M. Sc. Computer Science

MSc(Computer Science) 2019 Pattern (CBCS)

Programme Outcomes

The Master of Science in Computer Science program provides the students with knowledge, general competence, and analytical skills on an advanced level, needed in academics, industry and research.

Knowledge Outcomes

Students will able to

PO1	Become technology-oriented with the knowledge and will get the ability to develop creative solutions, and will better understand the effects of future developments of computer systems and technology on people and society.
PO2	Identify, formulate, and develop solutions to computational challenges. through project work.
PO3	Get ability to apply knowledge of computer science and skills to succeed in their career/ professional development and/or postgraduate education to pursue flexible career paths amidst future technological changes to real-world issues.
PO4	Understand and apply computer science principles to manage multi disciplinary projects using knowledge of programming languages, cloud computing, web services, different database technologies, operating systems and different design patterns.
PO5	Apply domain knowledge, use creativity, critical thinking, analysis and will become expertise for enhancing research capability to transform innovative research ideas into reality.

Skill outcomes

Students will be able to

PO6	have a wide perspective on software development including web based applications as well as graphic applications by learning new technologies, grasping the concepts and issues behind its use and the use of computers.
PO7	Get prepared for soft skills and develop their personality together with their technical skills.
PO8	Create, select, and apply appropriate techniques, resources, and modern IT tools including prediction and modeling to complex activities with an understanding of the limitations.
PO9	Build up programming, analytical, logical thinking and software development abilities.

General Competence

The students will be able to

PO10	Use innovation-based knowledge and creative methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO11	Understand the recent developments in IT, future possibilities and limitations, and the value of lifelong learning.
PO12	Devise solutions for complex problems and plan system components or processes that meet the specified needs with appropriate consideration for the society, health , safety, cultural, societal, and environmental considerations.

Program Specific Outcomes

After completing M.Sc. Computer Science Program students will be able to:

PSO1	Apply the fundamentals of mathematics, science and engineering knowledge to understand, analyze and develop computer programs in the areas related to algorithms, Advanced Operating System, Database Technologie,mobile technologies, software project management, multimedia, big data analytics, machine learning, artificial intelligence and networking for efficient design of computer-based systems of varying complexity.
PSO2	Communicate computer science concepts, designs, and solutions effectively and professionally.
PSO3	Apply appropriate techniques and modern hardware and software tools for the design and integration of computer systems and related technologies with the use of ICT.
PSO4	Develope in-house applications in terms of projects.
PSO5	Interact with IT experts & will gain knowledge by IT visits.
PSO6	Get industrial exposure through the 6 months Industrial Internship in IT industry
PSO7	make it employable according to the current demand of the IT Industry and responsible citizens.
PSO8	Enter in the field of research and prepare a basic research background.

M.Sc. Part I (Autonomous)

M.Sc. Comp. Sci. Part I (Semester I)

22-CSUT111 : Paradigm of Programming Language

After successfully completing this course, students will be able to:
CO1	Students will think about programming languages analytically.
CO2	Students will learn separate syntax from semantics of different programming languages.
CO3	Students will compare programming language designs.
CO4	Students will understand strengths and weaknesses of different programming languages and can learn new languages more quickly.
CO5	Students will understand basic language implementation techniques and learn small programs in different programming languages.

22-CSUT112: Design and Analysis of Algorithms

After successfully completing this course, students will be able to:
CO1	Students will learn fundamental concepts of asymptotic notations of an algorithm, Space & Time Complexity, Searching & Sorting Algorithms, Divide and Conquer techniques.
CO2	Students will know various design and analysis techniques such as greedy algorithms, dynamic programming.
CO3	Students will understand the techniques used for designing different graph algorithms.
CO4	Students will learn how to apply backtracking, branch and bound techniques for real time problems.
CO5	Students will know the concepts of P, NP and NP-Complete problems.

22-CSUT113 : Database Technologies

After successfully completing this course, students will be able to:
CO1	Students will get an overview of the concept of NoSQL technology.
CO2	Students will provide an insight to the different types of NoSQL databases.
CO3	Students will become capable of making a choice of what database technologies to use, based on their application needs.

22-CSDT114A: Cloud computing

CO1	Students will be able understand the principles and paradigm of Cloud Computing.
CO2	Students will understand and appreciate the role of Virtualization Technologies in real life

	databases.
CO3	Students will get an ability to design and deploy Cloud Infrastructure, platform and software for any service industry.

22-CSUP115: PPL and Database Technologies Practical

After successfully completing this course, students will be able to:	
CO1	Provide an insight to the different types of NoSQL databases used to real life applications.
CO2	Understand control structures , arrays,lists, maps, sets and static and dynamic memory allocation concepts and their implementation.
CO3	Create and handle databases and queries using various NQSQL technologies like MongoDB and Neo4j.
CO4	Handle graphical queries using Neo4j

22-CSDP114A : Cloud Computing Practical

After successfully completing this course, students will be able to:	
CO1	Understand core issues in cloud computing such as security, privacy, and interoperability.
CO2	provide the appropriate cloud computing solutions and recommendations according to the applications used.
CO3	identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
CO4	identify problems, and explain, analyze, and evaluate various cloud computing solutions.

M.Sc. Comp.Sci. Part I (Semester II)

22-CSUT121 : Advanced Operating System

After successfully completing this course, students will be able to:	
CO1	Understand Advanced Operating Systems Concepts using Unix/Linux

CO2	Study the understanding of the functions of Operating Systems.
CO3	Discuss the concepts underlying in the design and implementation of Operating Systems
CO4	Learn programming interface to the Unix/Linux system - the system call interface.

22-CSUT122 : Mobile Technologies

| After successfully completing this course, students will be able to: |
CO1	familiarize with technology of mobile communication and mobile ad-hoc networks
CO2	Understand the GSM architecture
CO3	Understand the issues relating to Wireless applications
CO4	Introduce wireless communication and networking principles, that support connectivity to cellular networks, wireless internet and sensor devices
CO5	Appreciate the social and ethical issues of mobile computing, including privacy

22-CSUT123 : Software Project Management

| After successfully completing this course, students will be able to: |
CO1	Students will understand Software Engineering and basic testing Concepts.
CO2	Students will know skills that are required to ensure successful medium and large scale software projects
CO3	Learn to select and apply project management techniques for process modeling,planning, estimation, risk management.
CO4	Student will learn software verification.
CO5	Understand design and execution of system test cases.

22-CSDT124A : Project

| After successfully completing this course, students will be able to: |
| CO1 | Acquire skills to develop the software project. |
| CO2 | Understand the software development life cycle. |

22-CSDP124A : Project related Assignments

| After successfully completing this course, students will be able to: |

CO1	Undertake problem identification, formulation and solution for any software project.
CO2	Design computer science solutions to complex problems utilising a systems approach.
CO3	Prepare students to work as part of teams on multi-disciplinary projects.

22-CSUP125 : Practical on Advanced OS & Mobile Technologies

After successfully completing this course, students will be able to:	
CO1	Understand and execute basic commands of shell script
CO2	Apply concept of creating new processes from parent processes and implementation of various system calls.
CO3	Get ability to develop applications using Mobile Programming Technologies like Android.
CO4	understand recent trends and emerging technologies and working of wireless architectures and their applications.

M.Sc. Part II (2019 pattern)

Semester III

CSUT231: Software Architecture and Design Patterns

After successfully completing this course, students will be able to:	
CO1	Recognize the characteristics of patterns that make it useful to solve real-world problems.
CO2	Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problems.
CO3	Able to use specific frameworks as per applications need.
CO4	Design java applications using design pattern techniques.

CSUT232 : Machine Learning

After successfully completing this course, students will be able to:	
CO1	Recognize the characteristics of machine learning that make it useful to real-world problems.
CO2	Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problems.
CO3	Able to estimate Machine Learning models efficiency using suitable metrics.
CO4	Design application using machine learning techniques.

CSUT233: Web Frameworks

After successfully completing this course, students will be able to:	
CO1	Students will be ready with the technology which is used widely in Industry as a part
CO2	Students will know the powerful way to develop the web application in Python.
CO3	Students will understand what is asynchronous programming.
CO4	Build and deploy a robust Django Web App. Integrate with Restful web services of full stack developers.

CSDT234C: Project

After successfully completing this course, students will be able to:	
CO1	Acquire skills to develop the software project.
CO2	Understand the software development life cycle.

CSDP234C: Project Related Assignments

After successfully completing this course, students will be able to:	
CO1	Undertake problem identification, formulation and solution for any software project.
CO2	Design computer science solutions to complex problems utilising a systems approach.
CO3	Prepare students to work as part of teams on multi-disciplinary projects.

CSUP235 : Practical on CSUT231, CSUT232 and CSUT233

After successfully completing this course, students will be able to:	
CO1	Able to use specific frameworks as per applications need.
CO2	Design java applications using design pattern techniques.
CO3	Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problems.
CO4	Able to estimate Machine Learning models efficiency using suitable metrics.

M.Sc. Part II (Semester IV)

CSUIT241 : Industrial Training /Institutional Project

After successfully completing this course, students will be able to:

CO1	Learn the basic concepts of Project & Project Management.
CO2	Become capable of self-education and clearly understand the value of achieving Perfection in the respective Project work.
CO3	Plan, schedule and execute a project considering the risk management and apply quality attributes in software development life cycle
CO4	Understand basics of IT Project management