Cloud Computing

CourseCode	23EC4702D	**Year**	IV	**Semester**	I
Course Category	PE–V	**Branch**	ECE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Data Structures
Continuous Internal Evaluation	30	**Semester End Evaluation**	70	**Total Marks**	100

Course Outcomes

CO	Upon successful completion of the course, the student will be able to	BL
CO1	Describe the key concepts and components of cloud computing and its layered architecture to illustrate its significance in cloud-enabled computing environments.	L2
CO2	Apply cloud reference architecture and service/deployment models (IaaS, PaaS, SaaS) together with integration methodologies to implement communication mechanisms in cloud environments.	L3
CO3	Deploy and manage cloud integration services such as storage, compute, and networking, and secure them using appropriate infrastructure and security mechanisms.	L4
CO4	Analyse cloud infrastructure, security mechanisms, and industry cloud platforms for data monitoring and processing.	L4
CO5	Develop and assess the effectiveness of secure and efficient cloud-based solutions using industry cloud platforms.	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2: Medium, 1:Low)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2												
CO2		3											
CO3			3										
CO4				2	2	2	2						
CO5				2	2	2	2						
Avg.	2	3	3	2	2	2	2						

	Syllabus	
Unit No.	**Contents**	**Mapped CO**
1	**Introduction to Cloud Computing** Cloud Computing in a Nutshell, Layers, Desired Features of a Cloud, Cloud Infrastructure Management, Challenges and Risks, migrating into a Cloud, Broad Approaches to Migrating into the Cloud, The Seven-Step Model of Migration into a Cloud	CO1
2	**Cloud Computing Architecture** Introduction, Cloud Reference Model, Architecture, Infrastructure / Hardware as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), Types of Clouds, Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds.	CO1,CO2

3	**Integration as a Service / Cloud-Enabling Technology** New Integration Scenarios, Integration Methodologies, SaaS Integration Services, A Framework of Sensor-Cloud Integration, Issues for Enterprise Applications on the Cloud, Transition Challenges, Enterprise Cloud Technology and Market Evolution. Cloud-Enabling Technology: Broadband Networks and Internet Architecture, Data Center Technology, Virtualization Technology, Web Technology, Service Technology	CO2,CO3
4	**Cloud Infrastructure & Security** Cloud Infrastructure, Cloud Storage Device, Cloud Usage Monitor, Load Balancer, SLA Monitor, Security Controls, Security Mechanisms, Security Policies, Cloud Security Threats, Threat Agents, Security Mechanisms - Encryption, Hashing, Digital signature, Public key infrastructure (PKI)	CO3,CO4
5	**Cloud Platforms in Industry** Amazon Web Services - Compute Services, Storage Services, Communication Services and Additional Services. Google App Engine: Architecture and Core Concepts, Application Life Cycle, Cost Model. Microsoft Azure: Azure Core Concepts, SQL Azure.	CO4,CO5

Learning Resources
Text Books
1 Rajkumar Buyya, Cloud Computing: Principles and Paradigms –Wiley, 2011 2 Thomas Erl, Cloud Computing: Concepts, Technology & Architecture –Prentice Hall Press, 2013
Reference Books
1 Kai Hwang, Geoffrey C. Fox, and Jack J. Dongarra, Distributed and Cloud Computing, 1st Ed., 2012, Elsevier 2 Michael Kavis, Architecting The Cloud, 1st Ed., Wiley publications, 2014
e-Resources & other Digital Material
1. https://nptel.ac.in/courses/106105173 2. https://nptel.ac.in/courses/106105167