



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	B.Tech (All branches)		
Course Title	CLOUD COMPUTING (Theory)		
Course Code	CSOE15	No. of Credits	3
Course Code of Pre-requisite subject(s)	CSMH17	Semester	V
Session	JULY 2019	Section (if, applicable)	
Name of Faculty	Mrs.V.DHIVYA	Department	CSE
Email	vdhivya@nitt.edu	Telephone No.	8838558990
Name of Course Coordinator(s) (if, applicable)	NIL		
E-mail	NIL	Telephone No.	NIL
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
Software Defined Networking (Theory)			
<p>Unit -I Overview of Distributed Computing, Cluster Computing and Grid Computing –Technologies for Network based systems –Software environments for Distributed Systems and Clouds –Overview of Services and Service oriented Architecture.*</p> <p>Unit -II Virtual Machines and Virtualization –Implementation levels of Virtualization – Virtualization structures/tools and Mechanisms –Virtualization of CPU, Memory and I/O Devices – Storage Virtualization.*</p> <p>Unit -III Cloud Computing –Properties –challenges –Service models –IaaS, PaaS and SaaS Deployment models –Service Composition and orchestration –Architecture design of Compute and Storage cloud –Public Cloud Platforms –Inter Cloud Resource Management.*</p> <p>Unit -IV Cloud Programming and Software Environments –Parallel and Distributed Programming paradigms – Programming on AWS, Azure and GAE –Cloud software environments Eucalyptus –OpenStack –Open Nebula.*</p>			



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Unit -V

Cloud Security –Infrastructure security –Data security –Identity and access management Privacy-Audit and Compliance.*

Text Book

1.Kai Hwang, Geoffrey C. Fox and Jack J. Dongarra, "Distributed and Cloud Computing from Parallel Processing to the Internet of Things", Morgan Kaufmann, Elsevier, 2012

Reference Books

1.Barrie Sosinsky, "Cloud Computing Bible" John Wiley & Sons, 2010
 2.Tim Mather, Subra Kumaraswamy, and Shahed Latif, "Cloud Security and Privacy An Enterprise Perspective on Risks and Compliance", O'Reilly 2009

COURSE OBJECTIVES

- To provide comprehensive knowledge of fundamental concepts and of cloud computing
- To demonstrate an understanding of Service models, deployment models, Virtualization
- To describe the programming and software environments of Cloud
- To shed light on the security issues in Cloud

COURSE OUTCOMES (CO)

- Ability to articulate the Virtualization concepts
- Ability to identify the architecture, service models and deployment models of Cloud
- Ability to master the programming aspects of Cloud

Course Outcomes	Aligned Programme Outcomes (PO)
1) Ability to articulate the Virtualization concepts	PO 1
2) Ability to identify the architecture, service models and deployment models of Cloud	PO 1, PO 6
3) Ability to master the programming aspects of Cloud	PO 8

COURSE PLAN – PART II

COURSE OVERVIEW

The course provides the fundamental concepts of cloud computing. It also demonstrates an understanding of service models, deployment models and virtualization. An introduction is also given in the programming and software environments of cloud. The security issues in cloud is also been described.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1.	1	Overview of Distributed Computing, Cluster Computing and Grid Computing –Technologies for Network based systems	Chalk and Talk PPT



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2	2	Software environments for Distributed Systems and Clouds –Overview of Services and Service oriented Architecture	Chalk and Talk PPT
3	3	Virtual Machines and Virtualization –Implementation levels of Virtualization –	Chalk and Talk PPT
4	4	Virtualizationstructures/tools and Mechanisms	Chalk and Talk PPT
5	5	Virtualization of CPU, Memory and I/O Devices – StorageVirtualization	Chalk and Talk PPT
6	6	Cloud Computing –Properties –challenges – Service models –IaaS, PaaS and SaaSDeployment models	Chalk and Talk PPT
7	7	Service Composition and orchestration –Architecture design of Computeand Storage cloud	Chalk and Talk PPT
8	8	Public Cloud Platforms –Inter Cloud Resource Management	Chalk and Talk PPT
9	9	Cloud Programming and Software Environments –Parallel and Distributed Programmingparadigms	Chalk and Talk PPT
10	10	Programming on AWS, Azure and GAE	Chalk and Talk PPT
11	11	Cloud software environments Eucalyptus –OpenStack – Open Nebula	Chalk and Talk PPT
12	12	Cloud Security –Infrastructure security –Data security	Chalk and Talk PPT
13	13	Identity and access management	Chalk and Talk PPT
14	14	Privacy-Audit and Compliance	Chalk and Talk PPT

COURSE ASSESSMENT METHODS-THEORY

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test-1	3 rd week of Aug	1 hour	20
2	Cycle Test-2	3 rd week of Sep	1 hour	20
3	Assingment	4 th week of Sep 3 rd week of Oct		10
CPA	Compensation Assessment	2 nd week of Nov	1 hour	20
4	Final Assessment* Theory	1st week of Dec	3 hours	50
TOTAL				100
*mandatory				



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COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)
1. Students' feedback through class committee meetings. 2. Feedback questionnaire from students - from MIS at the end of the semester.
COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)
MODE OF CORRESPONDENCE (email/ phone etc) Mode of Correspondence through Phone.
COMPENSATION ASSESSMENT POLICY Compensation assessment will be conducted for absentees in cycle test 1 or cycle test 2, only after the submission of medical or on duty certificates signed by competent authority.
ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed) <ul style="list-style-type: none">➤ At least 75% attendance in each course is mandatory.➤ A maximum of 10% shall be allowed under On Duty (OD) category.➤ Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.
ACADEMIC DISHONESTY & PLAGIARISM <ul style="list-style-type: none">➤ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.➤ Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.➤ The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office. <p>The above policy against academic dishonesty shall be applicable for all the programmers.</p>
ADDITIONAL INFORMATION The students can get their doubts clarified at any time with their faculty member.
FOR APPROVAL
Course Faculty <u>V. Dhya</u> (DHIVA.V) 2/8/19 CC-Chairperson <u>M.S.</u> 2/8/19 HOD <u>[Signature]</u> 2/8/19



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Guidelines

- The number of assessments for any theory course shall range from 4 to 6.
- Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

- Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- Necessary care shall be taken to ensure that the course plan is reasonable and is objective.