# **Previous Report**

#### **Course Outline**

Engineering and Applied Science Faculty of Science

SENG 4620 - **3.00** - Academic

Practical Cloud Computing

#### Rationale

This is one of the four SENG technical electives that students need to complete in order to full fill BEng Software Engineering program requirements.

#### **Calendar Description**

Students are introduced to the concepts, technologies, and platforms to develop foundations for cloud computing. Students explore the topics, including virtualization, load balancing, scalability & elasticity, deployment, and replication with real-world examples of cloud-based services. Students learn the programming aspects of cloud computing with the application development viewpoint. Students get an insight into specialized aspects of cloud computing, including cloud application benchmarking, cloud security, and big data analytics. Students gain handson experience in cloud computing using various cloud technologies.

#### **Credits/Hours**

Course Has Variable Hours: No Credits: 3.00 Lecture Hours: 3.00 Seminar Hours: 0 Lab Hours: 2.00 Other Hours: 0 *Clarify*:

# **Current Report**

#### **Course Outline**

**Engineering** 

Faculty of Science

SENG 4620 - **3.00** - Academic

Practical Cloud Computing

#### Rationale

The course has been revised to align with the latest trends and advancements in cloud computing, including areas like serverless computing, cloud architecture, infrastructure as code, and the full lifecycle of software development and deployment on the cloud.

#### **Calendar Description**

Students are introduced to the concepts, technologies, and platforms to develop foundations for cloud computing. Students explore the topics, including virtualization, load balancing, scalability & elasticity, deployment, and replication with real-world examples of cloud-based services. Students learn the programming aspects of cloud computing with the application development viewpoint. Students get an insight into specialized aspects of cloud computing, with one of the major cloud platforms and their core services, including compute, storage, access management, networking, and databases. Through practical exercises and projects, students will develop the skills to design cloud architectures and leverage cloud technologies to build and deploy cloud-based applications.

#### **Credits/Hours**

Course Has Variable Hours: No Credits: 3.00 Lecture Hours: 3.00 Seminar Hours: 0 Lab Hours: 2.00 Other Hours: 0 *Clarify:* Total Hours: 5.00 **Total Hours:** 5.00 **Delivery Methods:** (Face to Face) **Impact on Courses/Programs/Departments:** . **Repeat Types:** A - Once for credit (default) **Grading Methods:** (S - Academic, Career Tech, UPrep)

# **Educational Objectives/Outcomes**

 Understand concepts, technologies, and platforms to develop foundations of cloud computing.
Demonstrate programming for cloud computing with a view toward application development.
Apply usage of big data analytics in cloud computing.
Recognize the aspects of cloud application benchmarking and the principles of cloud security.
Analyze the applications of cloud computing in various industries with practical use-cases.

# Prerequisites

SENG 3210-Applied Software Engineering A minimum of grade "C" in SENG 3120.

## **Co-Requisites**

**Recommended Requisites** 

**Exclusion Requisites** 

#### **Texts/Materials**

#### Textbooks

1. **Required** Arshdeep Bahga and Vijay Madisetti. *Cloud Computing: A Hands-On Approach*, 1st ed. VPT, ISBN: 1494435144.

## **Student Evaluation**

The Course grade is based on the following course evaluations.

**Delivery Methods:** (Face to Face) **Impact on Courses/Programs/Departments:** . **Repeat Types:** A - Once for credit (default) **Grading Methods:** (S - Academic, Career Tech, UPrep)

## **Educational Objectives/Outcomes**

1. Understand concepts, technologies, and platforms to
develop foundations of cloud computing.
2. <u>Demonstrate programming for cloud computing by</u>
<u>design, develop, and deploy a fully functional cloud-based</u>
application on cloud infrastructure.
3. <u>Apply usage of big data analytics and manage and utilize</u>
<u>cloud storage services in cloud computing.</u>
4. Recognize the aspects of cloud application benchmarking
and the principles of cloud security.
5. Analyze the applications of cloud computing in various
industries with practical use-cases.
6. Design, implement, and manage network infrastructure

and connectivity within a cloud environment.

# Prerequisites

SENG 3210-Applied Software Engineering <u>A minimum of grade "C" in SENG 3210.</u>

### **Co-Requisites**

#### **Recommended Requisites**

#### **Exclusion Requisites**

## Texts/Materials

#### Textbooks

1. **Recommended** Nayan B. Ruparelia. *Cloud Computing*, 2nd ed. The MIT Press, 2023, ISBN: 9780262376211.

#### <u>Other</u>

1. **Required** The majority of the course content will be derived from resources provided by cloud service providers such as Amazon AWS, Google Cloud, and Microsoft Azure.

## **Student Evaluation**

The Course grade is based on the following course evaluations.

Final Exam (35.00%) Mid Term Exam (20.00%) Labs (20.00%) Design Project (25.00%)

#### **Course Topics**

#### **Course Topics Course Topics** Textbook Mapping Chapter # Book Introduction to Cloud Computing 1 <del>B1</del> Cloud Concepts & Technologies <del>B1</del> 2 Cloud Services & Platforms 3 <del>B1</del> Hadoop & MapReduce-Concepts <del>B1</del> Cloud Application Design <del>B1</del> Python for Cloud <del>B1</del> <del>8</del> Cloud Application Development in <del>B1</del> Python <del>Big Data Analytics</del> <del>B1</del> Cloud Application Benchmarking & <del>11</del> <del>B1</del> **Tuning** Cloud Security <del>12</del> <del>B1</del> <del>13</del> Cloud for Industry, Healthcare & <del>B1</del> **Education**

#### Methods for Prior Learning Assessment and Recognition

As per TRU Policy

#### Last Action Taken

Implement by Education Programs Committee Chairperson Shelley Church Final Exam (35.00%) Mid Term Exam (20.00%) Labs (20.00%) Design Project (25.00%)

# **Course Topics**

#### Course Topics

Course Topics

Introduction to Cloud Computing

API and Event-Driven Architectures in the Cloud

Serverless Functions and Computing

Cloud Storage and Databases

<u>Big Data Analysis in the Cloud</u>

Cloud Networking

<u>Cloud Security Fundamentals</u>

Authentication, Authorization, and Cloud Security Best Practices

Cloud Architecture and Design

Automation and Infrastructure as Code (IaC)

<u>Monitoring, Logging, and Troubleshooting in the Cloud</u>

Cloud Infrastructure for Machine Learning

Disaster Recovery in the Cloud

### Methods for Prior Learning Assessment and Recognition

As per TRU Policy

# Last Action Taken

Default by HOLD TRU Conversion



Current Date: 16-May-25