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**LECTURE SCHEDULE**

**Branch & Section: IV B. Tech CSE-1-II Semester Regulation: R13**

**Subject: Cloud Computing (Elective-IV) Academic year: 2017-18**

**Faculty Name: Dr. M. Bhanu Sridhar**

**COURSE OBJECTIVES:**

At the end of the course, the students will be able to:

1. Learn about cloud environment.
2. Build software systems and components that scale to millions of users in Internet.
3. Learn about cloud concepts and capabilities across various cloud service models including IaaS, SaaS, PaaS.
4. Develop cloud based software applications on top of cloud platforms.

**COURSE OUTCOMES:**

After completing the course, the student must demonstrate the knowledge and ability to:

1. Understanding the key dimensions of the challenge of cloud computing.
2. Assessment of the economics, financial, and technological implications for selecting cloud computing for own organisation.
3. Assessing the financial and organisational capacity of employer for actively initiating and installing cloud-based applications.
4. Appraisal of own organisation needs for capacity building and training in cloud computing related areas.

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| **Unit No.** | **Topic No.** | **Name of the Concept** | **No. of Classes Required** |
| Unit – 1 : **Systems modelling, Clustering and virtualization** | | | |
| Unit - 1 | 1 | Scalable computing over the Internet | 2 |
| 2 | Technologies for network based systems | 1 |
| 3 | System models for distributed and cloud computing | 2 |
| 4 | Software environments for distributed systems and clouds | 2 |
| 5 | Performance, security and energy efficiency | 1 |
| Total number of hours | | | 8 |
| Unit – 2 : **Virtual Machines and Virtualization of Clusters and Data Centers** | | | |
| Unit – 2 | 1 | Implementation levels of virtualisation | 2 |
| 2 | Virtualisation tools, structures and mechanisms | 2 |
| 3 | Virtualisation of CPU | 1 |
| 4 | Memory and I/O devices | 1 |
| 5 | Virtual clusters and resource management | 1 |
| 6 | Virtualisation for data center automation | 1 |
| 7 | Tutorial/slip test | 1 |
| Total number of hours | | | 9 |

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| **Unit No.** | **Topic No.** | **Name of the Concept** | **No. of Classes Required** |
| Unit – 3 : **Cloud Platform Architecture** | | | |
| Unit - 3 | 1 | Cloud computing and service models | 2 |
| 2 | Architectural design of compute and storage clouds | 1 |
| 3 | Public cloud platforms | 2 |
| 4 | Inter-cloud resource management | 1 |
| 5 | Cloud security and trust management | 1 |
| 6 | Service oriented architecture (SOA) | 1 |
| 7 | Message-oriented middleware | 1 |
| 8 | Discussion and seminars | 1 |
| Total number of hours | | | 10 |
| Unit – 4 : **Cloud Programming and Software Environments** | | | |
| Unit – 4 | 1 | Features of Cloud and grid platforms | 1 |
| 2 | Parallel and distributed programming paradigms | 2 |
| 3 | Programming support of Google App Engine | 2 |
| 4 | Programming on Amazon AWS and MS Azure | 2 |
| 5 | Emerging cloud software environments | 1 |
| 7 | Tutorial/Hand-on Experience | 1 |
| Total number of hours | | | 9 |

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| **Unit No.** | **Topic No.** | **Name of the Concept** | **No. of Classes Required** |
| Unit – 5 : **Cloud Resource Management and Scheduling** | | | |
| Unit - 5 | 1 | Policies and mechanisms for resource management applications of control theory to task scheduling in a cloud | 2 |
| 2 | Stability of a two level resource allocation architecture | 2 |
| 3 | Feedback controls based on dynamic thresholds | 1 |
| 4 | Coordination of specialized autonomic performance managers | 2 |
| 5 | Resource Bundling | 1 |
| 6 | Scheduling algorithms for computing clouds | 2 |
| 7 | Fair queuing | 1 |
| 8 | Start time fair queuing | 1 |
| 9 | Borrowed Virtual Time | 1 |
| 10 | Cloud scheduling subject to deadlines | 1 |
| 11 | Scheduling MapReduce Applications subject to deadlines | 1 |
| 12 | Discussion and seminars | 1 |
| Total number of hours | | | 16 |
| Unit – 6 : **Storage Systems** | | | |
| Unit – 6 | 1 | Evolution of storage technology | 1 |
| 2 | Storage Models | 1 |
| 3 | General Parallel file systems | 1 |
| 4 | Google file system | 1 |
| 5 | Apache Hadoop | 1 |
| 6 | Big Table, Megastore | 1 |
| 7 | Amazon Simple Storage Services (S3) | 1 |
| 8 | Discussion/Seminar | 1 |
| Total number of hours | | | 8 |

**Overall Number of classes required: 60**

**TEXTBOOKS:**

1. **Distributed and Cloud Computing, Kai Hwang et al, Elsevier.**
2. **Cloud Computing, Theory and Practice, Dan Marinescu, Elsevier.**
3. **Cloud Computing, A Hands-On Approach, Arshadeep Bagra and Vijay Madisetti, University Press.**

**REFERECE BOOKS:**

1. **Cloud Computing: A Practical Approach, Anthony Velte et al, Tata McGraw-Hill.**
2. **Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya et al, Tata McGraw-Hill.**

Dr. M. Bhanu Sridhar MBS

**NAME OF FACULTY SIGNATURE OF FACULTY**