









Department of Computer Science & Design

COURSE MODULE FOR THE SESSION 2025(EVEN SEMESTER)

Course Syllabus with CO's

Academic Year: 2025									
Department: Computer Science & Design									
Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours			Total Hrs/ 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

Reference Books

- 1.Rajkumar Buyya, Christian Vecchiola, and Thamrai Selvi, 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.

List of URL's

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

Course outcomes: The students should be able to:

- 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).

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code		В	SIS61.	3D	Title: Cloud Computing								
List of 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	-	1	-	-	-	-	-	1	-	7
CO-4	3	2	2	-	-	-	-	-	-	-	-	-	7
Total	12	8	8	-	-	-	-	-	-	-	1	-	28

The Correlation of Program Specific Outcome's (PS0's) and Course Outcome (CO's)

Subject Code		Title: Cloud Computing			
	BIS613D				
List of Course Outcome's	PSO1	PSO2	Total		
CO-1	-	-	-		
CO-2	=	-	-		
CO-3	=	-	-		
CO-4	=	-	-		
Total	-	-	-		