

## **M.Sc. (Computer Science) 2018-2019**

### **Program Outcome**

- Provides technology-oriented students with the knowledge and ability to develop creative solutions.
- Develop skills to learn new technology.
- Apply computer science theory and software development concepts to construct computing-based solutions.
- Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Mobile applications.

### **Course Outcome**

#### **M.Sc. (Computer Science) Sem – I**

##### **Paper 1 – Digital Electronics and Microprocessor**

- Define basic logical circuits, Boolean algebra, minimization methods, methods for writing Boolean functions, combinational and sequential circuits, flip-flops, digital automaton, and programmable structures.
- Describe operation methods of combinational and sequential circuits, similarities and differences of writing the Boolean functions and minimizations.
- Select appropriate methods for realization and circuit minimization.
- Pattern recognition for specific circuit realization and error discovery during circuit design process.

##### **Paper 2 – Advanced Computer Network**

- Configure PCs running Linux so that they receive IP addresses, have default routes, and can resolve host names, and so on. (And similarly for Windows, if time permits.)
- Differentiate between different LAN-based forwarding devices so that they can make thoughtful suggestions on how to build a network.
- Write networking code that uses TCP and UDP in client-server applications.
- Design networking protocols.
- Implement networking protocols.

### **Paper 3 – OOPs using JAVA**

- Able to apply object oriented programming features and concepts for solving given problem.
- Able to use java standard API library to write complex programs.
- Able to implement object oriented programming concepts using java.
- Able to develop interactive programs using applets and swings.

### **Paper 4 – Advanced Operating System**

- To design and understand the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems.
- To evaluate, and compare OS components through instrumentation for performance analysis.
- To analyze the various device and resource management techniques for timesharing and distributed systems.
- To develop and analyze simple concurrent programs using transactional memory and message passing, and to understand the trade-offs and implementation decisions.

## **M.Sc. (Computer Science) Sem – II**

### **Paper 1 – Analysis and Design of Algorithm**

- To design efficient algorithms using various algorithm designing strategies.
- To analyze the problem and develop the algorithms related to these problems.
- To classify the problem and apply the appropriate design strategy to develop algorithm.
- To design algorithm in context of space and time complexity and apply asymptotic notation.

### **Paper 2 – Relational Database Management System (RDBMS)**

- Identify the basic concepts and various data model used in database design ER modeling concepts and architecture use and design queries using SQL.
- Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression from queries.
- Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.

- Apply and relate the concept of transaction, concurrency control and recovery in database.

### **Paper 3 – Data Structure using C++**

- Choose appropriate data structures to represent data items in real world problems.
- Analyze the time and space complexities of algorithms.
- Design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees.
- Analyze and implement various kinds of searching and sorting techniques.

### **Paper 4 – Software Engineering**

- Get good knowledge of the issues and challenges faced while doing the Software project Management.
- To understand why majority of the software projects fails and how that failure probability can be reduced effectively.
- To do the Project Scheduling, tracking, Risk analysis, Quality management and Project Cost estimation using different techniques.
- Students will learn a good communication skill; improve presentation and team forming ability.

## **M.Sc. (Computer Science) Sem – III**

### **Paper 1 – Theory of Computation and Compiler Design**

- Acquire a full understanding and mentality of Automata Theory as the basis of all computer science languages design.
- Have a clear understanding of the Automata theory concepts such as RE's, DFA's, NFA's, Stack's, Turing machines, and Grammars.
- Be able to design FAs, NFAs, Grammars, languages modeling, small compilers basics.
- Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.

## **Paper 2 – Artificial Intelligence and Expert System**

- To analyze and formalize the problem as a state space, graph, design heuristics.
- Ability to represent solutions for various real-life problem domains using logic based techniques.
- Understand the numerous applications and huge possibilities in the field of AI.
- Ability to express the ideas in AI research and programming language related to emerging technology.

## **Paper 3 – Soft Computing**

- To discuss the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience.
- To relate with neural networks that can learn from available examples and generalize to form appropriate rules for inference systems.
- To describe with genetic algorithms and other random search procedures useful while seeking global optimum in self-learning situations.

## **Paper 4 – .NET Technology**

- Understand code solutions and compile C# projects within the .NET framework.
- Design and develop professional console and window based .NET application.
- Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application.
- Understand and implement string manipulation, events and exception handling within .NET application environment.
- Design and Implement Windows Applications using Windows Forms, Control Library, Advanced UI Programming & Data Binding concepts.

# **M.Sc. (Computer Science) Sem – IV**

## **Paper 1 – Advance Trends and Technology in Computer Science**

- To solve problem pervasive computing abilities.
- To understand the principles and paradigm of Cloud Computing.
- To study the basic technologies that forms the foundations of Big Data.

- Understand and explain the basic concepts of Grid Computing.

### **Paper 2 – Elective: I – Data Mining and Data Ware Housing**

- Students will be able to Understand Data Warehouse fundamentals, Data Mining Principles.
- Design data warehouse with dimensional modeling and apply OLAP operations.
- Identify appropriate data mining algorithms to solve real world problems.
- Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining.
- Describe complex data types with respect to spatial and web mining.

### **Paper 3 – Major Project**

- Project-based learning connects students to the real world.
- Undertake problem identification, formulation and solution.
- Demonstrate a sound technical knowledge of their selected project topic.
- Students will acquire the skills to communicate effectively and to present ideas clearly and coherently to specific audience in both the written and oral forms.
- Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it.
- Students will learn a good communication skill; improve presentation and team forming ability.