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| 1 | Course number | **CSE334** | | |
| 2 | Course Title | **Introduction to Cloud Computing** | | |
| 3 | Credits | **4** | | |
| 4 | Contact Hours | **3-1-0** | | |
| 5 | Course Objective | This introductory course on Cloud computing will teach both the fundamental concepts of how and why Cloud systems works, as well as Cloud technologies that manifest these concepts. | | |
| 6 | Course Outcomes | At the end of the course, students will have achieved the following learning objectives.   1. Classify and describe the architecture and taxonomy of parallel and distributed computing, including shared and distributed memory, and data and task parallel computing. 2. Characterize the distinctions between Infrastructure, Platform and Software as a Service (IaaS, PaaS, SaaS) abstractions, and Public and Private Clouds, and analyze their advantages and disadvantages. 3. Examine the design of task and data parallel distributed algorithms for Clouds and use them to construct Cloud applications. Demonstrate the use of Map-Reduce, Vertex-Centric and Continuous Dataflow programming models.. | | |
| 7 | Outline syllabus | | | |
| 7.01 | Unit A |  | **Introduction** |
| 7.02 | Unit A Topic 1 |  | Introduction to distributed systems and cloud computing |
| 7.03 | Unit A Topic 2 |  | Cloud architectures: SaaS, PaaS, IaaS. |
| 7.04 | Unit A Topic 3 |  | End-to-end system design. Networks and protocol stacks. |
| 7.05 | Unit B |  | **Remote Procedure Call** |
| 7.06 | Unit B Topic 1 |  | Client-server computing. Sockets and remote procedure call. |
| 7.07 | Unit B Topic 2 |  | RMI, CORBA. |
| 7.08 | Unit B Topic 3 |  | Storage in the Cloud: Google file system. |
| 7.09 | Unit C |  | **Cloud Services** |
| 7.10 | Unit C Topic 1 |  | Web services and REST. Example: Amazon S3. |
| 7.11 | Unit C Topic 2 |  | The JAX-RS API, Persistent cloud services. |
| 7.12 | Unit C Topic 3 |  | Three-tier middleware. JEE APIs. Google App Engine. |
| 7.13 | Unit D |  | **Sockets** |
| 7.14 | Unit D Topic 1 |  | Message queues and message brokers. |
| 7.15 | Unit D Topic 2 |  | JMS and Atmosphere. Web sockets |
| 7.16 | Unit D Topic 3 |  | Distributed snapshots. |
| 7.17 | Unit E |  | **Applications** |
| 7.18 | Unit E Topic 1 |  | Batch cloud computing: MapReduce and Hadoop. |
| 7.19 | Unit E Topic 2 |  | Applications in NoSQL data stores, Applications to scientific data Mining techniques. |
| 7.20 | Unit E Topic 3 |  | Popular Cloud Computing Systems from Google, Microsoft & IBM. |
| 9.1 | Text book | Dominic Duggan, Enterprise Software Architecture and Design, Willy Publication, 2013. | | |
| 9.2 | Other references | 1. Distributed and Cloud Computing, 1st edition, Morgan Kaufmann, 2011. 2. Greg Schulz, “Cloud and Virtual Data Storage Networking”, Auerbach Publications [ISBN: 978-1439851739], 2011. 3. Marty Poniatowski, “Foundations of Green IT” Prentice Hall; 1 edition, 2009. 4. 5. EMC, “Information Storage and Management” Wiley; 2 edition,2012. 5. Internet as a resource for reference | | |