

1. Name of the Faculty: Dr. Anurag Jain	Course Code: CSVT 2001P
2. Course : Introduction to Virtualization and Cloud Computing	L: 3
3. Program : B. Tech. – CSE - CCVT	T: 0
4. Target : Level-2	P: 0
	C: 3

#### COURSE PLAN

Target	50% (marks)
Level-1	40% (population)
Level-2	50% (population)
Level-3	60% (population)

#### 1. Method of Evaluation

UG	PG
Quizzes/Tests, Assignments (30%)	Quizzes/Tests, Assignments, seminar (50%)
Mid Examination (20%)	End semester (50%)
End examination (50%)	

#### 2. Passing Criteria

Scale	PG	UG
<b>Out of 10 point scale</b>	SGPA – “6.00” in each semester CGPA – “6.00” Min. Individual Course Grade – “C” Course Grade Point – “4.0”	SGPA – “5.0” in each semester CGPA – “5.0” Min. Individual Course Grade – “C” Course Grade Point – “4.0”

\*for PG, passing marks are 40/100 in a paper

\*for UG, passing marks are 35/100 in a paper

#### 3. Pedagogy-

- Synchronous Mode using BB Collaborate aided with power point presentations.
- Asynchronous Mode using Recorded Lectures/Voice over Power Points.
- Regular Communication for Tests/Quizzes/Assignments as well as discussions will be ensured by the faculty through email or Blackboard announcements.

#### 4. References:

Text Books	Web resources	Journal	Reference books
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“Mastering Cloud Computing, by Rajkumar Buyya	<a href="https://nptel.ac.in/courses/106105167/">https://nptel.ac.in/courses/106105167/</a>		1. Cloud Computing: Fundamentals, Industry Approach and Trends, by Rishab Sharma, Wiley Publication. 2. <b>Virtualization and Cloud Computing</b> (IBM ICE Publication)

### **GUIDELINES TO STUDY THE SUBJECT**

#### **Instructions to Students:**

- Go through the 'Syllabus' in the Black Board section of the web-site (<https://learn.upes.ac.in>) in order to find out the Reading List.
- Get your schedule and try to pace your studies as close to the timeline as possible.
- Get your on-line lecture notes (Content, videos) at Lecture Notes section. These are our lecture notes. Make sure you use them during this course.
- Check your blackboard regularly
- Go through study material.
- Check mails and announcements on blackboard.
- Keep updated with the posts, assignments and examinations which shall be conducted on the blackboard
- Be regular, so that you do not suffer in any way
- Cell Phones and other Electronic Communication Devices:** Cell phones are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.
- E-Mail and online learning tool:** Each student in the class should have an e-mail id and a password to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments preferably should be uploaded on online learning tool. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.
- Attendance:** Students are required to have minimum attendance of 75% in each subject. Students with less than said percentage shall NOT be allowed to appear in the end semester examination.

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This much should be enough to get you organized and on your way to having a great semester! If you need us for anything, send your feedback through e-mail [anurag.jain@ddn.upes.ac.in](mailto:anurag.jain@ddn.upes.ac.in) . Please use an appropriate subject line to indicate your message details.

There will no doubt be many more activities in the coming weeks. So, to keep up to date with all the latest developments, please keep visiting this website regularly

### **RELATED OUTCOMES**

1. The expected outcomes of the Program are:

PO1	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the

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	knowledge of, and need for sustainable development.
PO8	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**2. The expected outcomes of the Specific Program are: (upto3)**

PSO1	Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques.
PSO2	Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms.
PSO3	Ability to understand and apply Cloud Computing architecture for scalable, secure and dynamically provisioned business-oriented environment with optimized performance tuning and data reliability.

**3. The expected outcomes of the Course are: (minimum 3 and maximum 6)**

CO 1	Outline the fundamentals of virtualization and cloud computing.
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CO 2	Describe the use of Hypervisors and virtualization types.
CO 3	Discuss deployment and delivery models of cloud.
CO 4	Analyze the cloud workloads

#### 4. Co-Relationship Matrix

Indicate the relationships by 1- Slight (low) 2- Moderate (Medium) 3-Substantial (high)

Program Outcome s Course Outcome s	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	1				1								1	1	3
CO 2	1				1								1	1	3
CO 3	1				1								1	1	3
CO 4	1				1								1	1	3
Etc.	1				1								1	1	3
Average	1				1								1	1	3

1=weak

2= moderate

3=strong

#### 5. Course outcomes assessment plan:

- |  |                         |
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components Course Outcomes	Assignment	Test/Quiz	Mid Semester	End Semester	Any other
CO 1	✓	✓	✓	✓	
CO 2	✓	✓	✓	✓	
CO 3	✓	✓	✓	✓	
CO 4	✓	✓		✓	

- |                         |  |              |            |
|-------------------------|--|--------------|------------|
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| 3. Program              | : B. Tech. – CSE - CCVT                              | T:           | 0          |
| 4. Target               | : Level-2  | P:           | 0          |
|                         |  | C:           | 3          |

**Course Activities:**

S. No.	Description	Planned			Actual			Remarks
		From	To	No. of Sessions	From	To		
1.	Introduction to Virtualization	3 <sup>rd</sup> Aug, 2022	19 <sup>th</sup> Aug, 2022	6				
2.	Server, Storage, Network and Application Virtualization	22 <sup>nd</sup> Aug, 2022	9 <sup>th</sup> Sept Aug, 2022	6				Assignment 1+Quiz 1
3.	Introduction to Cloud Computing	12 <sup>th</sup> Sept, 2022	7 <sup>th</sup> Oct, 2022	8				Mid Semester
4.	Cloud Implementations / Cloud Deployment Models, Cloud Delivery Models	9 <sup>th</sup> Oct, 2022	4 <sup>th</sup> Nov, 2022	6				Assignment 2+Quiz 2
5.	Case Study on Virtualization, Cloud Workloads	7 <sup>th</sup> Nov, 2022	5 <sup>th</sup> Dec, 2022	10				Test + End Semester

Sessions: Total No. of Instructional periods available for the course

Signature of HOD/Dean

Signature of Faculty

Date:

Date:

5. Name of the Faculty: Dr. Anurag Jain

Course Code: CSVT 2001P

6. Course : Introduction to Virtualization and Cloud Computing

L: 3

7. Program : B. Tech. – CSE - CCVT

T: 0

8. Target : Level-2

P: 0

C: 3

### SESSION PLAN

#### UNIT-I

Lec t No	Dat e	Topics to be Covered	CO Mappe d	Lec t No	Date	Topics Actually Covered	CO Achieve d
1		Revision of OS concepts	CO1				
2		Introduction to Networking concepts	CO1				
3		Traditional IT infrastructure	CO1				
4		Benefits of Virtualization	CO1				
5		Types of Virtualizations	CO1				
6		History of virtualization	CO1		Asynchronous, <a href="https://youtu.be/JdLeXajpCz4">https://youtu.be/JdLeXajpCz4</a>	History of virtualization	

**Signature of Faculty:**

**Date**



**9. Name of the Faculty:** Dr. Anurag Jain

**Course Code:** CSVT 2001P

**10. Course** : Introduction to Virtualization and Cloud Computing

**L:** 3

**11. Program** : B. Tech. – CSE - CCVT

**T:** 0

**12. Target** : Level-2

**P:** 0

**C:** 3

### **SESSION PLAN**

#### UNIT-II

<b>Lect. No.</b>	<b>Date</b>	<b>Topics to be Covered</b>	<b>CO Mapped</b>	<b>Lect . No</b>	<b>Date</b>	<b>Topics Actually Covered</b>	<b>CO Achieved</b>
7		Types of server virtualization, Anatomy of server Virtualization	CO2				
8		Hypervisors	CO2				
9		Benefits & Types of storage Virtualization	CO2				
10		Types of Storage Virtualization, Benefits of Application Virtualization	CO2				
11		VPN	CO2				
12		VLAN, Assignment 1	CO2		Asynchronous, <a href="https://youtu.be/jC6MJTh9fRE">https://youtu.be/jC6MJTh9fRE</a>		

**Signature of Faculty:**

**Date**

**13. Name of the Faculty:** Dr. Anurag Jain

**Course Code:** CSVT 2001P

**14. Course** : Introduction to Virtualization and Cloud Computing

**L:** 3

**15. Program** : B. Tech. – CSE - CCVT

**T:** 0

**16. Target** : Level-2

**P:** 0

**C:** 3

### SESSION PLAN

#### UNIT-III

Lect . No.	Date	Topics to be Covered	CO Mapped	Lect . No	Date	Topics Actually Covered	CO Achieved
13		History of Cloud Computing	CO3				
14		Importance of Virtualization in cloud computing	CO3				
15		Anatomy of cloud	CO3				
16		Cloud Deployment models	CO3				
17		Cloud delivery models	CO3				
18		Stepping stones for development of cloud	CO3		Asynchronous <a href="https://youtu.be/M988_fsOSWo">https://youtu.be/M988_fsOSWo</a>		
19		Grid computing	CO3		Asynchronous <a href="https://youtu.be/THMuVkaCVjw">https://youtu.be/THMuVkaCVjw</a>		
20		Cloud computing	CO3				

**Date**

**Year: 2022**  
**Semester: III**

**17. Name of the Faculty:** Dr. Anurag Jain

**Course Code:** CSVT 2001P

**18. Course** : Introduction to Virtualization and Cloud Computing

**L:** 3

**19. Program** : B. Tech. – CSE - CCVT

**T:** 0

**20. Target** : Level-2

**P:** 0

**C:** 3

### SESSION PLAN

#### UNIT-IV

Lecture No.	Date	Topics to be Covered	CO Mapped	Lect. No	Date	Topics Actually Covered	CO Achieved
21		Decision factors for cloud implementation	CO3		Asynchronous		
22		Public cloud	CO3				
23		Private and hybrid cloud	CO3				
24		IaaS cloud delivery model	CO3				
25		PaaS cloud delivery model	CO3				
26		SaaS cloud delivery model	CO3				

**Date**

**Signature of Faculty**

**21. Name of the Faculty:** Dr. Anurag Jain

**Course Code:** CSVT 2001P

**22. Course** : Introduction to Virtualization and Cloud Computing

**L:** 3

**23. Program** : B. Tech. – CSE - CCVT

**T:** 0

**24. Target** : Level-2

**P:** 0

**C:** 3

### SESSION PLAN

#### UNIT-V

Lecture No.	Date	Topics to be Covered	CO Mapped	Lect No	Date	Topics Actually Covered	CO Achieved
27		Customer IT landscape	CO4				
28		Triggers of virtualization	CO4		Asynchronous		
29		Preparation for virtualization	CO4				
30		Transition tools for virtualization	CO4		Asynchronous		
31		Cost saving	CO4				
32		Cloud workload overview	CO4		Asynchronous		
33		Workloads most suitable and unsuitable for cloud	CO4				
34		Case Studies	CO4				
35		Course Revision					
36		Discussion on Quiz and Assignments					

**Date**
**Signature of Faculty**

25. Name of the Faculty: Dr. Anurag Jain  
 26. Course : Introduction to Virtualization and Cloud Computing  
 27. Program : B. Tech. – CSE - CCVT  
 28. Target : Level-2

Course Code: CSVT 2001P  
 L: 3  
 T: 0  
 P: 0  
 C: 3

### INDIRECT ASSESSMENT

Sample format for Indirect Assessment of Course outcomes:

NAME:
ENROLLMENT NO:
SAP ID:
COURSE: Introduction to Virtualization and Cloud Computing, CSVT 2001P, Aug-Dec, 2022
PROGRAM: B. Tech CS+CCVT III Semester

Please rate the following aspects of course outcomes of Introduction to Virtualization and Cloud Computing

Use the scale 1-3\*

course Outcomes	Statement	1	2	3
CO 1	Outline the fundamentals of virtualization and cloud computing.			
CO 2	Describe the use of Hypervisors and virtualization types.			
CO 3	Discuss deployment and delivery models of cloud.			
CO 4	Analyze the cloud workloads			

\*

1

WEAK

2

MODERATE

3

STRONG