AMITY UNIVERSITY
KOLKATA

FORMAT FOR COURSE CURRICULUM

Course Title: Cloud Computing Practitioner
Credit Units: 4

L	T	P/S	SW/FW	No. of PSDA		TOTAL CREDIT UNITS
2	0	2	2	3		4

Course Level: UG

Course Code: CSE314

Course Objectives:

After finishing this course student will be able to get introduction of Cloud Computing technology, its applications and importance. This course explores the basic characteristics of AWS Cloud infrastructure and its services in details. It helps in learning implementation of web application and its deployment in AWS Cloud. It also gives broad overview of service-orientation architecture and its usage.

Pre-requisites:

Knowledge of Networking, Distributed System and Operating System

Course Learning Outcomes:

At the end of the Course, Student will be able to:

1. Use AWS cloud architectural principles
2. Apply AWS Cloud value proposition and key services on the AWS platform
3. Analyze security and compliance aspects of the AWS platform
4. Create roles and policies to manage user accounts
5. Propose cloud solution for the customers

Course Contents/Syllabus:	Weightage (%)

Module I : Introduction to Cloud Computing	**20%**
Course Overview -advantages of cloud computing, a comparison of cloud and on- premises computing, and a description of the AWS Cloud Adoption Framework , Cloud Economics-AWS pricing philosophy, fundamental pricing characteristics and total cost of ownership (TCO), AWS Global Infrastructure-AWS regions and availability zones, AWS edge locations.	
Module II : AWS Core Services	**25%**
Compute Services-Introduction to Amazon EC2,different Amazon EC2 types and their usage ,Amazon Machine Image (AMI) ,Amazon EC2 pricing and billing Explain AWS Lambda and serverless computing, Review AWS Elastic Beanstalks,Storage Services-Working with EBS,Identify the appropriate storage solution,pricing differences between different storage alternatives,Amazon Simple Storage Service (Amazon S3) , Amazon Elastic File System (Amazon EFS), Amazon Glacier ,Amazon VPC-Build your VPC and Launch a Web Server,Database Services-different AWS database solutions , SQL and NoSQL database solutions, Build your DB server and interact with your DB using an App ,Elastic Load Balancing, Amazon CloudWatch, Auto Scaling,Scale and Load Balance Cloud Architecture.	
Module III : AWS Cloud Security	**20%**
AWS Shared Responsibility Model-difference between AWS Identity and Access Management (IAM) Users, Groups and Roles,different types of security credentials ,AWS Identity and Access Management ,AWS Trusted Advisor ,CloudTrail ,AWS Config ,AWS Day One Best Practice Review,AWS Security and Compliance Programs ,AWS Security Resources,security compliance and security compliance resources.	
Module IV: Cloud Architecture and Billing	**25%**
Introduction to the Well-Architected Framework-architectural best practices for designing and operating reliable, secure, efficient, and cost-effective systems in the cloud ,architectural pillars , Well-Architected Design Principles,Understanding Reliability and High Availability,business impact of design decisions, Example: Transitioning a Data Center to the Cloud. AWS Billing and Cost Management -elements of the AWS Billing Dashboard , different tools available in AWS Billing and Cost Management to review current billing and forecast future costs.	
Module V: Cloud Support and Industry Orientation	**10%**
AWS Organizations-Identify different support plan levels and their associated service levels, Support Services-prices associated with each of the support plans, Software-defined Cloud Manufacturing for Industry 4.0, AWS Manufacturing, Explore manufacturing processes in the cloud, AWS for manufacturing benefits, Industry Oriented Case Studies in Manufacturing(Xilinx case study, The Kellogg Company case study, SKF case study, Kemppi case study, iRobot case study, National Instruments case study etc)	

Pedagogy for Course Delivery:

The class will be held through remote teaching and learning methodology. Instructional material will be uploaded on LMS using four quadrant approach. In addition to assigning the problems, the course instructor will spend considerable time in understanding the concept of innovation through the eyes of the industry. The instructor will cover the ways to think innovatively liberally using thinking techniques.

List of Professional Skill Development Activities (PSDA):

i. Case Study
ii. Presentation
- Minor Experiment

Lab/Practical's details, if applicable:

List of Experiments:

- **Lab 01 – Introduction to Amazon EC2 ON**
- **Lab 02 – Working with EBS**
- **Lab 03 – Build your VPC and Launch a Web Server**
- **Lab 04 – Build your DB server and interact with your DB using an App**
- **Lab 05 – Scale and Load Balance your Architecture**
- **Lab 06 – Introduction to AWS IAM**

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
75%	25%	100%

B.Tech Theory Assessment (L&T):

	Continuous Assessment/Internal Assessment 40%						End Term Examination 60%
Components (Drop down)	Attendance	Class Test	Assignment	Minor Project	Group Presentation	Quiz	EE
Linkage of PSDA with Internal Assessment Component, if any				3	3	10	
Weightage (%)	5	15	4				60

Lab/ Practical/ Studio Assessment:

Continuous Assessment/Internal Assessment 40%					End Term Examination 60%	
Components (Drop down	Performance	Lab Record	Viva	Attendance	Practical	viva

Weightage (%)	15	10	10	**5**	**30**	**30**

Text Reading:

- AWS Certified Cloud Practitioner Certification Guide: Complete 2018 CLF-C01 Exam Study Guide (AWS Certification Guides Book 2) Kindle Edition by Todd Montgomery
- Cloud Computing : A Practical Approach by Anthony T. Velte Toby J. Velte, Robert Elsenpeter, 2010 by The McGraw-Hill.
  Cloud Computing: SaaS, PaaS, IaaS, Virtualization and more. by Dr. Kris Jamsa.

References:

- Cloud Computing Bible by Barrie Sosinsky, Published by Wiley Publishing, 2011.
- Cloud Computing for Dummies by Judith Hurwitz, Robin Bloor, Marcia Kaufman, and Dr. Fern Halper, Wiley Publishing, 2010. Moving to The Cloud, DinakarSitaram, Elsevier, 2014.
- Cloud Computing Theory And Practice Danc.Marinercus, Elsevier, 2013.
- https://aws.amazon.com/training/
- https://www.aws.training/Dashboard/?cta=tctopbanner

Additional Reading:

AWS Whitepapers

- Overview of Amazon Web Services whitepaper, April 2017
- Architecting for the Cloud: AWS Best Practices whitepaper, February 2016
- How AWS Pricing Works whitepaper, March 2016
- The Total Cost of (Non) Ownership of Web Applications in the Cloud whitepaper, August 2012
- Compare AWS Support Plans webpage