# 19CS31E4 - CLOUD COMPUTING

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| **Course Category:** | Professional Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 3-0-0 |
| **Prerequisite:** | .Operating Systems, Internet, Network Security, Parallel Processing, Databases and various computing. | **Sessional Evaluation:**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |
| **Course Objectives** | * To introduce the broad perceptive of cloud architecture and model * To understand the concept of Virtualization and familiar with the lead players in cloud. * To understand the features of cloud simulator and apply different cloud programming model as per need. * To design of cloud Services and explore the trusted cloud Computing system | | |

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| **Course Outcomes** | Upon successful completion of the course, the students will be able to: | |
| CO1 | Know basic idea about cloud computing vision and its developments. |
| CO2 | Learn taxonomy of Virtualization techniques in Cloud. |
| CO3 | Understand categories of cloud and its collaborative services. |
| CO4 | Study internal components and structure of Cloud models. |
| CO5 | Acquire knowledge on Aneka Cloud Application Platform. |
| CO6 | Explore various real time applications & cloud platforms in industry. |
| **Course Content** | UNIT – 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.  UNIT – II  **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.  UNIT – III  **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.  UNIT – IV  **Defining the Clouds for Enterprise**: Storage as a service, Database as a service, Process as a service, Information as a service, Integration as a service and Testing as a service. Scaling a cloud infrastructure - Capacity Planning, Cloud Scale. Disaster **Recovery**: Disaster Recovery Planning, Disasters in the Cloud, Disaster Management.  UNIT – V  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  -rk, grid computingUNIT – VI  Cloud Applications: Scientific Applications – Health Care, Geoscience And Biology. Business And Consumer Applications- Crm And Erp, Social Networking, Media Applications And Multiplayer Online Gaming.  **Cloud Platforms in Industry:** Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. Google App Engine-Architecture and Core Concepts, Microsoft Azure- Azure Core Concepts, SQL Azure. | |
| **Text Books and References:** | **Text Book:**   * + - 1. Mastering Cloud Computing by Rajkumar Buyya, Christian Vecchiola,S.Thamarai Selvi from TMH 2013.   **Reference Books:**   1. George Reese, “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud” O'Reilly 2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing, A Practical Approach”, TMH, 2009. | |
| **E-Resources** | 1. [**https://nptel.ac.in/courses**](https://nptel.ac.in/courses) 2. [**https://freevideolectures.com/university/iitm**](https://freevideolectures.com/university/iitm) | |