M. Sc. IT Learning Objectives & Learning Outcomes

MSc IT Semester I

SN	LEARNING OBJECTIVES	LEARNING OUTCOMES
Data Mining		
1.	Interpret the contribution of data mining to the decision-support level of organizations	Students would be able to discover interesting patterns from large amounts of data to analyze and extract useful information. Evaluate and implement a wide range of emerging and newly-adopted methodologies and technologies to facilitate the knowledge discovery.
2.	Learning different data-mining techniques: frequent pattern mining, association, correlation, classification, prediction, and cluster and outlier analysis.	Students would be able to understand different data-mining techniques: frequent pattern mining, association, correlation, classification, prediction, and cluster and outlier analysis.
Distributed System		
1.	To enable students to acquire knowledge about the architecture of a distributed system and understand the protocols working for the same	Students would be able to acquire knowledge about principles, architectures, algorithms and programming models used to design distributed systems.
2.	To enable students to learn various IPC techniques and distributed algorithms.	Students would be able to understand various inter-process communication techniques and distributed algorithms.
Data Analysis Tools		
1.	To assist students learn various statistical functions and tools of C	Students would be able to understand various statistical functions and tools of C
2.	To help students learn to use database queries in C	Students would be able to use database queries in C
3.	To help students learn and analyze data through various statistical tools and parametric and non-parametric testing.	Students would be able to analyze data through various statistical tools and parametric and non-parametric testing.
Software Testing		
1.	To make students understand whether the software is working satisfactorily as per the requirements	Students would be able to investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.
2.	To help students to understand whether the software is error free.	Students would be able to implement various test processes for quality improvement, Design test planning and manage the test process.
3.	To enable students to understand	Students would be effectively able to use software

	whether the software does its job correctly and can be used in production.	testing tools.
Data Mining Practical		
1.	Evaluate the performance of different data-mining algorithms	Students would be able to evaluate, select and apply appropriate data-mining algorithms, interpret and report the output appropriately to solve problems and make predictions.
2.	Propose data-mining solutions for different applications	Students would be able to understand various data-mining solutions for different applications.
Distributed System Practical		
1.	To simulate the working of a client server paradigms in a distributed system	Students would be able to simulate the working of various client server inter-process communication models.
Data Analysis Tools Practical		
1.	To enable students to use theoretical knowledge to write programs in Cygwin and analyze and interpret data.	Students would be able to write programs in Cygwin and can analyze and interpret data of any statistical problem.
Software Testing Practical		
1.	To help students to acquire knowledge about different types of testing with examples.	Students would be able to use practical knowledge of a variety of ways to test software and have an understanding of some of the tradeoffs between testing techniques.
2.	To help students learn different tools –Selenium Tool, Ellipse software	Students would be able to use different software testing tools.

MSc IT Semester II

SN	LEARNING OBJECTIVES	LEARNING OUTCOMES
Mobile Computing		
1.	To acquire knowledge about the working of mobile and wireless communication	Students would be able to learn the basic fundamentals of mobile communication systems.
2.	To enable students to learn radio communications and wireless standards.	Students would be able to understand mobile radio communication principles and to study the recent trends adopted in cellular systems and wireless standards.
Advanced Computer Networks		
1.	To enable students to acquire	Students would be able to develop basic

	knowledge about models used for advanced networking.	knowledge of the taxonomy and terminology related to networking models - OSI model and TCP/IP Protocol Suite and various Routing Protocols.
2.	To enable students to learn about data and storage centers and WAN designs considerations.	Students would be able to acquire knowledge about Data centers, WAN designs and Storage Area Networks.
Cloud Computing and Ubiquitous System		
1.	To enable students to acquire in-depth knowledge of Cloud Computing concepts, technologies, architecture and applications by introducing and researching state-of-the-art in Cloud Computing fundamental issues, technologies, applications and implementations.	Students would be able to understand the Cloud Computing concepts, technologies, architectures, applications and role of virtualization in cloud computing and gain knowledge of different emerging cloud software environments.
2.	To enable students to learn the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.	Students would be able to analyze different cloud computing platforms such as GAE, AWS and Azure
Advanced Database Systems		
1.	Learning Query optimization, parallel and distributed database systems	Students would be able to get knowledge of Query optimization, parallel and distributed database systems
2.	Execution of queries based on data	Students would be able to implement SQL queries.
Mobile Computing Practical		
1.	To help students to emulate the working mobile devices on smart or android devices	Students will be able to emulate the working of mobile smart devices to develop mobile applications.
Advanced Computer Networks Practical		
1.	To enable students to simulate the working of various networking protocols	Students would be able to simulate the working of various routing protocols.
Cloud Computing and Ubiquitous System Practical		
1.	To gain knowledge of application development and deployment using cloud platforms.	Students will be able to implement various cloud environments such as Private Cloud, Azure application, server cluster, Open Nebula GAE.
2.	To develop cloud based software applications such as Open Nebula, Azure, Cluster, GAE etc	Students would be able to implement cloud service models such as IaaS, PaaS and SaaS
Advanced Database Systems Practical		
1.	Learn to implement object oriented, spatial, active, deductive	Students would be able to implement object oriented, spatial, active, deductive and temporal

	and temporal database systems.	database systems.

MSc IT Semester III

SN	LEARNING OBJECTIVES	LEARNING OUTCOMES
Embedded Systems		
1.	To enable students to have knowledge about the basic working of a microcontroller system and its programming using high level languages.	Students would be able to understand the difference between the general computing system and the embedded system and also recognize its classification.
2.	To provide students experience to integrate hardware and software for microcontroller applications systems.	Students would be able to provide knowledge to integrate hardware and software for microcontroller application systems.
3.	To make students learn the basics about various microcontrollers and their applications.	Students would be able to acquire knowledge about microcontrollers, embedded processors and their applications
Information Security Management		
1.	To make students acquire knowledge about information security management system ISMS and industry specific security certifications	Students would be able to understand the concept of Information Security Management System and Security Certifications.
2.	To enable students to learn industry recognized security domains.	Students would be able to understand types of domains commonly recognized by the security industry.
Virtualization		
1.	To describe the aims of virtualization	Students would be able to understand the basics of virtualization and study different types of virtualization such as Network Virtualization, Storage Virtualization, and Application Virtualization and so on.
2.	To make students understand installation, configuration, and management of Computer virtualization workstation and servers.	Students would be able to Install different servers on virtual machine. (CISCO, XENCENTRE, VSphere, VMWare)
Ethical Hacking		
1.	To make students understand the step-by-step methodology and tactics that hackers use to penetrate network systems	Students would be able to understand the core concepts related to malware, hardware and software vulnerabilities and their causes
2.	To Give a better understanding of IDS, firewalls, honeypots, and wireless hacking.	Students would be able to appreciate the Cyber Laws and impact of hacking and analyze social engineering methods
Embedded Systems Practical		
1.	To provide Knowledge to	Students would be able to understand the architecture and

	understand the Embedded systems design, Embedded programming and their operating system	concepts of 8051 Microcontrollers.
2.	To make students learn the basics working of 8051 microcontrollers and embedded C programming.	Students would be able to have knowledge about the basic working of a microcontroller system and its programming in embedded C language.
Information Security Management Practical		
1.	To make students simulate the working of various security protocols and tools	Students would be able to simulate the working of various security algorithms, protocols and security devices.
2.	To enable students to analyze packets in a network.	Students would be able to use tools like packet analyzer and sniffing tools to analyze the data packets in a network.
Virtualization Practical		
1.	To make students learn about VMware and Microsoft Virtual Machine (VM) virtualization technologies	Students would be able to install and configure virtualization technology such as VMware, virtual server components such as vCenter, virtual network and storage such as vCenter server or ESxi.
2.	To demonstrate the set up and installation of different virtual servers such as vCenter, ESxi etc	Students would be able to deploy, manage and migrate virtual machines.
Ethical Hacking Practical		
1.	To make students learn concepts of footprinting, network scanning and packet sniffing	Students would be able to assess an environment using footprinting
2.	To make students learn network scanning to gain information.	Students would be able to collect information using network scanning

MSc IT Semester IV

SN	LEARNING OBJECTIVES	LEARNING OUTCOMES
Artificial Intelligence		
1.	To make students understand basic building blocks of AI.	Students would be able to understand the building blocks of AI as presented in terms of intelligent agents.
2.	Learn different methods of algorithms for solving problems.	Students would be able to analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
3.	To make students learn how to solve satisfaction problems, mapping etc.	Students would be able to develop intelligent algorithms for constraint satisfaction problems and

		also design intelligent systems for Game Playing.
IT Infrastructure Management		
1.	To enable the students to understand how an integrated ITSM framework can be utilized to achieve IT business integration, cost reductions and increased productivity.	Students would be able to apply basic information technology service concepts to a current state of services using IT Infrastructure library.
2.	To make students learn the relationship between Business Strategy, Operations Strategy, Process Type, and the impact of these on managerial decision making and choices.	Students would be able to understand the relationship between Business Strategy, Operations Strategy, Process Type, and the impact of these on managerial decision making and choices.
Computer Forensics		
1.	To provide students with a comprehensive overview of collecting, investigating, preserving, and presenting evidence of cyber-crime left in digital storage devices.	Students would be able to provide an understanding Computer forensics fundamentals
2.	To make students understand file system basics and where hidden files may lie on the disk, as well as how to extract the data and preserve it for analysis.	Students would be able to analyze various computer forensics technologies
3.	To make students learn industry professional standards for performing digital investigations.	Students would be able to conduct digital investigations that conform to accepted professional standards and are based on the investigative process: identification, preservation, examination, analysis and reporting
Cloud Management		
1.	To help students understand a public or private cloud and learning about cloud computing instances or create new ones, monitor utilization and costs, and adjust resource allocations.	Students would be able to get in depth knowledge about different cloud services such as public, private and hybrid clouds.
2.	To enable students learn cloud infrastructure management.	Students would be able to be able learn how to manage the cloud infrastructure using automated techniques and to acquire knowledge about the Microsoft System center 2012.
Computer Forensics Practical		
1.	To demonstrate the ability to create forensically sound image files and working copy drives from both live and at-rest computer systems using a variety of commercial and open source tools.	Students would be able to evaluate the effectiveness of available digital forensics tools and use them in a way that optimizes the efficiency and quality of digital forensics investigations.

2.	To enable students to apply the methods for preservation of digital evidence.	Students would be able to apply the methods for preservation of digital evidence
Cloud Management Practical		
1.	To help students to work with all the resources required to manage and automate the cloud platform.	Students would be able to work with all the resources required to manage and automate the cloud platform.