ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY,NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2024-25

INFORMATION TECHNOLOGY

SEMESTER IV

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				No. of hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Examination	Total	
1	PCC	**24IT401T**	Software Engineering and Project Management	**3**	**-**	**-**	**3**	**20**	**20**	**60**	**100**	**3**
2	PCC	**24IT401P**	Software Engineering and Project Management Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**-**
3	PCC	**24IT402T**	Object Oriented Programming	**3**	**-**	**-**	**3**	**20**	**20**	**60**	**100**	**3**
4	PCC	**24IT402P**	Object Oriented Programming Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**-**
5	PCC	**24IT403T**	Operating Systems	**2**	**-**	**-**	**2**	**10**	**10**	**30**	**50**	**1.5**
6	VSC	**24IT404P**	Technical Skill Development - I	**-**	-	**4**	**2**	**-**	**50**	**-**	**50**	**-**
7	AEC	**24IT405T**	Economics and Management	**3**			**3**	**20**	**20**	**60**	**100**	**3**
8	SEC	**24IT441P**	Career Development - IV		-	**2**	**1**	**-**	**50**	**-**	**50**	**-**
9	ELC	**24IT406P**	Micro Project II*			**2**	**1**	**-**	**50**	**-**	**50**	**-**
10	MDM	**24IT431M**	Multidisciplinary Minor - II	**3**	**-**	**-**	**3**	**20**	**20**	**60**	**100**	**3**
			Total	**14**	**-**	**12**	**20**	**90**	**290**	**320**	**700**	**-**

*** Field Project or Community engagement project in the major discipline**

Multidisciplinary Minor - II	
23IT431M	MDM-II Cloud Platforms and Services

		July 2025	**NEP 2.1**	**Applicable for 2025-26**
Chairman - BoS	**Dean – Academics**	**Date of Release**	**Version**	

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT401T	Software Engineering and Project Management	3	-		3	20	20	60	100

Course Objectives	Course Outcomes
This course is intended 1. To have knowledge of basic SW engineering methods and practices, and their appropriate application. 2. To understand software requirements and prepare SRS documents. 3. To study the complete process of project management, monitoring and control. 4. To study software development life cycle (SDLC) phases like analysis, design, coding, testing and deployment.	**Students will be able to** 1. Illustrate fundamentals of software engineering and different process models. 2. Summarize the concepts of system and requirement engineering to design software model. 3. Relate and Utilize design engineering concepts for designing of software 4. Classify software testing methodology and design test plan for the software. 5. Analyze and Make use of project management techniques forsoftware development.

Unit I: Introduction to Software Engineering	**[9Hrs]**
Software Engineering- A Layered Technology, Software Process Framework, Software Process Models: The Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, Unified Model, Agile Process, Extreme Programming, Scaled Agile Framework (SAFe).	
Unit II: Software Analysis:	**[9Hrs]**
Software Requirements, IEEE SRS documents, Requirements Engineering: Requirements Analysis, Modeling approaches -Scenario based modelling, UML models, Data modeling, Class based modeling, Flow Oriented Modeling, Behavioral Model.	
Unit III: Software Design:	**[9Hrs]**
Design Concepts and Process, Design model, Architectural design, Component, Class based components, User Interface design, Pattern based design, Software reuse, Quality Management: Quality Concepts, Software Quality Assurance, Software Reviews, Formal Technical Review, Software Reliability	
Unit IV: Software Testing	**[9Hrs]**
Software Testing Strategies, Validation testing, System testing, Unit testing, Integration testing, Validation testing, Black box testing, White box testing, Object-Oriented testing methods, Art of Debugging, Change Management: Software Configuration Management, SCM Repository, SCM Process	
Unit V: Software Project Management:	**[9Hrs]**
Project Management concepts, Metrics for process & projects and quality ,Software measurement, , Software Project estimation, Decomposition techniques, Empirical Estimation Models, Make/Buy decision, Project scheduling, monitoring and control, Software risks, RMMM, Software maintenance, Re-engineering, Reverse engineering, Restructuring, Forward engineering, Software Process Improvement, CMMI, Emerging trends of software engineering.	

Text Books

Sr. No	Title	Authors	Edition	Publisher
1	Software Engineering-A Practitioner's Approach	Roger Pressman	8th	Tata McGraw Hill
2	Software Engineering	Ian Summerville	9th	Pearson
3	Software Engineering for students	Douglas Bell	4th	Pearson

Reference Books

Sr. No	Title	Authors	Edition	Publisher
1	The Mythical Man-Month	Frederick P Broooks	1st	Online
2	Software Engineering Project Management	Bill Brykczynski	2nd	Wiley Student Edition
3	Software Engineering, Theory and Practice	Pfleeger, Atlee	4th	Pearson

Online Resources

1	https://www.javatpoint.com/software-engineering
2	https://www.tutorialspoint.com/software_engineering/index.htm
3	https://www.geeksforgeeks.org/software-engineering/

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FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT401P	Software Engineering and Project Management Lab		-	2	1	-	25	25	50

Course Objectives	Course Outcomes
This course is intended 1. To design SRS using SDLC approach. 2. To provide software development team working knowledge using role play 3. To study and test various software testing tools	**Students will be able to** 1. Identify functional and non-functional requirements for given problem statement. 2. Estimate project metrics and Create project schedule using software tools. 3. Design UML Diagrams for a given scenario. 4. Evaluate the performance of given project

Expt. No.	Experiments based on
1	Analyze functional and nonfunctional requirements for the given case study.
2	Demonstrate Agile model using Jira tool.
3	Design Project Schedule using gantter chart.
4	To Create SRS (Software Requirement for Specification) for a given case study.
5	To Design all static UML diagrams.
6	To Design all dynamic UML diagrams.
7	To Design Test cases for the login page.
8	Micro Project.

Text Books

Sr. No	Title	Authors	Edition	Publisher
1	Software Engineering-A Practitioner's Approach	Roger Pressman	8th	Tata McGraw Hill
2	Software Engineering	Ian Summerville	9th	Pearson
3	Software Engineering for students	Douglas Bell	4th	Pearson

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Sr. No	Title	Authors	Edition	Publisher
1	The Mythical Man-Month	Frederick P Broooks	1st	Online
2	Software Engineering Project Management	Bill Brykczynski	2nd	Wiley Student Edition
3	Software Engineering, Theory and Practice	Pfleeger, Atlee	4th	Pearson

Online Resources

1	https://highered.mheducation.com/sites/0073375977/information_center_view0/
2	https://www.javatpoint.com/software-engineering
3	https://www.tutorialspoint.com/software_engineering/index.htm

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT402T	Object Oriented Programming	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
This course is intended 1. To understand the basic concept of OOP. 2. To learn the features of OOP. 3. To implement concept of Classes & Object, Inheritance, Polymorphism, FileHandling using C++. 4. To understand the concept of Exceptionhandling.	**Students will be able to** 1. Describe and implement the basic concept of object-oriented programming 2. Apply the operator & function overloading for performing the operation onthe user defined data-types & functions. 3. Implement the concept of inheritance for data reusability. 4. Demonstrate & apply pointer on array, function & objects. 5. Apply the file handling, exception handling & template mechanism in Object based programming

Unit I: Concepts of OOP	**[9Hrs]**
Introduction to OOP, Procedural Vs. Object Oriented Programming, Benefits and applications of OOP; Beginning with C++: Overview and Structure of C++ Program, Access specifier, Classes and Objects, Array of object, Constructors and Destructors, Copy constructor.	
Unit II: Operator & Function Overloading	**[9Hrs]**
Static data member & member function, friend function and friend class. Function overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading of Binary Operators using Friends function, Namespace, Dynamic Binding (Polymorphism).	
Unit III: Inheritance	**[9Hrs]**
Introduction to inheritance, Types of inheritance -Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance. Virtual Base Classes, Abstract Classes & Pure virtual function, Constructors in Derived Classes, Nesting of Classes, Type casting.	
Unit IV: Pointer in C++	**[9Hrs]**
Addresses and pointers. The address of operator, pointer and arrays. Pointer and Function pointer , Memory management :New and Delete, pointers to objects, types of pointers-Null Pointer, Void Pointer, Wild Pointer, Dangling Pointer.	
Unit V: File Handling	**[9Hrs]**
Streams classes, Stream Errors, Disk file I/O with streams, file pointers, overloading the extraction and insertion operators, command line arguments. Templates -function templates, Class templates. Exception handling.	

Text Books

Sr. No	Title	Authors	Edition	Publisher
1	Object Oriented Programming in C++	Robert Lafore	4th	Sams Publication
2	Object Oriented Programming with C++	E. Balagurusamy	7th	MCGraw Hill
3	Object Oriented Programming And C++	Rajaram, R	2nd	New Age International Publishers

Reference Books

Sr. No	Title	Authors	Edition	Publisher
1	C++ : The Complete Reference	Schildt, Herbert	8th	MCGraw Hill
2	The C++ ProgrammingLanguage	B. Stroustrup	4th	Addison-Wesley PearsonEducation
3	C++ Primer	Stanley Lippman , Josée Lajoie , Barbara Moo	5th	O'Reilly-2013

Online Resources

1	https://www.geeksforgeeks.org/c-plus-plus/
2	https://www.mycplus.com/tutorials/cplusplus-programming-tutorials
3	https://www.w3schools.com/cpp/cpp_intro.asp
4	https://www.programiz.com/cpp-programming

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT402P	Object Oriented Programming Lab		-	2	1	-	25	25	50

Course Objectives	Course Outcomes
This course is intended 1. To learn the features of OOP. 2. To implement concept of Classes & Object, Inheritance, Polymorphism, File Handling, pointers and exception handling in C++.	**Students will be able to** 1. Apply the concepts of classes & objects, operator & function overloading for performing the operation on the user defined data-types & functions. 2. Implement the concept of inheritance for data reusability. 3. Demonstrate & apply pointer on array, function & objects. 4. Apply the file handling, exception handling & template mechanism in Object based programming

Expt. No.	Experiments based on
1	Classes and Objects
2	Constructors and Destructors (Copy constructor and Copy assignment)
3	Function overloading, operator overloading
4	Inheritance, Abstract Classes
5	Dynamic Memory Management
6	Pointers with array, function and objects
7	File Management
8	Templates and Exception
9	Micro -project

Text Books

Sr. No	Title	Authors	Edition	Publisher
1	Object Oriented Programming in C++	Robert Lafore	4th	Sams Publication
2	Object Oriented Programming with C++	E. Balagurusamy	7th	MCGraw Hill
3	Object Oriented Programming And C++	Rajaram, R	2nd	New Age International Publishers

Reference Books

Sr. No	Title	Authors	Edition	Publisher
1	C++ : The Complete Reference	Schildt, Herbert	8th	MCGraw Hill
2	The C++ Programming Language	B. Stroustrup	4th	Addison-Wesley Pearson Education
3	C++ Primer	Stanley Lippman , Josée Lajoie , Barbara Moo	5th	O'Reilly-2013

Online Resources

1	https://www.geeksforgeeks.org/c-plus-plus/
2	https://www.mycplus.com/tutorials/cplusplus-programming-tutorials
3	https://www.w3schools.com/cpp/cpp_intro.asp
4	https://www.programiz.com/cpp-programming

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FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT403T	Operating Systems	2		-	2	10	10	30	50

Course Objectives	Course Outcomes
This course is intended 1. To learn the fundamentals of Operating Systems. 2. To learn the mechanisms of OS to handle processes and threads and their communication	**Students will be able to** 1. Analyze the structure of OS and basic architectural components involved in OS design 2. Summarize file management and memory management and its allocation policies. 3. Interpret the Mutual exclusion, Deadlock detection and recovery.

Unit I: Introduction to OS and File Management	**[10Hrs]**
What is Operating System (OS), structure of OS, Types of OS, services of OS, System calls, Spooling and buffering. File Concept, file attributes, file operations, Disk SchedulingAlgorithms.	
Unit II: Process Management & Memory Management	**[10Hrs]**
Process concept, process scheduling, scheduling algorithm, Bare machine, resident monitor, swapping, paging, segmentations, page replacement algorithms, Allocation algorithm, thrashing.	
Unit III: Process Synchronization & Deadlock and Protection	**[10Hrs]**
Critical Section problem, semaphores, classic problems: Dining Philosopher problem, producer-consumer, reader-writers problem. deadlock, methods for handling deadlocks, Banker's Algorithm.	

Text Books

Sr. No	Title	Authors	Edition	Publisher
1	Modern Operating Systems	A. S. Tanenbaum	4th	Pearson
2	Operating System	A.S. Godbole	3rd	Tata McGraw Hill
3	Operating System Concepts	Silberschatz and Galvin	8th	Addison Wesley

Reference Books

Sr. No	Title	Authors	Edition	Publisher
1	Operating systems concepts and Design	Milan Milenkovic	3rd	Tata McGraw- Hill
2	Introduction to Operating Systems Concepts	P.C.P. Bhatt	3rd	PHI,2010.
3	Operating systems	Harvey M Deital	3rd	Pearson Education

Online Resources

1	https://www.geeksforgeeks.org/kernel-in-operating-system/?ref=ml_lbp
2	https://www.geeksforgeeks.org/resource-management-in-operating-system/?ref=ml_lbp
3	https://study.com/academy/lesson/operating-system-computer-science-meaning-examples.html

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT404P	Technical Skill Development- I	-	-	4	2	-	50	-	50

Course Objectives	Course Outcomes
This course is intended 1. To develop the dynamic web pages 2. To develop the interactive dynamic websites 3. TO Introduce fundamental concepts of JavaScript including variables, data types, operators, control structures, and functions.	**Students will be able to** 1. Demonstrate understanding of basic JavaScript concepts such as variables, data types, operators,comments, conditional and looping statements. 2. Apply functions, control structures, and built-in JavaScript objects to solve computational problems. 3. Design Web pages using JavaScript OOP and DoM 4. Implement concept of Construct the dynamic web pages using events, exception handlingand cookies

Practical.No.	Practical Based on
1	To study JavaScript variables, data types, and operators.
2	To implement if, if-else, nested if-else, and switch statements.
3	To practice for, while, and do-while loops.
4	To use functions, break, continue, return statements.
5	To use Arrays and Objects in JavaScript.
6	To learn built-in JS objects.
7	To access HTML elements using DOM methods
8	To learn ES6 classes, inheritance, prototype, encapsulation, polymorphism, abstraction.
9	To handle major events. (Mouse, Keyboard, Window)
10	To validate form fields using events
11	To use try–catch–finally and throw.
12	To understand cookies and user session handling.
13	Micro Project

Text Books

Sr.No.	Title	Authors	Edition	Publisher
1	HTML;CSS: The Complete Reference	Thomas A. Powell,	5th	McGraw Hill
2	Learning PHP, MySQL, JavaScript, CSS ; HTML5: A Step-by-Step Guide to Creating Dynamic Websites	Robin Nixon		O'Reilly

Reference Books

Sr.No.	Title	Authors	Edition	Publisher
1	Java Script: The Complete Reference	Thomas Powell	2nd	McGraw Hill
2	Bootstrap: Responsive Web Development	Jake Spurlock		O'Reilly

Online Resources

1	https://www.geeksforgeeks.org/introduction-to-javascript/
2	https://www.javatpoint.com/javascript-tutorial
3	https://www.freecodecamp.org/news/the-complete-javascript-handbook-f26b2c71719c/
4	https://www.w3schools.com/Js/

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FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT405T	Economics and Management	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
The course examines how the economics, business and industrial management practices are related and how business decision is taken.	**At the end of the course, students will be able to:** 1. Apply managerial economics concept in business analysis and business decision making. 2. Explain relationships between production and costs and understand different forms of market structures. 3. Assess impact of macroeconomics and government policies on business and economy. 4. Recognize the functions of management and marketing management for business decisions. 5. Explore role of financial management in business and decision making.

Unit I **[9 Hrs]**

Economics, Classification of economics, Industrial economics, Consumer demand, Law of Demand, Determinants of demand, Demand forecasting, Law of supply, Utility, Law of diminishing marginal Utility, Types of Elasticity of demand

Unit II **[9 Hrs]**

Concept of Production, Factors of Production, Laws of return, Cost concepts and types of cost, cost curves, Market Structures Perfect competition, Monopoly, Oligopoly, and Monopolistic competition.

Unit III **[9 Hrs]**

The functions of central bank, Inflation, Deflation, Recession. Measures to control Inflation, National income, GDP, GNP. Liberalization, Privatization and Globalization

Unit IV **[9 Hrs]**

Definition of management, functions of management – planning, organizing, directing, Controlling, Introduction to human resources Management, Marketing Management, Concepts of Marketing, Marketing mix, Methods of pricing, channels of distribution, advertising and sales promotion.

Unit V **[9 Hrs]**

Financial Management, nature and scope of financial management, Sources of finance, Types of capital, Brief outline of profit and loss account, balance sheet, Budgets and types of budgets, Ratio analysis.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Managerial Economics	D.N. Dwivedi	8th	Vikas Publishing
2	Modern Economic Theory	K.K. Dewett	2005	S. Chand Publisher
3	Industrial Management	Dr.I.K. Chopde, Dr.A.M. Sheikh	Revised Edition	S. Chand Publisher

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Industrial Organization and Industrial economics	T.R. Banga, S.C. Sharma	2006	Khanna Publishers

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT441P	Career Development - IV	-	-	2	1	--	50	-	50

Course Objectives	Course Outcomes
1. The sole objective of imparting aptitude training is to make students able to critically evaluate various real-life situations by resorting to an analysis of key issues and factors. 2. This Aptitude Training helps them to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions. 3. To categorize, apply and use thought process to distinguish between concepts of Quantitative methods.	1. Students shall understand the concepts of Quadratic Equation, AP, GP, and HP. 2. Students shall understand the concepts of Averages and Mixture and allegations 3. Students shall understand the concepts of Blood relations 4. Students shall understand the concepts of cubes and Dice problem. 5. Students shall understand the concepts of clocks and Calendars.

Unit I	**[6Hrs]**
Aptitude : Quadratic Equation Arithmetic progression, Geometric progression, Harmonic progression Imax: Critical Thinking, Interview Simulation, Engineering Leadership, Spatial Reasoning	
Unit II	**[6Hrs]**
Aptitude : Average Mixture and Allegation Imax: Interactive Interview Training, Start-Up & Entrepreneurship,	
Unit III	**[6Hrs]**
Aptitude : Blood Relation :- Family Tree, Coding Blood Relation, Pointing to a Person Problem Imax: Engineering Ethics, Employability, Engineering Judgment	
Unit IV	**[6Hrs]**
Aptitude : Cubes and Dice Problems:- Number of cuts to be made, Number of colorful Faces of Cubes, Hidden Dice Number Imax: Disposition for Innovation, Disposition for Start up	
Unit V	**[6Hrs]**
Aptitude : Clocks :- Angle made by Hour hand, Minutes hand, Mirror and water Image of Clock, Behind and Ahead time concept Calendars :- Day on Specific date, Coded Calendars Problems, Calendars repetition Imax: Creating A Winning Resume, Patriotism Self - respect & Start - up	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude By R. S. Aggarwal	R.S. Aggarwal	--	S.Chand
2	Quantitative Aptitude	Shripad Deo	--	Allied Publication
3	A Modern Approach to Verbal & Non-Verbal Reasoning	R.S. Aggarwal	--	

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude for CAT by Arun Sharma	Arun Sharma	--	MCGRAW HiLL

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT406T	Micro Project II*	-	-	2	1	--	50		50

Course Objectives	Course Outcomes
This study aims to examine and analyze a real-life scenario through the systematic collection, organization, and interpretation of data using simple and practical analytical methods. The project provides hands-on exposure to real-world data, enabling a better understanding of analytical techniques while strengthening problem-solving abilities.	1. Apply concepts and principles learned in theory to systematically examine and effectively resolve a real-world problem. 2. Efficiently acquire, organize, and interpret data using relevant methodologies and tools." 3. Design and implement a simple, functional solution or prototype aligned with the selected topic. 4. Demonstrate the ability to work alone or in a team to systematically plan, carry out, and document the micro project. 5. Analyse the learning process and evaluate the impact and usefulness of the project results.

	[2Hrs]
Students are expected to undertake micro projects on emerging technologies to apply and enhance their knowledge through hands-on exploration, practical experimentation, and real-world problem analysis, thereby strengthening their technical competence, creativity, critical thinking, and ability to design simple yet impactful solutions within their selected domain.	

FOURTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24IT431M	MDM – II Cloud Platforms and Services	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
This course is intended 1. To provide a comprehensive understanding of cloud computing concepts, platforms, and services. 2. To equip students with the skills to effectively utilize cloud storage services for data management, backup, and recovery. 3. To develop the ability to apply cloud computing and big data technologies to address complex data challenges.	**Students will be able to** 1. Compare and contrast major cloud platforms (AWS, Azure, GCP) . 2. Design effective cloud storage solutions by applying knowledge of object, block, and file storage, recovery, and cost optimization. 3. Analyze big data challenges and propose solutions using cloud- based big data tools. 4. Identify and mitigate common cloud security threats and vulnerabilities. 5. Manage cloud services effectively by understanding SLAs, monitoring and managing service.

Unit I: Cloud Platforms Overview	**[9Hrs]**
Cloud Computing Platforms: Cloud Services, Cloud Model, Cloud Architecture, Cloud Platform (AWS, Azure, GCP), Comparison of pricing models, performance, and features, Platform Selection (workload, budget, security, compliance, etc.).	
Unit II: Cloud Storage Services:	**[9Hrs]**
Storage Concepts: Object, block, and file storage, Storage tiers and lifecycle management, Data durability, availability, and consistency. Data backup and recovery strategies. Cost optimization for storage.	
Unit III: Cloud Computing and Big Data:	**[9Hrs]**
Big Data Challenges: Volume, velocity, and variety of big data. Cloud-based Big Data Tools: Hadoop, Spark, and other relevant tools, Hadoop Architecture and components, Integration with cloud platforms.	
Unit IV: Cloud Security	**[9Hrs]**
Cloud Security Threats: Common threats and vulnerabilities, best practices for cloud environments, Identity and Access Management (IAM): Role-based access control, multi-factor authentication, IAM services provided by cloud platforms.	
Unit V: Cloud Service Management	**[9Hrs]**
Service Level Agreements (SLAs): Understanding SLAs offered by cloud providers, SLA monitoring and management. Budgeting and forecasting, Cost analysis tools.	

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Learning Cloud Computing: Build, Deploy and Manage Cloud Systems	Richard Barker	2	O'Reilly Media
2.	Cloud Computing: Principles and Paradigms	Rajkumar Buyya, James Brookey, and Srikumar Venugopal	8	Wiley
3.	Cloud Architecture and Design Patterns	Eberhard Wolff	1	O'Reilly Media

Web Resources:

1. GeeksforGeeks : https://www.geeksforgeeks.org/