Kadi Sarva Vishwavidyalaya

Faculty of Engineering and Technology

First Year Master of Engineering (Computer Engineering)

In Effect from Academic Year 2017-18

Subject Code: MECE203-N	Subject Title: CLOUD COMPUTING

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	00	02	05	04	03	70	30	20	30	150

LEARNING OBJECTIVES:

The objective of this course is

- To Introduce cloud computing technology
- Study about various cloud platforms
- Understanding cloud architecture
- Understanding cloud services and applications
- Study about cloud security
- To establish public, private and hybrid cloud for own organization

OUTLINE OF THE COURSE:

Unit No	Topics	Hours
1	**Introduction Cloud Computing**	**06**
2	**Virtualization**	**10**
3	**Security in Cloud Computing**	**06**
4	**Storage in Cloud**	**06**
5	**Cloud monitoring and management**	**06**
6	**Cloud computing platforms**	**07**
7	**Cloud computing standards**	**07**

Total hours (Theory): 48

Total hours (Practical): 32

Total hours: 80

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DETAILED SYLLABUS:

Sr. No	Topic	Lecture Hours	Weight age (%)
1	**Introduction** • Cloud Computing in Nutshell • Challenges and Risks • Cloud types and service models, • Migrating into the Cloud • Seven Step model of migration	6	13
2	**Virtualization** • Introduction, Characteristics of Virutalized environments, Taxonomy of • Virtualization techniques, Pros and Cons of Virtualization, Technology examples: • Xen, KVM, Vmware, Microsoft Hyper-V • VM Consolidation	10	20
3	**Security in Cloud Computing** • Introduction, Global Risk and Compliance aspects in cloud environments and key security terminologies. • Technologies for Data security • Data security risk, • Cloud computing and identity, Digital identity and access management, • Content level security, Security-As-A-Cloud Service	6	13
4	**Storage in Cloud** • Storage system architecture, Big data, Virtualize data centre(VDC) architecture • VDC Environment, server, storage, networking, desktop and application virtualization techniques and benefits, Virtual Machine Components and Process of converting physical to VMs, Block and file level storage virtualization. • Virtual provisioning and automated storage tiering, VLAN, VSAN and benefits.	6	13

5	**Cloud monitoring and management** • Introduction and architecture for federated cloud computing, Performance prediction for HPC on Cloud. • SLA management: Types of SLA, Life cycle of SLA. • Traditional approaches of SLA. • Service catalog, service ordering process, management and functional interfaces of services , cloud portal and its functions. • Cloud service life-cycle phases: service planning, service creation, service operation, and service termination.	6	13
6	**Cloud computing platforms** • Infrastructure as Service, best-of breed cloud infrastructure components, cloud ready converged infrastructure. • Virtual machine provisioning and migration services. • Anatomy of Cloud infrastructure, Distributed management of virtualinfrastructure, scheduling techniques, SLA Commitment.	7	14
7	**Cloud computing standards** • Information and communication technologies (IT) standards Life cycle. • The role of conformity assessment to standards. • Categorizing the status of standards. • Standards for interoperability and portability, performance, security, service agreements, accessibility.	7	14
	Total:	**48**	**100%**

INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)
• At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
• Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
• Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
• One internal exam will be conducted as a part of internal theory evaluation.
• Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
• Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
• The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
• Experiments shall be performed in the laboratory related to course contents.

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STUDENTS LEARNING OUTCOMES:

On successful completion of the course, the student will:

- Student will be having the basic knowledge of Cloud Computing.
- Student will be able to understand cloud service and deployment models.
- Student will be able to deploy private cloud.
- To know about cloud applications.

REFERENCE BOOKS:

1. Cloud Computing Principles and Paradigms, by Rajkumar Buyya, James Broberg, Andrzej Goscinski, Wiley New Jersey
2. Cloud Computing Bible , Barrie Sosinsky
3. Cloud Computing for Dummies by Judith Hurwitz, R.Bloor, M.Kanfman, F.Halper, Wiley India
4. Cloud Computing : A Practical Approach, Antohy T Velte, et.al McGraw Hill
5. Enterprise Cloud Computing by Gautam Shroff, Cambridge
6. Cloud Security by Ronald Krutz and Russell Dean Vines, Wiley-India

LIST OF PRACTICALS:

Sr. No	Name of Experiment
1	Study of two research papers and presentation on issues, challenges and outcomes of proposed research work.
2	Implement Cloud, preferably with open source platforms.
3	Study of simulator (open source).
4	Implement algorithm of presented research paper and generate the results.