**COURSE OUTLINE : CS/IS 243**
**D Credit – Degree Applicable**
**COURSE ID 010439**
**Cyclical Review: May 2021**

**COURSE DISCIPLINE :** CS/IS

**COURSE NUMBER :** 243

**COURSE TITLE (FULL) :** Cloud Computing – Cloud Design

**COURSE TITLE (SHORT) :** Cloud Computing – Cloud Design

**ACADEMIC SENATE DISCIPLINE:** Computer Information Systems

**CATALOG DESCRIPTION**

CS/IS 243 course covers how cloud computing systems are built using a common set of core technologies, algorithms, and design principles centered around distributed systems. The Amazon Web Services (AWS) Management Console will be used to provision, load-balance and scale their applications using the Elastic Compute Cloud (EC2) and the AWS Elastic Beanstalk. The course covers design principals of scalable cloud systems and has hands-on labs on AWS and the departments private cloud server.

Total Lecture Units:2.00

Total Laboratory Units: 1.00

**Total Course Units: 3.00**

Total Lecture Hours:36.00

Total Laboratory Hours: 54.00

Total Laboratory Hours To Be Arranged: 0.00

**Total Contact Hours: 90.00**

**Total Out-of-Class Hours: 72.00**

Recommended Preparation: CS/IS 240.

## ENTRY STANDARDS

| | Subject | Number | Title | Description | Include |
|---|---|---|---|---|---|
| 1 | CS/IS | 240 | Cloud Computing – Fundamentals | Describe the cloud computing model; | Yes |
| 2 | CS/IS | 240 | Cloud Computing – Fundamentals | describe examples of infrastructure as a service; | Yes |
| 3 | CS/IS | 240 | Cloud Computing – Fundamentals | describe examples of platform as a service; | Yes |
| 4 | CS/IS | 240 | Cloud Computing – Fundamentals | describe examples of software as a service; | Yes |
| 5 | CS/IS | 240 | Cloud Computing – Fundamentals | identify and mitigate security concerns associated with cloud computing. | Yes |

## EXIT STANDARDS

1 Describe the general design principles in the cloud environment.
2 Describe strategies and best practices of cloud design.
3 Describe the design principles of security in the cloud.
4 Describe best practices for achieving reliability in the cloud.
5 Describe best practices for cost optimization of cloud services.
6 Identify and utilize tools and features used in cloud design.

## STUDENT LEARNING OUTCOMES

1 Deploy multi-tier infrastructure using CloudFormation
2 Monitor EC2 instances using CloudWatch
3 Test resiliency of EC2 instances using failure injection scripts

## COURSE CONTENT WITH INSTRUCTIONAL HOURS

| | Description | Lecture | Lab | Total Hours |
|---|---|---|---|---|
| 1 | Introduction to AWS Management Console, Regions and Availability Zones | 4 | 6 | 10 |
| 2 | Design Principles for Cloud Systems using Best Practices | 4 | 6 | 10 |
| 3 | AWS Elastic Beanstalk Architecture | 4 | 6 | 10 |
| 4 | Elastic Beanstalk Implementation | 4 | 6 | 10 |
| 5 | Auto-Scaling and Load Balancing Configuration | 4 | 6 | 10 |
| 6 | Git Repository and the Elastic Beanstalk Command Line Interface (EB CLI) | 4 | 6 | 10 |
| 7 | EC2 Deployment of A Server | 4 | 6 | 10 |
| 8 | Amazon Machine Image Configuration | 4 | 6 | 10 |
| 9 | CloudWatch Monitoring and Logging | 4 | 6 | 10 |
| | | | | **90** |

GLENDALE COMMUNITY COLLEGE

## OUT OF CLASS ASSIGNMENTS

1 Projects (i.e. AWS monitoring)
2 Labs (i.e. deploy AWS Elastic Beanstalk)

## METHODS OF EVALUATION

1 Exams
2 Projects (i.e. AWS monitoring)
3 Labs (i.e. deploy AWS Elastic Beanstalk)

## METHODS OF INSTRUCTION

- [x] Lecture
- [x] Laboratory
- [ ] Studio
- [x] Discussion
- [ ] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [ ] Collaboratory Learning
- [x] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [ ] Presentations

## TEXTBOOKS

| Title | Type | Publisher | Edition | Medium | Author | IBSN | Date |
|---|---|---|---|---|---|---|---|
| AWS System Administration | Required | O'Reilly Publishers | 1 | | Ryan, M., Lucifredi | 978-1-4493-4257-9 | 2018 |
| Open Educational Resources | | | | Open Educational Resources will be used by instructors of this course | | | |