- CO4. Classify the routing protocols and analyze how to assign the IP addresses for the given network.
- CO5. Describe the functions of data link layer and explain the protocols.
- CO6. Explain the types of transmission media with real time applications

## **Semester -IV**

### **Course: Computer Graphics**

- CO1. To understand computer graphics system and apply computer graphics in various areas of research including image processing, animation etc.
- CO2. Increase the ability to understand how data is displayed on visual display unit and how virtual reality effects are created.
- CO3. Able to use line, circle and ellipse algorithms to design complex pictures with optimal complexities.
- CO4. Able to perform various 2D effects on images like moving, rotating, zooming, tilting and clip images using various clipping algorithms.
- CO5. Able to perform various 3D effects on images like moving, rotating, zooming, tilting and clip images using various clipping algorithms.
- CO6. To increase the ability to use various algorithms to remove hidden lines and hidden surfaces.
- CO7. To understand how various illumination model can be used to perform various effects on images.
- CO8. To understand how to shade images using gouraud and phong shading.

### **Course: Linux Administration**

- CO1. To understand about Linux Operating System and min system requirement to use Linux.
- CO2. Able to install Linux Operating System and create partitions of hard disk.
- CO3. Able to use LILO boot manager, troubleshoot it and create virtual terminal on their machines.
- CO4. Able to use Linux commands to perform various actions.
- CO5. To be able to understand linux file system and how to create, delete and move directories using commands.
- CO6. To increase the ability to use shell scripting in a program while solving complex problems.
- CO7. To increase the ability to use various editors on linux and perform various task on it.

- CO8. Able to configure X windows manually and test it.
- CO9. Able to boot Linux operating system from floppy and understand root account
- CO10. To increase understanding about mounting floppy or CD-ROM on new file system.
- CO11. Able to do compression of files, make back up of system and recover system in uncertain situations.
- CO12. To increase understanding about computer network, configuring the network and use firewall to maintain security.

### **Course: Modern Information System**

- CO1. To understand about system and its components
- CO2. Able to categories system depending upon their characteristics.
- CO3. To increase the ability to use various information system to run a business.
- CO4. Understand how MIS can be used by managers to take decisions.
- CO5. Understand the underlying architecture of MIS.
- CO6. To increase the understanding about nature of functional Information system and its applications in marketing.
- CO7. Able to differentiate data, information and knowledge.
- CO8. Able to categorize knowledge depending upon its nature.
- CO9. To increase the ability to understand how knowledge is used in knowledge management systems.

### **Course: Artificial Intelligence**

- CO1. To Understand what artificial intelligence is and where it can be applied to solve problems.
- CO2. Increase the ability to do inferencing using propositional logic.
- CO3. To understand how to form clauses and use them to perform unification and resolution.
- CO4. To increse the ability to differnciate knowledge and use it in knowledge base system.
- CO5. To understand how to represent knowledge while constructing complex system and resolving issues with knowledge representation.
- CO6. To understand how system use various learning model to perform knowledge acquisition.

- CO7. Able to deal with the issues while manipulation and organization of knowledge.
- CO8. To increase the ability to handle uncertain situations in intelligent machines.
- CO9. Apply prolog programming to build intelligent machines and perform various operations on these machines.
- CO10. Able to understand what expert system is and how it perform inferencing to reach to some conclusion.
- CO11. To understand how artificial intelligence can be used in game playing and planning.
- CO12. Increase understanding regarding various phases used while processing natural languages.

**Course: Research Methodology**

- CO1. Develop understanding on various kinds of research, objectives of doing research, research process, research designs.
- CO2. Develop understanding on how to formulate research problem and use various sources like journals, books, e-sources to do literature review.
- CO3. To increase the ability to design research proposal and use induction and deduction.
- CO4. To understand various primary and secondary data collection techniques to collect data for research.
- CO5. Develop understanding on how to use internet and computer in documentation of research proposals, thesis etc.
- CO6. Identify, explain, compare, and prepare the key elements of a research report;
- CO7. Able to present poster and research paper/poster in national and international conferences/seminars.
- CO8. Develop understanding on intellectual property rights, how to check plagiarism of research paper and how to do citation in research paper.
- CO9. To increase the ability to analyse and test cost incurred on research project.
- CO10. Able to understand about various national and international government and private agencies that provide grant for research and how to apply for research grant.