COURSE FILE

For

Cloud Infrastructure and Services (ECSE373L**)**

Faculty Name : Indrajeet Gupta

Course Type : Elective

Semester and Year: VI Semester (III Year)

L-T-P : 2-0-2

Credits : 3

Department : Computer Science Engineering

Course Level : UG

SCHOOL OF ENGINEERING AND APPLIED SCIENCES

Department of Computer Science Engineering

Bennett University

Greater Noida, Uttar Pradesh

Bennett University

Course Details:

Course Name:	**Cloud Infrastructure and Services**	**Course Code:**		**ECSE373L**	
Department:	**Computer Science Engineering**	**Type:**		**Elective**	
L-T-P Structure	**2-0-2**	**Credits**	**3**	**Pre-requisite:**	**NA**
Course Objectives	Students will learn to deploy cloud infrastructure using the virtualization, cloud resource management and the underlying architecture then will integrate the cloud services as per the requirement of customer and service provider.				
Course Outcome	**At the end of the course, the students will be able to:** 1. Understanding cloud infrastructure 2. Gain depth knowledge of cloud services and microservices. 3. Integrating the services on public and private cloud infrastructure				
Course Contents:	**Topics**			**No. of Hours**	
1	Recap of cloud computing essentials: Cloud definition, Cloud Models, Virtualization, Cloud Architecture			3	
2	Defining Cloud Infrastructure, Role of Infrastructure for IT Enterprise, Business Firm, and Individual virtualization of CPU, memory, I/O and multicore processors			3	
3	Capacity Planning: Assessing the value proposition, measuring the cloud's value, avoiding capital expenditures, Computing the costs, specifying the service level agreements, defining licensing models			3	
4	Cloud Infrastructure Categorization: Servers, Processers, Network devices and storage resource, Network clusters, Edge Location			3	
5	Datacentre Management and Green Cloud computing and Ubiquitous clouds and IOT, online social and professional networking			3	

6	Service and Resource Management, Data Canter Management Tools Integration Reporting, Visibility, Reliability and Security	3
7	Interfaces for Users, Admins, and Developers, The Frontline of Digital Transformation, Infrastructure as a code, Risk and Challenges in using of Cloud Infrastructure, Cloud Service and Service Categories Infrastructure Vs Core Services, Aspects of Service Oriented Architecture (SOA) and microservices and its detailed programming model	4
8	Exploring cloud infrastructure with services: administrating the clouds, management responsibilities, lifecycle management, management standards, emerging cloud standards	3
9	Criteria for service selection, Multi-criteria Decision Making among cloud services, Parameters affecting to performances of service implementation. Continuous Integration and Continuous Development (CI-CD), Security issues in cloud infrastructure and service integration	3
Lab Work	Students will gain practical experience by the followings. 1. Make architectural decisions based on AWS architectural principles and best practices. 2. Leverage cloud services to make the infrastructure scalable, reliable, and highly available. 3. Leverage AWS Managed Services to enable greater flexibility and resiliency in an infrastructure. 4. Make an AWS-based infrastructure more efficient to increase performance and reduce costs. 5. Use the Well-Architected Framework to improve architectures with AWS solutions and Application integration	
Textbook:	1. Lizhe Wang, Rajiv Ranjan, Jinjun Chen, Boualem Benatallah, Cloud Computing, CRC Press 2017. 2. Rafaels, R. J. (2015). Cloud Computing: From Beginning to End. CreateSpace Independent Publishing Platform.	
References:	1. Hwaiyu Geng, Data Center Handbook (1st ed.), Wiley, 2015. 2. Buyya, R., Vecchiola, C., & Selvi, S. T. (2013). Mastering cloud computing: foundations and applications programming. Newnes.	
MOOCs:	1. https://www.edx.org/course/introduction-to-cloud-infrastructure-technologies 2. https://www.mooc-list.com/course/building-containerized-applications-aws-coursera 3. https://aws.amazon.com/training/course-descriptions/architect/	

Evaluation Components:

Components of Course Evaluation	Percentage
Mid Term Examination	15
End Term Examination	30
Lab Continuous Evaluation	15
Class Participation/ Teacher Assessment/Viva-Voce/Lab Exam	10
Quizzes/Viva-Voce	10
Project Demo/Cloud Industry Certifications/Research Paper Project	20

Notes:

1. Teacher Participation includes activities like, short quizzes, polling, random question fire, questionnaire, class participation and so on.

2. Lab Continuous Evaluation will be performed in each Lab.