M.Sc. Tech (Information Technology)

Program Outcome:
- To provide advanced and in-depth knowledge of Information Technology and its applications.
- To prepare Post Graduates who will achieve peerrecognition; as an individual or in a team; through demonstration of good analytical, design, and implementationskills.
- To develop a programming attitude to serve as a software developer in the ITindustry.
- To enable students, to pursue a professional career in Information and Communication Technology in related industry, business, andresearch.
- To impart professional knowledge and practical skills.
- To understand the concepts and applications in the field of Information Technology like Web designing and development, Mobile application development, and Network and communicationtechnologies.

Program Specific Outcome:
- To apply knowledge of recent computing technologies,skills to solve real-world problems.
- To work in a multidisciplinary environment, become an entrepreneur based upon societal needs, Understanding of professional, social, and ethical responsibilities.
- To apply domain knowledge and expertise for enhancing research capability to transform innovative ideas into reality.

Semester-I

Course Title: MTUT-101 Advanced Operating System
Course Outcomes:
- To understand design issues of Advanced Operating systems.
- Able to gain knowledge of architecture, kernel, and file management of the Unix operating system.
- To develop an understanding of processes and their control.
- To understand basic concepts and needs of Distributed operating systems and working of different advanced Operating systems like Mobile OS, Multiprocessor OS, Real-time OS.

Course Title: MTUT-102 Principles of Programming Language
Course Outcomes:
- To analyze the strengths and weaknesses of programming languages for effective and efficient program development.
- Develop the ability to think about programming languages analytically.
- Understand basic language implementation techniques.

- To inculcate the principles underlying the programming languages enabling to learn new programming languages.
- To grasp different programming paradigms.
- To use the programming paradigms effectively in application development.

Course Title: MTUT-103 Object-Oriented Analysis & Design
Course Outcomes:
- Able to understand the fundamentals of object modeling
- To understand and differentiate Unified Process from other approaches.
- Ability to design with static UML diagrams.
- To design with the UML dynamic and implementation diagrams.
- To improve the software design with design patterns.
- To test the software against its requirements specification.

Course Title: MTUT-104A Data Science & Analytics
Course Outcomes:
- To learn a powerful, flexible, and scalable general-purpose database to handle big data.
- Deploy the Data Analytics Lifecycle to address big data analytics projects.
- Apply appropriate analytic techniques and tools to analyze big data, create statistical models, and identify insights that can lead to actionable results.
- To select appropriate data visualizations to communicate analytic insights to business sponsors and analytic audiences.

Course Title: MTUP-104A Data Science & Analytics Practical
Course Outcomes:
- Able to gain solid knowledge in a broad range of methods based on statistics and informatics and can use these for data management, analysis, and problem-solving.
- Develop and implement programs using R and Spark.
- Able to implement/modify methods involved in Data Science.

Course Title:- MTUT-104B Spring Boot & Hibernate
Course Outcomes:
- To develop production-ready Spring applications more efficiently.
- To reduce the development time and run the application independently.
- Able to understand Hibernate Concepts.

Course Title:- MTUP-104B Spring Boot & Hibernate Practical
Course Outcomes:
- To develop a simple console-based Spring AOP Application
- Develop a REAL-TIME project with Spring MVC, Spring REST.

- To implement Spring application program using hibernate.

Course Title:- MTUT-104C Blockchain
Course Outcomes:
- Understand how blockchain systems (mainly Bitcoin and Ethereum) work.
- Design, build and deploy smart contracts and distributed applications.
- Integrate ideas from blockchain technology into their projects.

Course Title:- MTUP-104C Blockchain Practical Assignments
Course Outcomes:
- To develop Blockchain Applications using JavaScript.
- To use bitcoin technology for the implementation of P2P Payment gateway.

Course Title: - MTUP-105 Practical on MTUT-101 and MTUT-102
Course Outcomes:(MTUT-101)
- Able to get practical knowledge about Advance Operating System concepts and their actual implementation.
- Understand the structure and working of the AngularJS program.
- To understand how to implement the Advance Operating System concepts.

Course Outcomes: (MTUT-102)
- Learn how functions, variables, and class mechanisms work in Kotlin.
- Describe how to manage control structures in Kotlin.
- Use classes, lambdas, and extensions in Kotlin.

Semester-II

Course Title:-MTUT-201 Software Architecture & Design Pattern
Course Outcomes:
- Able to use specific frameworks as per applications need.
- Design java application using design pattern techniques.
- Design and implement codes with higher performance and lower complexity.
- Demonstrate code qualities needed to keep code flexible.
- Illustrate design principles and be able to assess the quality of a design.
- Able to explain principles in the design of object-oriented systems.
- Understand a range of design patterns.
- Discuss suitable patterns in specific contexts.

Course Title: MTUT-202 AI and Machine Learning
Course Outcomes:
- Understand foundational principles, mathematical tools, and program paradigms of artificial intelligence.
- Understand the fundamental issues and challenges of machine learning: data, model selection, model complexity.
- Analyze the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and unsupervised learning
- Apply intelligent agents for Artificial Intelligence programming techniques.

Course Title: MTUT-203 Agile Methodology
Course Outcomes:
- To provide students with a theoretical understanding of agile software development.
- To provide a good understanding of software design and a set of software technologies and APIs.
- Gain knowledge of agile development and testing techniques.
- To understand the benefits and pitfalls of working in an agile team.
- Able to understand the significance and application of Agile in Software Project Management.

Course Title: MTUT-204A Development and Operation
Course Outcomes:
- Provide an understanding of the automation process and its associated tools.
- Gain knowledge of Continuous Integration and build environment
- Offers the best choice for Software Developers or Test Automation Engineers who want to know more about designing implementation.
- Introduction to continuous integration, its advantages, and Implementation.

Course Title: MTUP-204A Development and Operation Practical Assignments
Course Outcomes:
- Implement the installation process of Jenkin.
- Implementing programs using Shell Script.
- Knowledge of Jenkin pipeline for the java web application.

Course Title: MTUT-204B Digital Image Processing
Course Outcomes:
- To become familiar with Digital image fundamentals.
- To become familiar with image enhancement techniques in the Spatial and Frequency domain.
- Ability to learn concepts of degradation function and restoration techniques.

- Able to study image segmentation and representation techniques.

Course Title: MTUP-204B Digital Image Processing Practical Assignments
Course Outcomes:
- Able to gain basic knowledge of using MATLAB
- Implement various functions for Image Segmentation, Image Morphology, Smoothing and Sharpening of Image, Histogram designing.

Course Title: MTUP-204CProject
Course Outcomes:
- Undertake problem identification, formulation, and solution.
- Understand project characteristics and various stages of project development.
- Design solutions to complex problems.
- Gain a sound technical knowledge of selected project development platforms.
- Develop and enhance coding skills.

Course Title: MTUP-204C Project Related Assignment
Course Outcomes:
- Able to design User interfaces in the selected technology.
- Able to study event handling and data handling in chosen technology.
- Understand how to write Test Cases.

Course Title: MTUP-205 Software Architecture & Design Pattern & Machine Learning Practical
Course Outcomes:
- Able to use specific frameworks as per applications need.
- Design java application using design pattern techniques.
- Understand the implementation procedures for machine learning algorithms.
- Understand the implementation procedures for AI algorithms.
- Design python programs for basic AI algorithms and problems.
- Design python programs for various learning algorithms.
- Apply appropriate data sets to the machine learning algorithms.
- Identify and apply ML algorithms to solve real-world problems.

Semester-III

Course Title: MTUT-301 .NET Framework
Course Outcomes:
- Understand the Microsoft .NET Framework and ASP.NET page structure
- Design web application with a variety of controls and C# Programming

- Access the data using inbuilt data access tools
- Use Microsoft ADO.NET to access data in web Application
- Configure and deploy Web Application
- Develop secured web application

Course Title: MTUT-302 Mobile Technologies
Course Outcomes:
- Design and develop user interfaces for the Android platform, IOS and Both.
- Apply Java programming concepts to Android application development.
- To be able to design iOS applications.
- To be able to develop an application using Swift Programming language.
- To be able to develop the multi-screen application using XCode.
- Explore React Native basic.
- Build UI with React Native Elements.

Course Title: MTUT-303 Research in Computing
Course Outcomes:
- Develop the ability to pursue advanced studies and research in computer science.
- To be able to conduct business research with an understanding of all the latest theories.
- To develop the ability to explore research techniques used for solving any real-world or innovative problem.

Course Title: MTUT-304A Angular Script
Course Outcomes:
- To Understand Client Side MVC and SPA.
- Explore AngularJS Component.
- Develop an AngularJS Single Page Application.
- Create and bind controllers with Javascript.
- Apply a filter in the AngularJS application.

Course Title: MTUT-304B Business Intelligence
Course Outcomes:
- Introduce the concepts and components of Business Intelligence (BI).
- Evaluate the technologies such as data warehousing, OLAP.
- Define how BI will help an organization.
- Identify the technological architecture that makes up BI systems.

Course Title: MTUT-304C Project and Project Related Assignment
Course Outcomes:
- Undertake problem identification, formulation, and solution.

- Understand project characteristics and various stages of project development.
- Design solutions to complex problems.
- Gain a sound technical knowledge of selected project development platforms.
- Develop and enhance coding skills.

Semester-IV

Course Title: MTUIT-401 Industrial Training and Industrial Project
Course Outcomes:
- Capability to acquire and apply fundamental principles of software engineering.
- To enhance students' knowledge in the particular technology.
- To increase the self-confidence of students and help in finding their proficiency.
- An ability to work in an actual working environment.
- An ability to utilize technical resources.
- An ability to write technical documents and give oral presentations.
- Become updated with all the latest changes in the technological world.
- Ability to communicate efficiently.
- To be a multi-skilled engineer with good technical knowledge, management, leadership, and entrepreneurship skills.
- Ability to identify, formulate, and model problems and find engineering solutions based on a systems approach.
- Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.
- Awareness of the social, cultural, global, and environmental responsibility of an engineer.