COURSE MODULE FOR THE SESSION 2025-26 (EVEN SEMESTER)

Course Syllabus with CO's

AcademicYear:2025-26

Department: Computer Science and Engineering(AI & ML)

Course Code	CourseTitle	Core/Elective	Prerequisite	Contact Hours			TotalHrs/ Sessions
				L	T	P	
BIS613D	**Cloud Computing and Security-BIS613D**	Core	**Fundamentals of Cloud concept and virtualization**	3	-	-	40

Objectives:

- Introduce the rationale behind the cloud computing revolution and the business drivers
- Introduce various models of cloud computing
- Introduction on how to design cloud native applications, the necessary tools and the design tradeoffs.
- Realize the importance of Cloud Virtualization, Abstraction`s and Enabling Technologies and cloud security.

Topics Covered as per Syllabus

Module-1

Distributed System Models and Enabling Technologies: Scalable Computing Over the Internet, Technologies for Network Based Systems, System Models for Distributed and Cloud Computing, Software Environments for Distributed Systems and Clouds, Performance, Security and Energy Efficiency.

Module -2

Virtual Machines and Virtualization of Clusters and Data Centers: Implementation Levels of Virtualization, Virtualization Structure/Tools and Mechanisms, Virtualization of CPU/Memory and I/O devices, Virtual Clusters and Resource Management, Virtualization for Data Center Automation.

Module -3

Cloud Platform Architecture over Virtualized Datacenters: Cloud Computing and Service Models, Data Center Design and Interconnection Networks, Architectural Design of @#@10012025 Annexure-II 2 2 Compute and Storage Clouds, Public Cloud Platforms: GAE, AWS and Azure, Inter-Cloud Resource Management.

Module -4

Cloud Security: Top concern for cloud users, Risks, Privacy Impact Assessment, Cloud Data Encryption, Security of Database Services, OS security, VM Security, Security Risks Posed by Shared Images and Management OS, XOAR, A Trusted Hypervisor, Mobile Devices and Cloud Security.

Cloud Security and Trust Management: Cloud Security Defense Strategies, Distributed Intrusion/Anomaly Detection, Data and Software Protection Techniques, Reputation-Guided Protection of Data Centers.

Module-5

Cloud Programming and Software Environments: Features of Cloud and Grid Platforms, Parallel and Distributed Computing Paradigms, Programming Support for Google App Engine, Programming on Amazon AWS and Microsoft, Emerging Cloud Software Environments.

Textbooks:

1.Kai Hwang, Geoffrey C Fox, and Jack J Dongarra, Distributed and Cloud Computing, Morgan Kaufmann, Elsevier 2012

2. Dan C. Marinescu, Cloud Computing Theory and Practice, Morgan Kaufmann, 2nd Edition, Elsevier 2018

ReferenceBooks

1.Rajkumar Buyya, Christian Vecchiola, and ThamraiSelvi, Mastering Cloud Computing McGrawHill Education, 1st Edition, 2017

2. Toby Velte, Anthony Velte, Cloud Computing: A Practical Approach, McGraw-Hill Education, 2017.

3. George Reese, Cloud Application Architectures: Building Applications and Infrastructure in the Cloud, O'Reilly Publication, 1st Edition, 2009

4. John Rhoton, Cloud Computing Explained: Implementation Handbook for Enterprises, Recursive Press, 2nd Edition, 2009.

ListofURL's

- https://www.youtube.com/watch?v=1N3oqYhzHv4
- https://www.youtube.com/watch?v=RWgW-CgdIk0

Courseoutcomes: Thestudentsshouldbeableto:

- https://freevideolectures.com/course/4639/nptel-cloud-computing/1.
- https://www.youtube.com/playlist?list=PLShJJCRzJWxhz7SfG4hpaBD5bKOloWx9J
- https://www.youtube.com/watch?v=EN4fEbcFZ_E
- https://www.youtube.com/watch?v=RWgW-CgdIk0
- https://www.geeksforgeeks.org/virtualization-cloud-computing-types/
- https://www.javatpoint.com/cloud-service-provider-companies

Internal Assessment Marks:40(3 Session Tests are conducted during the semester and Marks allotted based on best of 2 test performances).

TheCorrelationofCourseOutcomes(CO's)andProgramOutcomes(PO's)

Subject Code	BIS613D			Title:Cloud Computing								
Listof Course Outcomes	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Total
CO-1	3	2	2	-	-	-	-	-	-	-	-	-	7
CO-2	3	2	2	-	-	-	-	-	-	-	-	-	7
CO-3	3	2	2	-	-	-	-	-	-	-	-	-	7
CO-4	3	2	2	-	-	-	-	-	-	-	-	-	7
Total	12	8	8	-	-	-	-	-	-	-	-	-	28

TheCorrelationofProgramSpecificOutcome's (PS0's)andCourse Outcome(CO's)

SubjectCode	BIS613D	Title:Cloud Computing	
ListofCourseOutcome's	PSO1	PSO2	Total
CO-1	-	-	-
CO-2	-	-	-
CO-3	-	-	-
CO-4	-	-	-
Total	-	-	-

Note: 3=StrongContribution 2=AverageContribution 1=WeakContribution -=NoContribution