### COURSE OUTLINE

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| Subject Title: Cloud Computing | Teacher’s Name: Risala Tasin Khan, Ph.D |
| Code: ICT-5102 | Designation: Professor |
| Credit Hour: 3 | Room No: |
| Contact Hour:1.5+1.5 | Cell phone: 01715108479 |
| Advising Hour: Office Time | E-mail: risala@juniv.edu |

Course Objectives:

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, distributed system which is the basic platform behind cloud computing, cloud concepts capabilities across the various cloud service models including Iaas,Paas,Saas, and developing cloud based software applications on top of cloud platforms.

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| Course Contents | | CLOs | |
| 1 | Cloud Computing: At a glance (vision, challenge, reference models, deployment models, characteristics and benefits) | 1 | |
| 2 | Historical Development of Cloud Computing (Client-Server Computing, Computing Paradigm, Distributed System, Mobile and Ubiquitous Computing, System Models for Distributed Computing, Design Challenges of Distributed Computing) | 1 | |
| 3 | Principle of Parallel and Distributed Computing (Eras of Computing, Parallel vs. Distributed Computing, Elements of Distributed Computing, architecture of Distributed Computing, Technology concept of Distributed Computing) | 1 | |
| 4 | Cloud Computing: in Depth (Essential Characteristics of Cloud Computing, Central Idea, SOA, SLA) | 1 | |
| 5 | Cloud Computing Architecture & Management (Cloud Architecture, Anatomy of Cloud, Network Connectivity in Cloud, Feature of Cloud Application, Cloud Migration) | 1,2 | |
| 6 | SOA (Components of SOA, Benefits of SOA, SOA architecture) | 1,3 | |
| 7 | Virtualization (Characteristics of Virtualized Environment, Taxonomy of Virtualized Technique, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Technology Examples) | 1,3 | |
| 8 | Cloud Computing Requirement & Deployment Model (Industrial and End User Benefits from Cloud, Cloud Computing Service model, Cloud Computing Deployment Model) | 1,2 | |
| 9 | Data-Intensive Computing (Introduction, Technologies for Data-Intensive Computing, MapReduce Programming) | 5 | |
| 10 | Cloud Platforms in Industry (Amazon Web Service, Google AppEngine, Microsoft Azure) | 2,4 | |
| 11 | Fog Computing | 1 | |
| 12 | Cloud Applications Development | 2 | |
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Course Outcome:

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 organization

3. Assessing the financial, technological, and organizational capacity of employer’s for actively initiating and installing cloud-based applications.

4. Assessment of own organizations’ needs for capacity building and training in cloud computing-related IT areas

Text Books:

Mastering Cloud Computing . Author: Rajkumar Buyya, Christian Vecchiola, S. T. Selvi.

Distributed System: Principle and Paradigm. Author: Andrew S. Tanenbaum

1. Reference Books:

Distributed Systems: Concept and Design. Author: George Coulouris, Jean Dollimore, Tim Kindberg

1. Distribution of Marks:

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| Description | Percentage |
| Final Exam | 60% |
| Class Tests | 20% |
| Project Paper/Term Paper (Individually)/ Assignments including Presentation | 10% |
| Class Attendance | 10% |
| Total | 100% |

5.0 Distribution (Planning) of the Course Contents:

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| Lecture No. | Contents |
| Lec:1-2 | Cloud Computing: At a glance   * The vision of cloud computing * Defining a Cloud * A closer Look * Cloud computing reference models * Characteristics and Benefits * Challenges Ahead |
| Lec:3-4 | Historical Development of Cloud Computing   * Client-Server Computing * Computing Paradigm * Distributed System * Mobile and Ubiquitous Computing * System Models for Distributed Computing * Design Challenges of Distributed System * Problem of Designing Distributed system |
|  | QUIZ-1 |
| Lec-5-6 | Principle of Parallel and Distributed Computing   * Eras of computing * Parallel vs. distributed computing * Elements of parallel computing * Elements of distributed computing * Technologies for distributed computing |
| Lec-7-8 | Principle of Parallel & Distributed Computing:   * Parallel vs Distributed Computing * Elements of Parallel Computing * Elements of Distributed Computing |
| Lec-9-10 | Technologies of Distributed Computing   * Remote Procedure * Distributed Object Framework * Service Oriented Computing |
| Lec-11 | Cloud Computing: in Depth   * Essential Characteristics of Cloud Computing * Central Idea * SOA |
|  | QUIZ-2 |
| Lec-13-14 | Cloud Computing Requirement & Deployment Model   * Industrial and End User Benefits from Cloud * Cloud Computing Service model * Cloud Computing Deployment Model |
| Lec-15-16 | Cloud Computing Architecture & Management   * Cloud Architecture * Anatomy of Cloud * Network Connectivity in Cloud * Feature of Cloud Application * Cloud Migration * Economics of Cloud * Open challenges |
|  | Quiz-3 |
| Lec-17-19 | Virtualization   * Characteristics of Virtualized Environment * Taxonomy of Virtualized Technique * Virtualization and Cloud Computing * Pros and Cons of Virtualization * Technology Examples |
| Lec-20-21 | Data Intensive Computing   * Introduction * Technologies for Data-Intensive Computing |
| Lec-22-26 | Cloud Platforms in Industry:   * Amazon Web Service * Google AppEngine * Microsoft Azure |
| Lec-27 | Cloud Applications |
| Lec-28 | Fog Computing |

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Signature of the Faculty