

**Usha Mittal Institute of Technology**

**SNDT Women's University**

**Department of Computer Science and Technology**

**Name of Programme: Master of Technology in Computer Science and Technology**

<b>Program Outcomes</b>	
PO1	Develop understanding of the theoretical foundations and the limits of computing.
PO2	An ability to adapt existing models, techniques, algorithms, data structures, etc. for efficiently solving problems
PO3	An ability to design, develop and evaluate new computer based systems for novel applications which meet the desired needs of industry and society
PO4	Understanding and ability to use advanced computing techniques and tools
PO5	An ability to undertake original research at the cutting edge of computer science & its related areas.
PO6	An ability to function effectively individually or as a part of a team to accomplish a stated goal.
PO7	An understanding of professional and ethical responsibility.
PO8	An ability to communicate effectively with a wide range of audience
PO9	An ability to learn independently and engage in lifelong learning
PO10	An understanding of the impact of IT related solutions in an economic, societal and environment context
<b>Program Specific Outcomes</b>	
PSO1	The Master of Computer Science and Technology Programme will prepare its graduates to achieve:
PSO2	To apply knowledge of computing and technological advances appropriate to the programme
PSO3	Problem Solving skills, and identify and define the logical modeling of solutions
PSO4	An ability to design implements and evaluate a computer-based system, process, component, or programme to meet stakeholder needs.
PSO5	A sense of professional, ethical, legal, security and social issues and responsibilities
PSO6	Effectiveness in communicating with a wide range of audiences using tools
PSO7	An ability to analyze the local and global impact of business solutions on individuals, organizations, and society.
<b>Course Objectives</b>	
	<b>M.Tech (Comp Sci and Tech) Semester-I</b>
	<b>Research Methodology</b>
C01	Understand research problem formulation.
C02	Analyze research related information
C03	Follow research ethics
C04	Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
C05	Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general

	& engineering in particular.
C06	Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.
<b>Advanced Data structures and Algorithms</b>	
C01	Describe, explain and use abstract data types including stacks, queues and lists
C02	Design and Implement Tree data structures and Sets.
C03	Understand and implement nonlinear data structures – graphs
C04	Understand various algorithm design and implementation
<b>Distributed Computing</b>	
C01	List the principles of distributed systems and describe the problems and challenges associated with these principles
C02	Understand Distributed Computing techniques, Synchronous and Processes.
C03	Apply Shared Data access and Files concepts
C04	Design a distributed system that fulfills requirements with regards to key distributed systems properties
C05	Understand Distributed File Systems and Distributed Shared Memory
C06	Apply Distributed web-based system.
C07	Understand the importance of security in distributed systems
<b>Image and Vision computing</b>	
C01	Understand the need for image transforms different types of image transforms and their properties
C02	Develop any image processing application
C03	Understand the rapid advances in Machine vision
C04	Learn different techniques employed for the enhancement of images.
C05	Learn different causes for image degradation and overview of image restoration techniques
C06	understand the need for image compression
C07	learn the spatial and frequency domain techniques of image compression
C08	learn different feature extraction techniques for image analysis and recognition
<b>Elective-I: (Geographical Information System)</b>	
C01	Comprehend fundamental concepts and practices of Geographic Information Systems (GIS) and advances in Geospatial Information Science and Technology (GIS&T).
C02	Apply basic graphic and data visualization concepts such as color theory, symbolization, and use of white space.
C03	Demonstrate organizational skills in file and database management
C04	Give examples of interdisciplinary applications of Geospatial Information Science and Technology
C05	Apply GIS analysis to address geospatial problems and/or research questions
C06	Demonstrate proficiency in the use of GIS tools to create maps that are fit-for-purpose and effectively convey the information they are intended to.
<b>Seminar</b>	
C01	To learn new advances in the area of Computer Technology
C02	To understand the various tools and techniques
C03	To deliver the concept effectively
C04	To understand standard research papers
<b>Semester-II</b>	
<b>Communication Networking and Mobile Networks</b>	
C01	Recognize the technological trends of Computer Networking

C02	Discuss the key technological components of the Network
C03	Evaluate the challenges in building networks and solutions to those.
<b>Object Oriented Software Development</b>	
C01	Students will cite knowledge of various approaches to document a software system (Remembering).
C02	Students will be able to describe functional and non-functional requirements (Understanding).
C03	Students will be able to use proper architecture for software (Applying).
C04	Students will be able to categorize different components used in the software system (Analyzing).
C05	Students will be able to choose from different architectural styles (Evaluating). Students will be able to improve quality of software by selecting proper architecture (Creating).
<b>Compiler Construction</b>	
C01	Master using lexical analyzer and parser generator tools
C02	Master building symbol tables and generating intermediate code.
C03	Master generating assembly code for a RISC machine
C04	Master programming in Java.
C05	Be familiar with compiler architecture
C06	Be familiar with register allocation.
C07	Be exposed to compiler optimization
<b>Enterprise Resource Planning</b>	
C01	Identify the important business functions provided by typical business software such as enterprise resource planning and customer relationship management
C02	Describe basic concepts of erp systems for manufacturing or service companies
C03	Analyze the technical aspect of telecommunication systems, internet and their roles in business environment.
C04	Develop skills necessary for building and managing relationships with customers, and stakeholders
<b>Network Security</b>	
C01	Describe network security services and mechanisms
C02	Symmetrical and Asymmetrical cryptography
C03	Data integrity, Authentication, Digital Signatures
C04	Various network security applications, IPSec, Firewall, IDS, Web security, Email security, and Malicious software etc
<b>R &amp; D Project</b>	
C01	To get aware about recent trends in Technology
C02	To understand various tools and techniques
C03	To apply the theoretical knowledge into reality
C04	To survey various papers
<b>Semester-III</b>	
<b>Big Data</b>	
C01	Explain how data is collected, managed and stored for data science Understand the key concepts in data science, including their real-world applications and the toolkit used by data scientists
C02	Implement data collection and management scripts using MongoDB
<b>Cloud Computing</b>	
C01	Identify security aspects of each cloud model
C02	Develop a risk-management strategy for moving to the Cloud
C03	Implement a public cloud instance using a public cloud service provider
C04	Apply trust-based security model to different layer
<b>Software Engineering for Mobile Computing</b>	

C01	To understand the software method
C02	To learn software lifecycle
C03	To understand and implement software engineering tools for mobile applications.
<b>Stage-I Project</b>	
C01	Understand programming language concepts, along with object oriented concepts as well as software engineering principles or go through the research work and gather knowledge over the field and develop an ability to apply them to software design of real life problems in an industry/ commercial environment
C02	Plan, analyze, design a software project and demonstrate the ability to communicate effectively in speech and writing
C03	Introduce with major software engineering topics and position them to lead medium sized software projects in industry or propose any new model over the selected field of research that will be useful for future activities.
C04	Learn about and go through the software development cycle with emphasis on different processes -requirements, design, and implementation phases and also learn details about different artifacts produced during software development.
C06	Gain confidence at having conceptualized, designed, and implemented a working, medium sized project with their team
<b>Seminar/Project / Internship</b>	
C01	Understand the past and present of the disciplines by exploring their purpose, practice, and philosophy
C02	Gain an understanding of advanced research methodologies in the field, including theory, interdisciplinary approaches, and the 22 analysis of available primary sources.
C03	Demonstrate through short written assignments and critical reviews the ability to synthesize and assess the arguments of scholarly articles and monographs at the level of professionals in the field
<b>Semester-IV</b>	
<b>Project-II Dissertation</b>	
C01	Demonstrate knowledge and understanding of report writing.
C02	Demonstrate appropriate referencing and develop skills in other aspects of academic writing
C03	Use and develop written and oral presentation skills.
C04	Apply the demographic/statistical research training acquired in the taught element of the programme by designing an appropriate research strategy and research methodology to carry out your research.
C05	Show evidence of clarity of argument, understanding of the chosen topic area, and presentation of technical information
C06	Understand and apply theoretical frameworks to the chosen area of study
C07	Describe the process of carrying out independent research in written format and report your results and conclusions with reference to existing literature
<b>Project-II : Dissertation Viva</b>	
C01	Understand programming language concepts, along with object oriented concepts as well as software engineering principles or go through the research work and gather knowledge over the field and develop an ability to apply them to software design of real life problems in an industry/ commercial environment.
C02	Plan, analyze, design a software project and demonstrate the ability to communicate effectively in speech and writing
C03	Introduce with major software engineering topics and position them to lead medium sized software projects in industry or propose any new model over the selected field of research that will be useful for future activities

C04	Learn about and go through the software development cycle with emphasis on different processes -requirements, design, and implementation phases and also learn details about different artifacts produced during software development.
C05	Gain confidence at having conceptualized, designed, and implemented a working, medium sized project with their team