

Course 601-2: Fundamentals of Cloud Computing

Course Code	601-2
Course Title	Cloud Computing
Credit	4
Teaching / Week	4 Hours / Week (Suggested) (Total Minimum 48 Hours)
Minimum Weeks/Semester	15 Weeks (Including Class work, preparation, Examinations etc.)
Review/Revision	2021-2022
Implementation Year	2022-2023 A.Y.
Purpose of Course (POC)	To provide fundamental knowledge and management of cloud computing system along with Big Data.
Course Objective	To provide comprehensive knowledge of cloud computing, its architecture, Management and security. This course will also provide the introductory knowledge of Big Data.
Pre-requisite	Basic concepts and understanding of operating system and computer network technologies.
Course Outcome	<p>After learning the course, the student will be able:</p> <ul style="list-style-type: none"> • To understand the cloud models such as software as a service and the other models IaaS and PaaS as well as managing in a multi-cloud world, developing your cloud strategy such as integrating data in the cloud, promoting cloud security, and more. • To learn about Big data sets that are too large to be handled by traditional data-processing application software and about Data Lake.
Course Content	<p>Unit-1: Introduction to Cloud Computing</p> <p>1.1 Fundamentals of Cloud Computing</p> <p style="padding-left: 20px;">1.1.1 Concepts of cloud and cloud computing</p> <p style="padding-left: 20px;">1.1.2 Types of cloud based on deployment (Public, Private and Hybrid)</p> <p>1.2 Cloud service models:</p> <p style="padding-left: 20px;">1.2.1 IaaS (Infrastructure as a Service), PaaS (Platform as a Service)</p> <p style="padding-left: 20px;">1.2.2 SaaS (Software as a Service)</p> <p style="padding-left: 20px;">1.2.3 Network as a Service, Database as a Service</p> <p>1.3 Advantages and dis-advantages of Cloud computing</p> <p>Unit-2: Architecture of Cloud Computing</p> <p>2.1 Basics of Planning and deployment of Cloud</p> <p style="padding-left: 20px;">2.1.1 Cloud Planning phases</p> <p style="padding-left: 40px;">2.1.1.1 Business Architecture Development</p> <p style="padding-left: 40px;">2.1.1.2 IT Architecture Development</p> <p style="padding-left: 40px;">2.1.1.3 Transformation Plan Development</p> <p style="padding-left: 20px;">2.1.2 Technologies behind the Cloud</p> <p style="padding-left: 40px;">2.1.2.1 Virtualization</p> <p style="padding-left: 40px;">2.1.2.2 Service oriented Architecture (SOA)</p> <p style="padding-left: 40px;">2.1.2.3 Utility Computing</p> <p>2.2 Cloud Computing Architecture</p> <p>2.3 Infrastructure components of Cloud</p> <p>Unit-3: Cloud Management:</p> <p style="padding-left: 20px;">3.1 Tasks of Cloud management</p> <p style="padding-left: 20px;">3.2 Cloud Storage Devices: (Block storage, File Storage)</p> <p style="padding-left: 20px;">3.3 Cloud Storage Classes: (Managed and Unmanaged)</p> <p style="padding-left: 20px;">3.3.1 Cloud Virtualization:</p>

	<p>3.3.1.1 Hypervisor 3.3.1.2 Types of Hardware Virtualization: (Full, Emulation, Para)</p> <p>Unit-4: Cloud Securing, Operations and Applications: 4.1 Security Boundaries 4.1.1 Cloud security Alliance (CSA) 4.1.2 Cloud operations and its management concepts 4.2 Cloud applications: 4.2.1 Business Applications 4.2.2 Data storage and backup applications</p> <p>Unit-5: Concepts of Big Data and Data Lake: 5.1 Concepts of Bigdata 5.1.1 Sources of Bigdata 5.1.2 Bigdata benefits over Traditional Database 5.1.3 Concepts of Data Warehouse 5.1.3.1 Concepts of data processing techniques: 5.1.3.1.1 OLTP (Online Transaction Processing) 5.1.3.1.2 OLAP (Online Analytical Processing) 5.2 Concepts of Data Lake: 5.2.1 Data lake concepts and its architecture 5.2.2 Significance of data lake 5.2.3 Comparison of Data Lake and Data Warehousing [All Units carry Equal Weightage]</p>
Reference Books	<ol style="list-style-type: none"> 1. Cloud Computing For Dummies 2nd Edition, by Judith S. Hurwitz, Daniel Kirsch, John Wiley & Sons Inc., ISBN: 978-1119546658 2. Cloud Computing: Concepts, Technology & Architecture, Ricardo Puttini, Thomas Erl, and Zaigham Mahmood, PHI, ISBN: 978-0133387520, 3. Cloud Computing: Principles and Paradigms - R. Buyya et al, Wiley 2010 4. Cloud Computing : Principles Systems and Application - L Gillam et al - Springer 2010 5. Cloud Computing Bible - Sosinsky - Wiley - India, 2011 6. Cloud Computing Second Edition Dr. Kumar Saurabh, Wiley - India, 2012 7. Service Oriented Architecture: Concepts , Technology and Design, Thomas Erl, Prentice Hall publication, 2005 8. Understanding Enterprise SOA - Enterprise Service Oriented Architecture, Eric Pulier, Hugh Taylor, Dreamtech Press 2008 9. Cloud Computing - Insight into New Era Infrastructure, Dr Kumar Saurabh, Wiley India 2012 10. Understanding SOA with Web Services - Sanjiva Weerawarana, Francisco Cubera, Frank Leymann, Tony Storey, Donald F Ferguson, Eric Newcomer, Greg Lomow - Addison Wesley Publication, 2004 11. Enterprise Service Bus - Dave Chappell - O'Reilly Publications 2004 12. Amazon Web Services For Dummies, Bernard Golden, ISBN:978-1118571835 13. Principles of Interactive Computer Graphics, New Man W. & Sproul P. F. –McGraw Hill 14. Procedural Elements for Computer Graphics, Rogers D. F. – McGraw Hill.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.