



Satish Pradhan Dnyanasadhana College, Thane

(Arts, Science and Commerce)

Re-Accredited "B+" Grade (CGPA 2.69) by NAAC, ISO 21001:2018 (Certified)

Affiliated to University of Mumbai

M.Sc. in Information Technology

Program Specific Outcomes

PSO1: Ability to apply the knowledge of Information Technology with recent trends aligned with research and industry.

PSO2: Ability to apply IT in the field of Computational Research, Soft Computing, Big Data Analytics, Data Science, Image Processing, Artificial Intelligence, Networking and Cloud Computing, Statistics, Cyber Forensics, Block chain

PSO3: Ability to provide socially acceptable technical solutions in the domains of Information Security, Machine Learning, Internet of Things and Embedded System, Infrastructure Services as specializations.

PSO4: Ability to apply the knowledge of Intellectual Property Rights, Cyber Laws and Cyber Forensics and various standards in interest of National Security and Integrity along with IT Industry.

PSO5: Ability to write effective project reports, research publications and content development and to work in multidisciplinary environment in the context of changing technologies



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Department	Semester	Course
Information Technology	I	MSc (Soft Computing -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Perform basic set operations like union, intersection, and complement, and implement De-Morgan's Law .	L6	PSO2/PO1
CO2	Plot various membership functions and use the Fuzzy Inference System (FIS) Editor to model scenarios,.	L6	PSO2/PO2
CO3	Implement neural networks to solve problems such as generating the ANDNOT and XOR functions with McCulloch-Pitts nets, and applying perceptron nets for logical functions with bipolar inputs., compute weights with hetero-associative neural nets	L3	PSO2/PO2



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Department	Semester	Course
Information Technology	I	MSc (Soft Computing)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To differentiate between soft and hard computing, describe various soft computing techniques such as fuzzy compand apply these techniques to real-world problems	L2/L1/L3	PO2
CO2	To explain fundamental concepts and models of artificial neural networks, differentiate between supervised learning networks and associative memory networks, and apply various training algorithms and network types.	L2/L3	PO1 PO2
CO3	To describe various unsupervised learning networks and special neural networks, compare third-generation neural networks, and apply these advanced models to real-world data processing and analysis challenges.	L1/L2/L3	PO2 PSO2
CO4	To define key concepts in fuzzy logic, and apply fuzzy arithmetic and measures to evaluate and solve problems involving uncertainty and imprecision.	L1/L3/L5	PO2
CO5	To describe the components and applications of fuzzy logic control systems, compare genetic algorithms with traditional optimization techniques.	L1/L2	PO1/PO2



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Department	Semester	Course
Information Technology	I	MSc (Research in Computing)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To analyze the role of business research and evaluate how information systems and knowledge management contribute to effective data use	L4/L5	PO1/PO4/PSO1/PSO2
CO2	To identify and define research problems, apply qualitative research tools, and analyze secondary data	L1/L3/L4	PO1 PO2 PSO1
CO3	To apply various research methods, , demonstrate effective communication with respondents, and conduct experimental research.	L3/L4	PO2 PO4 PSO2
CO4	To explain different levels of scale measurement and attitude measurement, design effective questionnaires, select appropriate sampling designs, and determine the correct sample size for research projects.	L2/L6/	PSO1 PO1
CO5	To perform data editing and coding, apply basic and advanced statistical analysis techniques, and interpret differences between variables to make informed research conclusions.	L3/L2	PO2 PSO1 PSO2



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Department	Semester	Course
Information Technology	I	MSc (Research in Computing -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Obtain and Analyze Data: to compute descriptive statistics from datasets and import data from various sources into R/Python/Excel.	L4	PSO1 PSO2 PO2
CO2	Design and Analyze Surveys:	L6/L4	PSO1 PSO2 PO1
CO3	Perform Hypothesis Testing:.	L3	PSO1 PSO2 PO6
CO4	Conduct Sampling and Regression Analysis:	L3	PSO1 PSO2 PO2 PO4



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Department	Semester	Course
Information Technology	I	MSc (Data Science)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To describe the components of the Data Science technology stack, explain the layered framework for Data Science, and analyze the design and engineering data science Ecosystem.	L1/L2/L4	PSO2 PO1
CO2	To explain the structure and function of the three management layers in Data Science, analyze the process of balancing and controlling data within the Data Science Control Layer	L2/L4	PO2 PO1
CO3	To identify and analyze errors in data, and design and implement a practical Assess Superstep to improve data analysis processes.	L1/L4/L6/L2	PSO1 PO1
CO4	To explain the concepts of Data Vault and the Time-Person-Object-Location-Event model, apply data transformation techniques, and conduct hypothesis testing.	L2/L3	PSO2 PO2 PO4
CO5	To apply various data analysis techniques such as univariate, bivariate, and multivariate analysis, evaluate different machine learning models and algorithms,.	L3/L5	PSO1 PSO2 PO1



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Department	Semester	Course
Information Technology	I	MSc (Data Science -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Data Management and Conversion: Create data models using Cassandra and convert data from various formats (such as CSV, XML, JSON, MySQL, JPEG, video, and audio) into a standardized format like HOURS.	L6	PSO2 PO1 PO2
CO2	Data Processing and Analysis: Perform tasks related to retrieving, assessing, processing, transforming, and organizing data. This includes using utilities for auditing and generating detailed reports to summarize findings.	L3	PSO1 PSO2 PO2 PO4
CO3	Data Visualization: Use Power BI to visualize data, creating insightful charts and dashboards to help make data-driven decisions.	L6	PSO1 PSO2 PO1 PO2



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Department	Semester	Course
Information Technology	I	MSc (Cloud Computing -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Network Programming and Object Communication: Implement TCP and UDP programming, multicast socket communication, and object communication using RMI (Remote Method Invocation). They will also demonstrate the implementation of web services.	L3	PSO1 PSO2 PO2
CO2	Virtualization Techniques: Set up and manage virtual environments using various virtualization technologies including Xen, VMware ESXi with vCenter, and Windows Hyper-V.	L6	PSO1 PSO2 PO2
CO3	Cloud Application Development: Develop and deploy applications on Microsoft Azure and Google App Engine, gaining hands-on experience with cloud platforms and services.	L6	PSO1 PSO2 PO1 PO2



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Department	Semester	Course
Information Technology	I	MSc (Cloud Computing)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To describe the evolution and principles of cloud computing and virtualization, compare parallel and distributed computing, and evaluate the benefits and challenges of virtualization technologies	L1/L2/L5	PSO1 PSO2 PO1
CO2	To explain the concepts and models of cloud computing, differentiate between various cloud delivery and deployment models, and identify security threats.	L2/L1	PSO1 PSO2 PO1
CO3	To describe specialized cloud mechanisms explain cloud management tools, and apply cloud security measures	L1/L2/L3	PSO2 PO2
CO4	To explain various fundamental and advanced cloud architectures and evaluate the effectiveness of different architectural approaches	L2/L5	PSO1 PSO2 PO1
CO5	To compare cloud delivery models from both provider and consumer perspectives, analyze and evaluate cost metrics and pricing models for cloud services,	L2/L4/L5	PSO1 PSO2 PO2



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Department	Semester	Course
Information Technology	II	MSc (Big Data)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Explain the evolution, characteristics, and challenges of big data., Understand and apply key concepts in big data analytics,	L2/13	PSO1 PSO2 PO2
CO2	Implement and evaluate clustering algorithms and association rules. Apply regression.	L2/L5/L3	PSO1 PSO2 PO2
CO3	Utilize classification methods such as decision trees and Naïve and apply time series analysis techniques Conduct text analysis by processing raw text, representing it using TFIDF,	L3	PSO1 PSO2 PO2
CO4	Build scalable data products using Hadoop and understand its architecture and integrating Python with Hadoop Streaming. Utilize Spark for in-memory computing,	L6/L3	PSO1 PSO2 PO4
CO5	Apply distributed analysis techniques and design patterns for handling large-scale data, using tools like Hive and HBase .	L3	PSO1 PO2



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Department	Semester	Course
Information Technology	II	MSc (Big Data Analytics -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Setup and Manage Big Data Systems: Install, configure, and run Hadoop and HDFS for handling large-scale data storage and processing.	L6	PSO1 PSO2 PO2
CO2	Apply Classification and Clustering Techniques: Implement and use decision tree classification, SVM (Support Vector Machine), and Naive Bayes for data classification, as well as clustering algorithms for grouping similar data.	L3	PSO1 PSO2 PO2
CO3	Data Storage and Manipulation: Develop applications to store and manipulate big data using HBase or MongoDB, and perform data analysis with R or Python.	L6	PSO1 PSO2 PO4



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Department	Semester	Course
Information Technology	II	MSc (Image Processing)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To differentiate between soft and hard computing, describe various soft computing techniques and apply these techniques to real-world problems.	L2/L3	PSO1 PSO2 PO2
CO2	Use frequency domain techniques to filter and enhance images, Apply image restoration and reconstruction methods to correct image distortions and remove noise, estimating degradation effects.	L3/L2	PSO1 PSO2 PO2
CO3	Understand and Apply various transforms like Fourier, Walsh-Hadamard, and Wavelet Utilize advanced image compression methods and implement watermarking techniques to efficiently encode images	L2/L3	PSO1 PSO2 PO1 PO2
CO4	Apply morphological image processing techniques to manipulate and analyze shapes in images, Implement various image segmentation methods to detect edges, apply thresholding,.	L3/L2	PSO1 PSO2 PO2
CO5	Utilize active contour methods like snakes and level sets for advanced image segmentation to outline and segment objects in images. Extract and analyze key features from images.	L3/L1/L4	PSO1 PO2



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Department	Semester	Course
Information Technology	II	MSc (Image Processing -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Analyze Image Samples and Resolution: Calculate the number of samples required for an image and study the effects of reducing its spatial resolution to understand image quality and data requirements.	L4	PSO1 PO1
CO2	Apply Intensity Transformations: Implement basic intensity transformation functions such as image negation, thresholding, log transformations, and power-law transformations, and perform contrast stretching, gray-level slicing, and bit-plane slicing for enhanced image analysis.	L3	PSO1 PSO2 PO2
CO3	Perform Advanced Image Processing Techniques: Plot image histograms, process color images by segmenting into RGB planes, apply Discrete Fourier Transform, and execute morphological operations like erosion, dilation, opening, and closing to refine and analyze image features.	L3/L6	PSO1 PSO2 PO1 PO2



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Department	Semester	Course
Information Technology	II	MSc (Microservice Architecture -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Develop and Deploy Microservices: Build and deploy ASP.NET Core MVC applications and REST APIs, create and manage microservices with ASP.NET Core, and establish backing services to support these microservices.	L6	PSO1 PSO2 PO2 PO1
CO2	Utilize Containerization and CI/CD: Work with Docker for containerization, including commands, images, and networks, and use Docker to install software packages. Implement continuous integration using CircleCI to automate and streamline deployment processes.	L3	PSO1 PSO2 PO1 PO2
CO3	Build Real-Time Systems: Design and build real-time microservices with ASP.NET Core, integrating various components to create responsive and scalable applications.	L6/L4	PSO1 PSO2 PO4



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Department	Semester	Course
Information Technology	II	MSc (Microservice Architecture)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Understand and implement microservices to improve software flexibility and scalability.Design effective microservice systems by applying key principles,	L2/L3/L6	PSO1 PSO2 PO1
CO2	Design and manage microservices by defining service boundaries, creating effective APIs, and handling data and distributed transactions.Implement microservices in practice by following guidance on solution architecture, organizational culture, and tools.	L6/L2	PSO1 PSO2 PO1 PO2
CO3	Develop and deploy microservices using ASP.NET Core integrating apps with Docker and continuous integration tools like Wercker and Circle CI. Implement microservice ecosystems	L6/L2	PSO1 PSO2 Po1 PO2
CO4	Create data services by selecting appropriate data stores, building repositories with PostgreSQL, and integrating them through practicaltesting.Implement event sourcing and CQRS patterns, develop cloud-native web	L6/L2	PSO1 PSO2 PO2
CO5	Configure microservice ecosystems .Develop real-time applications using technologies like Websockets and cloud messaging,.	L6	PSO1 PO1 PO3



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Department	Semester	Course
Information Technology	II	MSc (Modern Networking)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Understand and describe key elements of modern networking, Explain concepts of cloud computing, IoT, and network convergence, while applying knowledge of traffic types,	L2/L3/L4	PSO2 PO1
CO2	Understand the fundamentals of Software-Defined Networking (SDN), Apply SDN concepts to real-world scenarios,,	L2/L3	PO2 PSO2
CO3	Explain Network Functions Virtualization (NFV) concepts and architecture,, Implement and manage virtualized network functions and services,	L2/L4/L3	PSO1 PSO2 PO1
CO4	Understand and apply Quality of Service (QoS) and Quality of Experience (QoE) principles to manage network performance, Implement QoS and QoE strategies by utilizing various measurement methods and mapping models	L2/L3/L3	PSO1 PSO2 PO2
CO5	Describe and differentiate between various cloud computing services and deployment models. Analyze and apply Internet of Things (IoT) concepts, including its architecture and security requirements, to real-world scenarios, ensuring robust security measures in cloud and IoT environments.	L1/L2	PSO1 PSO2 PO3 PO2



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Department	Semester	Course
Information Technology	I	MSc (Modern Networking -P)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Network Configuration and Path Control: Design and verify IP SLA tracking, path control using Policy-Based Routing (PBR), and manage MPLS (Multi-Protocol Label Switching) environments to ensure optimal network performance and reliability.	L6	PSO1 PSO2 PO1
CO2	BGP Configuration: Set up and manage both Internal (IBGP) and External BGP (EBGP) sessions, utilize AS_PATH attributes, and apply Local Preference and MED (Multi-Exit Discriminator) for effective route management and network traffic control.	L6	PSO1 PSO2 PO1
CO3	Network Security: Implement and secure the management plane to protect network infrastructure, ensuring secure access and control over network devices and configurations.	L3	PSO1 PO2



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Department	Semester	Course
Information Technology	III	MSc (Offensive Security)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	understand key concepts in securing cloud computing environments, web applications, and wireless networks. apply techniques to ensure fault tolerance and resilience in these systems. and analyze methods to protect these emerging technologies.	L2/L3//L4	PSO2 PSO3 PO4
CO2	understand social engineering tactics and how to defend against them. apply vulnerability assessment techniques and risk management strategies to identify and address security weaknesses. analyze disaster recovery plans to ensure business continuity.	L2/L3/L4	PSO2 PSO3 PO4
CO3	understand the importance of penetration testing and how it differs from vulnerability assessment. apply the Metasploit framework and supporting tools like Nessus and NMAP for effective penetration testing. analyze its components and configuration to optimize its use.	L2/L3/L4	PSO2 PSO3 PO1
CO4	understand how to gather and analyze information using Metasploit for different protocols and services. analyze the use of Metasploit for social engineering, including creating malicious payloads and infectious media.	L2/L4	PSO2 PSO3 PO1
CO5	understand how to organize and conduct a penetration test using Metasploit. evaluate the benefits of using Metasploit, such as its open-source nature, support for large networks, and user-friendly GUI.	L2/L5	PSO4 PO1 PO6



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Department	Semester	Course
Information Technology	III	MSc (Offensive Security)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	understand key concepts in securing cloud computing environments, web applications, and wireless networks. apply techniques to ensure fault tolerance and resilience in these systems. and analyze methods to protect these emerging technologies.	L2/L3//L4	PSO2 PSO3 PO4
CO2	understand social engineering tactics and how to defend against them. apply vulnerability assessment techniques and risk management strategies to identify and address security weaknesses. analyze disaster recovery plans to ensure business continuity.	L2/L3/L4	PSO2 PSO3 PO4
CO3	understand the importance of penetration testing and how it differs from vulnerability assessment. apply the Metasploit framework and supporting tools like Nessus and NMAP for effective penetration testing. analyze its components and configuration to optimize its use.	L2/L3/L4	PSO2 PSO3 PO1
CO4	understand how to gather and analyze information using Metasploit for different protocols and services. analyze the use of Metasploit for social engineering, including creating malicious payloads and infectious media.	L2/L4	PSO2 PSO3 PO1
CO5	understand how to organize and conduct a penetration test using Metasploit. evaluate the benefits of using Metasploit, such as its open-source nature, support for large networks, and user-friendly GUI.	L2/L5	PSO4 PO1 PO6



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Department	Semester	Course
Information Technology	III	MSc (<i>Security Breaches,</i>)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	understand the basics of information security, also analyze security controls and evaluate the role of penetration testing in safeguarding systems.	L2/L4/L5	PSO3 PSO4 PO2
CO2	understand how to analyze system vulnerabilities by exploring concepts, assessment tools, and scoring systems. You'll apply this knowledge to generate assessment reports.	L2/L3	PSO1 PO1 PO2
CO3	understand social engineering, including how attackers, commit identity theft, and exploit insider threats. also apply countermeasures and conduct penetration testing to prevent these attacks.	L2L3	PSO4 PO1 PO6
CO4	understand how web servers and web applications can be compromised, including various attack methods, tools, and apply countermeasures to protect them., analyze threats to wireless networks., and evaluate security tools and strategies .	L2/L3/L4/L5	PSO2 PO1 PO2
CO5	understand how mobile platforms and IoT devices can be compromised., and apply mobile security practices and penetration testing.implement countermeasures to ensure secure communications and data protection.	L2/L3	PSO3 PSO4 PO1 PO4



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Department	Semester	Course
Information Technology	III	MSc (Security Breaches-Practicals)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Students will be able to identify various tools and techniques used for footprinting, reconnaissance, and network scanning to understand potential security threats in a system.	L2	PSO1 PSO2 PO1
CO2	Students will be able to practically apply tools such as Wireshark, Nessus, and Metasploit to detect, monitor, and analyze network traffic for potential security breaches.	L3	PSO1 PSO2 PO1
CO3	Students will develop skills to analyze the data captured through various tools, identifying vulnerabilities in networks and systems.	L3	PSO1 PO2
CO4	Students will be equipped to design and implement countermeasures to protect against security threats,	L6/L3	PSO1 PSO2 PO1



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Department	Semester	Course
Information Technology	III	MSc (Technical Writing and Entrepreneurship Development,)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	learn about the basics of technical communication, gain an understanding of the ethical and legal considerations in technical writing,	L2	PO1 PSO1 PSO2
CO2	understand different types of content, such as articles, blogs, and newsletters, and how to identify the best channels to publish. apply techniques to create effective blogs.	L2/L3	PO1 PO2 PSO1
CO3	understand how to create effective graphics and also apply techniques to create graphics. create different types of reports,	L2/L3/L6	PO1 PSO2 PSO5
CO4	analyze and evaluate the effectiveness of documents and websites through reviews, usability testing, and tools to check for quality and plagiarism.	L4/L5	PO6 PSO5
CO5	understand how to manage innovation within organizations, and apply strategies to manage uncertainty and innovation projects. understand the basics of managing intellectual property, and evaluate the role of research and development (R&D)	L1/L3/L5	PO4 PSO1



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Department	Semester	Course
Information Technology	IV	MSc (Blockchain -Practicals)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To understand the core concepts of blockchain technology, including cryptography, transactions, and mining, and apply these concepts by writing and testing Python programs	L2/L3	PSO1 PSO2 PSO5 PO4 PO3
CO2	The ability to analyze different blockchain scenarios and develop smart contracts in Solidity, implementing essential programming constructs.	L4/L6	PSO1 PO1 PO2
CO3	Capable of creating blockchain, deploying it, and evaluating its functionality by integrating it with tools like Go Ethereum, MetaMask, and Remix, demonstrating the end-to-end process from development to execution.	L6/L5	PSO2 PO1 PO2



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Department	Semester	Course
Information Technology	IV	MSc (Security Operation)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	understand the roles of auditors and auditees, apply audit standards and professional ethics, and evaluate audit processes	L2/L3/L5	PSO1 PSO5 PO6
CO2	understand how to manage information systems acquisition and development, analyze system development methodologies, control design, and testing techniques..	L2/L3	PSO1 PSO2 PO1 PO2
CO3	learn about key aspects of managing information systems operations, will examine systems performance management, problem resolution, and how to handle changes and releases.	L2/L3	PSO1 PSO3 PO1
CO4	understand how to govern and manage the software development life cycle,. will learn about centralization vs. decentralization, .	L2	PSO1 PSO2 PO1
CO5	understand how to protect information assets by recognizing various threats and applying technical protections. will also examine the auditor's role in evaluating business continuity and disaster recovery plans.	L2/L3	PSO3 PSO4 PO1 PO2



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Department	Semester	Course
Information Technology	IV	MSc (Security Operations -Practicals)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Understand and Explain Key Security Operations Concepts. and the basics of encrypting and decrypting data	L2	PSO1 PSO3 PO2
CO2	Apply Security Tools and Techniques. extracting executable files from PCAP files and analyzing DNS traffic, applying these techniques to identify potential threats and anomalies in network data.	L3/L4	PSO3 PO2 PO6
CO3	Analyze and Evaluate Security Data. develop skills to analyze security data using tools like Splunk, ELK, and GrayLog, learning to identify patterns, detect threats, and evaluate the effectiveness of security operations.	L4/L5	PSO3 PO6
CO4	Create and Implement Security Solutions. to create their own syslog server and configure Linux systems to work with it,	L6/L3	PSO3 PO4



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(Arts, Science and Commerce)

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Affiliated to University of Mumbai

Department	Semester	Course
Information Technology	IV	MSc (Security Operation)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	understanding of managing security operations, explore identity and access management lifecycle stages, and analyze how to manage security events, logs, and enterprise assets,	L2//L4	PSO3 PO1 PO4
CO2	analyze Windows-based systems, explore processes, memory, and event logs, examine and evaluate endpoint security technologies	L4/L3/L5	PSO1 PSO2 PO2
CO3	understand the CIA Triad (Confidentiality, Integrity, Availability) and its importance in threat analysis, analyze attack vectors and complexities, and apply digital forensic techniques	L2/L4/L3	PSO4 PO2 PO6
CO4	learn the incident response process, including identifying and managing security incidents. You'll understand how to prepare for and respond to incidents, analyze incident response team structures, and apply compliance frameworks	L2/L4/L3	PSO3 PSO5 PO1 PO4
CO5	learn how to analyze data and security events, and interpret security incidents through deterministic and probabilistic analysis. You'll also explore various types of attacks, develop strategies to mitigate these threats.	L2/L3/L6	PSO3 PO1 PO4



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Department	Semester	Course
Information Technology	IV	MSc (Cyber Forensics)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	understand the computer forensics and the investigation process. analyze the steps required for first responders to secure a crime scene involving digital data.	L2/L4	PSO1 PSO4 PO1
CO2	learn how to set up a forensic lab, understand the structure of hard disks and file systems,	L2	PSO2 PSO5 PO2
CO3	learn to recover deleted files and partitions, analyze steganography and image files. apply techniques to crack application passwords	L2/L4/13	PSO2 PO2
CO4	learn to capture and correlate logs to events, investigate network logs and traffic for forensic purposes, and analyze wireless and web attacks through network forensics.	L2/L4	PO4 PO6 PO4
CO5	learn to track and investigate email crimes, explore mobile forensics techniques, prepare detailed investigation reports,	L3/L4/L6	PSO5 PO4 PO3



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Department	Semester	Course
Information Technology	IV	MSc (Cyber Forensics -Practicals)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	To understand the fundamentals of cyber forensics and apply various forensic tools such as The SleuthKit, FTK, and OSForensics to analyze file systems, recover deleted data, and conduct forensic investigations on digital devices.	L2/L3/L4/L6	PSO1 PSO2 PO1
CO2	To analyze network traffic, detect web attacks, and investigate security incidents using tools like Wireshark, NetworkMiner, and PMdump, as well as perform mobile forensics and password cracking.	L6/L4	PSO2 PO4
CO3	Evaluate forensic evidence and generating detailed reports using forensic tools such as FTK Imager and ProDiscover Pro, ensuring that the findings are comprehensive and admissible in legal contexts.	L5/L6	PSO4 PO6



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Department	Semester	Course
Information Technology	IV	MSc (Blockchain)

After completing the course, Students will be able to:-

CO No.	Course Outcome	Bloom's level	Mapping of PO and PSO's
CO1	Understand the basics of blockchain technology, explore the layers and importance of blockchain, and examine its various uses and applications.	L2/L4/L3	PSO1 PSO2 PO2
CO2	Learn about Ethereum's structure and its role in creating trustless systems explore how Ether functions.	L2/L4	PSO2 PO4
CO3	Discover Hyperledger's key components like Fabric and Composer, and learn how to install, deploy, and troubleshoot Hyperledger networks.	L4/L2/	PSO1 PSO2 PO2
CO4	Understand the basics of mining Ether, also learn about mining tools and methods, the principles of cryptoeconomics,	L2	PSO1 PSO5 PO1 PO4
CO5	learn how to create and deploy decentralized applications (DApps) on blockchain networks.	L2/L6	PSO1 PO2