## Cloud Computing

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| **Course Code** | 19CS4602D | **Year** | III | **Semester** | II |
| **Course Category** | Program Elective-III | **Branch** | CSE | **Course Type** | Theory |
| **Credits** | 3 | **L-T-P** | 3-0-0 | **Prerequisites** | Computer Networks, Operating Systems |
| **Continuous Internal Evaluation :** | 30 | **Semester End Evaluation:** | 70 | **Total Marks:** | 100 |

| **Course Outcomes** | | |
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| **Upon Successful completion of course, the student will be able to** | | |
| **CO1** | Understand the basic concepts of Cloud Computing. | **L2** |
| **CO2** | Apply cloud computing services to commercial systems for deploying cloud | **L3** |
| **CO3** | Apply cloud computing concepts in various business sectors. | **L3** |
| **CO4** | Analyze different platforms in industry for building and training in cloud computing-related IT areas | **L4** |

**Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)**

| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | | | | | | | | | | | | | |
| **CO2** | 3 | | | | | | | | 3 | 3 | | | | |
| **CO3** | 3 | | | | | 2 | | | | | | | 2 | |
| **CO4** | | 3 | | | | 2 | | | | | | | | 1 |

| Syllabus | | |
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| **Unit No** | **Contents** | **Mapped CO** |
| **I** | **Introduction to Cloud:** Cloud Computing at a Glance, The Vision of Cloud Computing, Defining a Cloud, A Closer Look, Cloud Computing Reference Model. Characteristics and Benefits, Challenges Ahead, Historical Developments.<br>**Virtualization:** Introduction, Characteristics of Virtualized Environment, Taxonomy of Virtualization Techniques, Virtualization and Cloud computing, Pros and Cons of Virtualization, Technology Examples- VMware and Microsoft Hyper-V. | **CO1** |
| **II** | **Cloud Computing Architecture :** Introduction, Cloud Reference Model, Architecture, Infrastructure / Hardware as a Service, Platform as a Service, Software as a Service, Types of Clouds, Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds, Economics of the Cloud, Open Challenges, Cloud Interoperability and Standards, Scalability and Fault Tolerance. | **CO1** |
| **III** | **Aneka:** Cloud Application Platform Framework Overview, Anatomy of the Aneka Container, From the Ground Up: Platform Abstraction Layer, Fabric Services, Foundation Services, Application Services, Building Aneka Clouds, Infrastructure Organization, Logical Organization, Private Cloud Deployment Mode, Public Cloud Deployment Mode, Hybrid Cloud Deployment Mode, Cloud Programming and Management, Aneka SDK, Management Tools. | **CO1,CO2** |
| **IV** | **Cloud Applications:** Scientific Applications – Health care, Geoscience and Biology. Business and Consumer Applications- CRM and ERP, Social Networking, Media Applications and Multiplayer Online Gaming. | **CO1,CO3** |
| **V** | **Cloud Platforms in Industry:** Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life-Cycle, cost model. Microsoft Azure- Azure Core Concepts, SQL Azure. | **CO1,CO4** |

**Learning Resources**

**Text Books**

1. Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, S.ThamaraiSelvi, 2013, TMH.

**References**

1. Rajkumar Buyya, JamesBroberg, AndrzejGoscinski, Cloud Computing Principles and Paradigms, Wiley Publishing inc.
2. George Reese, "Cloud Application Architectures", First Edition, O"Reilly, Media 2009.
3. Micheal Miller, "Cloud Computing – web based Applications that change the way you work and

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| collaborate Online", .Pearson Education. |
| **E-Resources and other Digital Material** |
| 1. http://www.slideshare.net/himanshuawasthi2109/cloud-computing-ppt-16240131<br>2. http://nptel.ac.in/courses/106105033/41<br>3. https://www.youtube.com/watch?v=r8Lu_BjxlZc<br>4. http://video.mit.edu/watch/mitef-nyc-cloud-computing-8347/ |