1. Name of the Faculty: **Ambika Aggarwal**          Course Code: CSVT3023
2. Course          :  **Cloud Computing**          L: 2
3. Program          : B.Tech (CSE-DevOps)          T: 0
4. Target          :  60%          P: 0
          C: 2

# COURSE PLAN

| Target | 50% (Marks) |
|--------|-------------|
| Level-1 | 40% (Population) |
| Level-2 | 40% (Population) |
| Level-3 | 50% (Population) |

## 1. Method of Evaluation

| UG | Weightage (%) |
|----|---------------|
| • Internal Assessment | 30 |
| • Mid-sem | 20 |
| • End-sem | 50 |

## 2. Passing Criteria

| Scale | UG |
|-------|-----|
| **Out of 10 Point Scale** | SGPA – "5.0" in Each Semester<br>CGPA – "5.0"<br>Min. Individual Course Grade  –  "C"<br>Course Grade  Point –  "4.0" |

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

## 3. Pedagogy

- Face to Face  (Context-Based Learning)
- Online lectures(Adaptive Teaching)
- Class Test
- Video Lectures
- Presentation
- Concept Dairy (Student maintain the record of content which they understood from the sessions)

## 4. References:

| Text Books | Web resources | Journals | Reference books |
|------------|---------------|----------|-----------------|
| 1. Mastering cloud computing by RK buyya | https://ramslaw.wordpress.com/wp-content/uploads/2016/07/0124114547cloud.pdf<br><br>https://industri.fatek.unpatti.ac.id/wp-content/uploads/2019/03/211-Cloud- | | |

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                                                     C: 2

| 2. | Cloud computing for Dummies – Judith Hurwitz et all | [Computing-for-Dummies-Judith-Hurwitz-Robin-Bloor-Marcia-Kaufman-Fern-Halper-Edisi-1-2010.pdf](Computing-for-Dummies-Judith-Hurwitz-Robin-Bloor-Marcia-Kaufman-Fern-Halper-Edisi-1-2010.pdf) | | |

# GUIDELINES TO STUDY THE SUBJECT

**Instructions to Students:**

1. Go through the 'Syllabus' in the LMS section of the web-site (https://myupes-beta.upes.ac.in) in order to find out the Reading List.
2. Get your schedule and try to pace your studies as close to the timeline as possible.
3. 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.
4. Check your LMS regularly
5. Go through study material
6. Check mails and announcements on LMS
7. Keep updated with the posts, assignments and examinations which shall be conducted on the LMS
8. Be regular, so that you do not suffer in any way
9. **Cell Phones and other Electronic Communication Devices:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests. Such devices MUST be turned off in the class room.
10. **e-Mail and online learning tool:** Each student in the class should have an e-mail id and a pass word 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.
11. **Attendance:** Students are required to have minimum attendance of 80% in each subject.

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 to your concerned faculty. 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:**

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                                                            C: 2

| | |
|---|---|
| PO1 | *Engineering Knowledge*: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| PO2 | *Problem Analysis*: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| PO3 | *Design/Development of Solutions*: 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 | *Conduct Investigations of Complex Problems*: 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 | *Modern Tool Usage*: 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 | *The Engineer and Society*: 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 | *Environment and Sustainability*: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| PO8 | *Ethics*: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| PO9 | *Individual and Team-work*: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| PO10 | *Communication*: 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 | *Project Management and Finance*: 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 | *Life-long Learning*: 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. |

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| | |
|---|---|
| PSO2 | Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. |
| PSO3 | Develop an understanding of quantitative modeling and data analysis techniques and apply these to real-world business problems, communicate findings, and effectively present results for improved decision-making. |

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

| | |
|---|---|
| CO 1 | Define the fundamentals of Cloud computing and virtualization. |
| CO 2 | Explain networking and hardware/software requirement for implementing cloud storage platform. |
| CO 3 | Analyse various virtualization techniques and their comparison. |
| CO 4 | Compare various Cloud computing models. |
| CO 5 | Design a complete flowchart for deploying and access a cloud computing based application. |

4.  **Co-Relationship Matrix**
    Indicate the relationships by1- Slight (low) 2- Moderate (Medium) 3-Substantial (high)

| Program Outcomes / Course Outcomes | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO 1 | 1 | 1 | | 1 | 2 | 1 | | | | | 1 | 1 | | | |
| CO 2 | 1 | | | | 2 | 1 | | | | | | 1 | | | |
| CO 3 | 1 | 2 | | | 2 | 1 | | | | | | 1 | | | |
| CO 4 | 1 | 1 | | 1 | 2 | 1 | | | | | | 1 | | | |
| CO 5 | 1 | 2 | 2 | 1 | 2 | 1 | | | | | | 1 | | | |
| Average | 1 | 1.5 | 2 | 1 | 2 | 1 | | | | | 1 | 1 | | | |

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                                                             C: 2

**5. Course outcomes assessment plan:**

| components<br>Course Outcomes | Internal Assessment | Mid-sem | End-sem | Any other |
|---|---|---|---|---|
| **CO 1** | √ | √ | √ | ☐ |
| **CO 2** | √ | √ | √ | ☐ |
| **CO 3** | √ | √ | √ | ☐ |
| **CO 4** | √ | | √ | ☐ |
| **CO 5** | √ | | √ | ☐ |

# BROAD PLAN OF COURSE COVERAGE

**Course Activities:**

| S. No. | Description | Planned | | | Remarks |
|---|---|---|---|---|---|
| | | **From** | **To** | **No. of Sessions** | |
| 1. | Unit I: Introduction to Virtualization | 5th Aug | 14th Aug | 4 Lecture Hours | |
| 2. | Unit II: Server, Storage, Network and Application Virtualization | 9th Aug | 13th Sept | 6 Lecture Hours | |
| 3. | Unit III: Introduction to Cloud Computing | 16th Sept | 30th Sept | 4 Lecture Hours | |
| 4. | Unit IV: Cloud Implementations / Cloud Deployment Models, Cloud Delivery Models | 1st Oct | 30th Oct | 6 Lecture Hours | |
| 5. | Unit V: Case Study on Virtualization, Cloud Workloads | 4th Nov | 20th Nov | 4 Lecture Hours | |
| | Total Session | | | 24 | |

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

# SESSION PLAN

1. Name of the Faculty: **Ambika Aggarwal**      Course Code: CSVT3023
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4. Target      : 60%      P: 0
     C: 2

# UNIT-I

| Lecture | Topics to be Covered | CO Mapped |
|---|---|---|
| 1. | **Traditional IT Infrastructure, Benefits of Virtualization** | 1 |
| 2 | **Types of Virtualization** | 1 |
| 3 | **History of Virtualization** | 1 |
| 4 | Recap/Assessment | 1 |

# SESSION PLAN

# UNIT-II

| Lecture No. | Topics to be Covered | CO Mapped |
|---|---|---|
| 5 | **Types of Server Virtualization, Hypervisors** | 2 |
| 6 | **Anatomy of Server Virtualization** | 2 |

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                                                     C: 2

| 7 | Benefits of Storage Virtualization | 2 |
|---|---|---|
| 8 | Types of Storage Virtualization, VPN, VLAN | 2 |
| 9 | Benefits of Application Virtualization | 2 |
| 10 | Recap/Assessment | 2 |

# SESSION PLAN

# UNIT-III

| Lecture No. | Topics to be Covered | CO Mapped |
|---|---|---|
| 11 | History, Importance of Virtualization in Cloud, Anatomy of Cloud | 3 |
| 12 | Cloud deployment models, Cloud delivery models | 3 |
| 13 | stepping stones for the development of cloud, Grid Computing, Cloud Computing | 3 |

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| 14 | Recap/Assessment | |
|----|------------------|---|
|    |                  | 3 |

# SESSION PLAN

# UNIT-IV

| Lecture No. | Topics to be Covered | CO Mapped |
|-------------|---------------------|-----------|
| 15 | **Decision Factors for Cloud Implementations** | 4 |
| 16 | **Public, Private and Hybrid Cloud** | 4 |
| 17 | **Overview, Infrastructure as a Service (IaaS) Cloud Delivery Model** | 4 |
| 18 | **Platform as a Service (PaaS) Cloud Delivery Model** | 4 |
| 19 | **Software as a Service (SaaS) Cloud Delivery Model** | 4 |
| 20 | Recap/Assessment | 4 |

# SESSION PLAN

# UNIT-V

| Lecture No. | Topics to be Covered | CO Mapped |
|-------------|---------------------|-----------|

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3. Program         : B.Tech (CSE-DevOps)        T:  0
4. Target          :  60%                         P:  0
                                                  C:  2

| 21 | Customer IT Landscape, Triggers of Virtualization | 5 |
|---|---|---|
| 22 | Preparation for Virtualization, Transition Tools for Virtualization, Cost savings | 5 |
| 23 | Cloud workload Overview, Workloads most suitable for Cloud, Workloads not suitable for Cloud. | 5 |
| 24 | Recap/Assessment | 5 |