



B. Tech.
Semester V

**CLOUD INFRASTRUCTURE AND RESOURCE
MANAGEMENT
IT5041**

Effective from June-2023

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
IT5041	Cloud Infrastructure and Resource Management	3	2	3	2

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
IT5041	Cloud Infrastructure and Resource Management	40	60	50	150

Objectives of the course:

- To understand the basic concepts of cloud computing.
- To understand working infrastructure of different service providers.

Course outcomes:

Upon completion of the course, the student shall be able to,

- CO1: To understand the basics the basic concepts of cloud computing.
- CO2: Analyse the services and features of Amazon Web Service and Google Cloud Platform.
- CO3: To understand the working of Aneka and Azure cloud platform.
- CO4: Analyse resource management services and functionalities in cloud computing.
- CO5: Know the Functioning of cloud storage.
- CO6: To recognize the different advanced technologies and their working principle in cloud environment.

Sr. No.	Topics	Hours
Unit – I		
1	Introduction of Cloud Computing: Virtualization, Types of Virtualization ,Pros and cons of virtualization, Cloud Deployment Model, Service Offering Model, Basic Terminology of Cloud, Roles and Responsibility of cloud service provider.	5
Unit – II		
2	Cloud Infrastructure (AWS and GCP) : AWS : Introduction,Amazon Web Service,Compute service, Compute Storage, Cloud Communication service, Additional services of AWS.	7

	GCP: Google App engine, GCP Architecture, Core concept of GCP, application, Life cycle of GCP, Cost Model.	
Unit – III		
3	Cloud Infrastructure (Aneka and Azure) : Aneka:Introduction, Aneka Container, Building Aneka Cloud, Cloud Programming and Management. Azure: Introduction, Azure Concepts, SQL Azure, Windows Azure Platform.	6
Unit – IV		
4	Resource Management: Resource Pooling Architecture, Resource Polling Methods, Policies and Mechanism, Resource Allocation, Resource building and Scheduling, Cloud Scheduling subject to Resources.	7
Unit – V		
5	Cloud Storage: Basic Terminology, Storage as a Service, Storage Providers, Storage Security, Reliability, Advantages, Disadvantages	6
Unit – VI		
6	Advance Technology in Cloud: Green Cloud Computing, Edge Computing, Cloud Cryptography, Load Balancing, Cloud Analytics, Cloud Scalability, Service Model, Cloud Computing Platforms.	5

Text book:

1. Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi “Mastering Cloud Computing”, Elsevier.

Reference books:

1. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter “Cloud Computing A practical Approach”, McGrawHill.
2. Rajkumar Buyya, James Broberg, Andrzej Goscinski “Cloud Computing Principles and Paradigms”, Wiley Publication.

Course objectives and Course outcomes mapping:

- To understand the basic concepts of different cloud infrastructures :C01, C02, C03
- To understand functions and working of resource management : C04, C05
- To understand advanced technology in cloud environment : C06

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		C01	C02	C03	C04	C05	C06
1	Introduction of Cloud Computing	✓					
2	Cloud Infrastructure (AWS and GCP)		✓				
3	Cloud Infrastructure (Aneka and Azure)			✓			
4	Resource Management				✓		
5	Cloud Storage					✓	
6	Advance Technology in Cloud						✓

Programme outcomes:

- PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.
- PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.
- PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.
- PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.
- PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.
- PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.
- PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.
- PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.
- PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

- PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.
- PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	C01	C02	C03	C04	C05	C06
P01	✓	✓	✓			
P02				✓	✓	
P03	✓	✓	✓			
P04				✓		
P05						✓
P06				✓		✓
P07	✓	✓	✓			
P08						✓
P09					✓	✓
P010			✓	✓		
P011		✓			✓	
P012						✓