



Hindi Vidya Prachar Samiti's
**Ramniranjan Jhunjhunwala College of Arts, Science
& Commerce (Autonomous), Ghatkopar (W)**



Affiliated to
University of Mumbai

**Mapping of the courses to Employability/
Entrepreneurship/ Skill Development**

**Program: M.Sc. Information Technology
Program Code: RJSPIT**

Choice Based Credit System Syllabus

(With effect from the academic year 2019-20)

Mapping of the courses to Employability/ Entrepreneurship/ Skill Development

Course Name	Course Code	Topic focusing on Employability/ Entrepreneurship/skill development	Employability / Entrepreneurship / Skill development
Foundation of Data Science	RJPIT101 & RJSPIT1P1	Skill Development Unit I: Mathematics for Data Science, Exploratory Data Analysis, Exploring Binary and categorical data. Unit II: Data and Sampling Distributions, Distributions, Significance Testing Unit III: Basic Probability and Terms, Data Transformations and quality analysis Unit IV: Hypothesis testing. Regression and Prediction Unit V: Classification, Statistical Machine Learning, Unsupervised Learning, Time Series	1. Technical skill in data preparation and model building using machine learning algorithms. 2. Analytical skills in evaluating the models/ ML algorithms.
Distributed Systems	RJSPIT102 & RJSPIT1P2	Skill Development Unit I: Characterization of Distributed Systems Unit II: Processes Unit III: Synchronization, Consistency Unit IV: Replication, Fault Tolerance, Security Unit V: Distributed Object Based Systems, Distributed File Systems, Distributed Web-Based Systems Distributed Systems	1. Technical skills in developing client-server applications using network protocols. 2. Technical skills in implementing synchronization protocols for client and server.
Image and Vision Processing	RJSPIT103 & RJSPIT1P3	Skill Development Unit I: Introduction to Image Processing Unit II: Intensity transformations Unit III: Color Image Processing Unit IV: Morphological Image Processing Unit V: Content-Based Image Retrieval, Motion from 2D Image Sequences, Image Segmentation	1. Technical skills in utilizing the open-source tools for Image Processing and Image transformations techniques. 2. Technical skills for pursuing a research career in object recognition, pattern matching and computer vision.

M.Sc. Information Technology – Mapping of the Courses

Cloud Computing	RJSPIT104 & RJSPIT1P4	Skill Development, Employability Unit I: Introduction, Principles of Parallel and Distributed Computing Unit II: Virtualization, Cloud Computing Architecture Unit III: Public Cloud Platforms, Inter-cloud Resource Management, Cloud Security and Trust management, Cloud Programming and Software Environments, Programming Paradigms Unit IV: Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Programming support Emerging Cloud Software Environments Unit V: Energy efficiency in clouds, Cloud Applications	<ol style="list-style-type: none"> 1. Technical skills in utilising the open-source tools to configure various cloud services 2. Employability skills in providing overview of various Cloud service platforms and services.
Advanced Artificial Intelligence	RJSPIT201 & RJSPIT2P1	Skill Development Unit I: Introduction, Problems, Problem Spaces and Search, Heuristic Search Techniques Unit II: Knowledge Representation Issues, Using Predicate Logic, Representing Knowledge Using Rules Unit III: Symbolic Reasoning Under Uncertainty, Statistical Reasoning, Weak Slot-and-Filler Structures Unit IV: Strong Slot-and-Filler Structures, Knowledge Representation Summary, Game Playing Unit V: Planning, Understanding, Natural Language Processing, Parallel and Distributed AI, Robotic Process Automation	<ol style="list-style-type: none"> 1. Technical skills in developing and implementing various search techniques and reinforcement learning. 2. Technical skills in Artificial Intelligence language - Prolog
Wireless Sensor Networks- CISCO	RJSPIT202 & RJSPIT2P2	Skill Development, Employability Unit I: Sensor networks overview, Basic Wireless Sensor Technology, Wireless Transmission Technology and Systems Unit II: Fundamentals of MAC Protocols, Routing Protocols for Wireless Sensor Networks Unit III: Transport Control Protocols for Wireless Sensor Networks Unit IV: Middleware for Wireless	<ol style="list-style-type: none"> 1. Technical skills used for configuring the sensor networks by writing TCL scripts. 2. Employability skills in setting up Wireless sensor (motes) networks, Network Analyses, trouble

		Sensor Networks Unit V: Performance and Traffic Management, Operating Systems for Wireless Sensor Networks	shooting.
Big Data Analytics	RJSPIT203 & RJSPIT2P3	Skill Development, Employability Unit I: Introduction to Big Data Unit II: Hadoop Framework Unit III: Data Analysis Unit IV: Mining Data Streams Unit V: Big Data Framework	<ol style="list-style-type: none"> 1. Technical skills in processing and analysing data using big data frameworks. 2. Employability skills in big data analysis using various BDA tools.
Virtualization	RJSPIT204 & RJSPIT2P4	Skill development, Employability Unit I: Understanding Virtualization, Understanding Hypervisors, Understanding Virtual Machines. Unit II: Introducing VMware vSphere, Planning and Installing VMware ESXi, Installing and Configuring vCenter Server. Unit III: vSphere Update Manager and the vCenter Support Tools, Creating and Configuring Virtual Networks, Creating and Configuring Storage Devices. Unit IV: Ensuring High Availability and Business Continuity, Securing VMware vSphere, Creating and Managing Virtual Machines, Using Templates and vApps. Unit V: Managing Resource Allocation, Balancing Resource Utilization, Monitoring VMware vSphere Performance, and Automating VMware vSphere.	<ol style="list-style-type: none"> 1. Technical skills in understanding and configuring VMware vSphere client and server. 2. Employability skill used in server virtualization
Deep Learning	RJSPIT301 & RJSPIT3P1	Skill Development Unit I: Artificial Neural Networks, Training of neural networks Unit II: Deep Neural Networks Unit III: Convolutional Neural Networks Unit IV: Recurrent Neural Networks Unit V: GPU in Deep Learning	<ol style="list-style-type: none"> 1. Technical skills in designing, building the learning networks. 2. Technical skills in optimizing the performance of various neural networks.

M.Sc. Information Technology – Mapping of the Courses

Robotics	RJSPIT302 & RJSPIT3P2	Skill Development Unit I: Basic Concepts Unit II: Direct and Inverse Kinematics Unit III: Manipulator Differential Motion and Statics Unit IV: Path Planning Unit V: Dynamics and Control	<ol style="list-style-type: none"> 1. Technical skills in designing trajectories and path planning of mechanical robots. 2. Technical skills in designing basic robotic processes, online and offline programming using Python in RoboDK and study of RoboAnalyser tool.
Computer Hacking Forensics Investigation	RJSPIT303 & RJSPIT3P3	Skill Development, Employability Unit I: Computer forensics in today's world, Computer Forensics Investigation Process, Understanding hard disks and file systems. Unit II: Data acquisition and duplication, Defeating anti-forensics techniques, Operating system forensics. Unit III: Network forensics, Investigating web attacks, Database forensics. Unit IV: Cloud forensic, Malware forensics, Investigating email crimes. Unit V: Mobile forensic, Forensics report writing and presentation	<ol style="list-style-type: none"> 1. Technical skills in installing and using forensics tools. 2. Employability skills in investigating and analysing the evidence using forensic tools.
Amazon Web Services	RJSPIT304 & RJSPIT3P4	Skill Development, Employability Unit I: Amazon Simple Storage Service (Amazon S3) and Amazon Glacier Storage, Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Elastic Block Store (Amazon EBS) Unit II: Amazon Virtual Private Cloud (Amazon VPC), Elastic Load Balancing, Amazon CloudWatch, and Auto Scaling Unit III: AWS Identity and Access Management (IAM), Databases and AWS, SQS, SWF, and SNS Unit IV: Domain Name System (DNS) and Amazon Route 53, Additional Key Services Unit V: Security on AWS, AWS Risk and Compliance, Architecture	<ol style="list-style-type: none"> 1. Technical skills in AWS cloud for user creation, security polices and groups, DynamoDB, API gateway, Key Management Services, S3 bucket storage handling. 2. Employability skills in AWS Cloud Architect Solution.

		Best Practices	
Natural Language Processing	RJSPIT401 & RJSPIT4P1	Skill Development, Employability Unit I: Lexical Processing Introduction to NLP, Basic Lexical Processing, Advanced Lexical Processing Unit II: Syntactic Processing Introduction to Syntactic Processing, Parsing, Information Extraction, Conditional Random Fields Unit III: Semantic Processing Introduction to Semantic Processing, Distributional Semantics Unit IV: Topic Modeling Unit V: Building Chatbots with Rasa	1. Technical skills in processing and analysing textual and speech data using NLP tools. 2. Employability skills in data analysis.
Software Defined Networking	RJSPIT402 & RJSPIT4P2	Skill Development Unit I: Networking Concepts Unit II: SDN Concepts Unit III: OpenFlow Unit IV: SDN architecture and Eco system Unit V: OpenFlow agents	1. Technical skills in installing and configuring various controllers to implement network topology. 2. Technical skills in using OpenFlow protocol with various controllers.
Virtual & Augmented Reality	RJSPIT403	Skill Development Unit I: Introduction to Virtual Reality, Introduction to Augmented Reality Birds Eye View, Geometry of Virtual Worlds Unit II: Light and optics, Physiology of Human Vision, Visual Perception Unit III: Visual Rendering, Motion in Real and Virtual World, Tracking and Interaction Unit IV: Audio, Evaluating VR Systems and Experiences Unit V: Experience Design, Future of VR	1. Technical skills in understanding the design process of Virtual and Augmented Systems. 2. Technical skills used in unity 3D development studio.
Blockchain Technology	RJSPIT404	Skill Development, Employability Unit I: Blockchain Fundamentals Unit II: Web Technologies & Programming Fundamentals Unit III: Introduction to Ethereum Unit IV: Building Ethereum Applications Unit V: Alternate Public, Federated	1. Technical skills in understanding various technical factors involved in block chain technology 2. Employability skill is achieved in

M.Sc. Information Technology – Mapping of the Courses

		and Private Blockchain and comparisons Limitation of Public Blockchains, Enterprise expectations on Blockchain, Benefits of private Blockchain	designing the smart contract and block chain platform for various problem statement
Project	RJSPIT405	-	1. Technical skills in requirement analysis, designing and implementing the application, perform testing and evaluation of the product.