COEN 241 Introduction to Cloud Computing

Winter 2022-2023 • Santa Clara University

Introduction to cloud computing, cloud architecture and service models, the economics of cloud computing, cluster/grid computing, virtualization, big data, distributed file system, MapReduce paradigm, NoSQL, horizontal/vertical scaling, thin client, disaster recovery, free cloud services and open source software, example commercial cloud services, and federation /presence/ identity /privacy in cloud computing. SCU Catalog

Summary

This syllabus is similar to a contract between students and the instructor, and as such it is quite long (with many sections required by the university). A few key points from this syllabus are highlighted here:

- We will primarily use **Piazza** for all asynchronous communication for this class. We will not be responding to email messages. See: Communication Policy
- You must earn a passing grade on the midterm and the final project to earn a B or higher letter grade in this class. See: Pass Requirements
- See Attendance Policy and Late Policy for exceptions to late assignment and attendance requirements.

Course Details

This section covers basic information about the course and the instructor.

COEN 241 - Introduction to Cloud Computing
Monday, Wednesdays: 5:10 PM – 7:00 PM
Location: Kenna Hall 106, Some classes will be on Zoom
Zoom link: on Camino

Instructor and Assistants

The instructor and the weekly office hours for this course will be:

Instructor: Sean Choi
Office hours: Monday 3~5pm on Zoom or Heafey 211
Personal Zoom Link in Camino

Grader: Lakshmi Naarayanan Vaigai Shrinivasan

See the Communication Policy for how to contact the instructor and the grader.

Prerequisites

Basic programming experience (COEN 12 or 912C), preferably in Java or Python. Computer Networks (COEN 146 or 233), and preferably Operating Systems (COEN 283).

Required Materials

This course will use **Cloud Computing Solutions Architect (CCSA)** by Bahga and Madisetti as the textbook. There will also be materials in the lecture slides that are not present in the textbook.

Important Dates

Below are important dates relevant to this class **(Subject to Change)**:

🚩	Date	Description
	01/09	Classes begin.
	01/13	Last day to add classes or withdraw with full refund
🚩	01/13	Project Groups Due **(No Late Submission)**
🚩	01/16	No Class (MLK, University Holiday)
🚩	01/18	Project Proposal Due **(No Late Submission)**
	02/03	Last day to withdraw from a class without a “W” on transcript.
🚩	02/13	Start of **Remote** Instruction
🚩	02/15	Midterm
🚩	02/20	No Class (Presidents Day, University Holiday)
	02/24	Last day to withdraw from a class with a “W” on transcript.

🚩	03/13	Back to **In-Person** Instruction
🚩	03/13	Final Presentation **(No Late Submission)**
🚩	03/15	Final Presentation **(No Late Submission)**
🚩	03/15	Last Day of Class
🚩	03/22	Final Report Submission Due **(No Late Submission)**

See the official academic calendar for other important dates.

Learning and Assessment

This section covers the learning outcomes and how they will be assessed.

Learning Outcomes

At the end of this course, students should understand the following concepts

- Cloud Computing Service & Deployment Models
- Virtualization
- Containerization: Docker and Kubernetes
- Serverless Computing
- Microservices and Orchestration
- Availability, Reliability and Scalability
- Software Defined Networks & Network Virtualization
- Storage Virtualization
- Distributed Databases / NoSQL
- Consistency (Zookeeper, Raft)
- MapReduce and Spark/Hadoop
- Sustainable Cloud

Pass Requirements

You must meet the following minimum requirements to receive a B or higher grade:

- **Midterm Pass Requirement:** Students must receive an average C letter grade or higher on the midterm

- **Project Pass Requirement:** Students must receive an average C letter grade or higher on the final project.

Failure to meet 1 or more of these requirements will cap your letter grade for this course to B maximum, regardless of whether you have a higher letter grade.

If you are concerned about not meeting one or more of these requirements by the withdrawal deadline, you are encouraged to consult with the instructor. Your best option may be to withdraw from the class.

Meeting the pass requirements **does not guarantee a passing grade**. See the Grade Breakdown section below for how the final grade will be calculated.

Grading Breakdown

If you are meeting the pass requirements, then your final letter grade for this class will be calculated as follows:

Percentage	Category
40%	Projects
15%	Assignments
15%	Quizzes
25%	Midterm Exam
5%	Participation

Participation

You must attend and participate in *all* lectures actively.

- **Attendance:** You should ideally attend and participate in every lecture.
    - **Alternatives:** If there is an emergency and you cannot make it to one of the sessions, you must inform the instructor.
    - You can miss **up to 2 lectures** for non-emergency before losing points for attendance.
- **Active Participation:** You must participate in discussions and ask questions both in class and Piazza.

Exams

There will be one midterm exam. You must receive an average C letter grade or higher. See the Pass Requirements for details.

Assignments

Three assignments are planned for this quarter and will be usually due in a week.

Final Project

This is a project based course, thus you will be working towards a final project with your team and submit a final report, as well as a final presentation, at the end of the quarter. More details about the project will be shared throughout the quarter.

Grading Scale

Here is a table of percentage earned to letter grade and GPA (subject to change).

Score Range	Letter
93% ≤ 100%	A
90% < 93%	A–
87% < 90%	B+
83% < 87%	B
80% < 83%	B–
77% < 80%	C+
73% < 77%	C
70% < 73%	C–
67% < 70%	D+
63% < 67%	D
60% < 63%	D–
0% < 60%	F

Scoring in the ranges above **guarantees** you will receive at least the grade listed.

Communication Policy

Email **will NOT be used** for communication in this course, thus we will not respond to email unless absolutely necessary. **All course-related communication will be handled using Piazza**. When making posts on Piazza, please keep the following in mind:

- **Answering other students' questions on Piazza counts as Participation.** If you know the answer to someone else's question, please do answer. You can post the answer as an anonymous reply if you wish. The instructor can still see your name and will count towards your participation.
- **Search other posts first.** It is possible your question has already been asked and answered in another post. There is a search feature that you can use.
- **Make a public post when appropriate.** You can **post anonymously** if you prefer. Your classmates will not be able to see your identity for anonymous posts, but instructors will still be able to see your name.
- **Do not post code publicly on Piazza.** If you have a question regarding your specific code, please post it as a private post to all instructors. This ensures only the instructor and TA will see your code.
- **Make posts specific to solutions or grades private** to the instructor. This replaces directly emailing the instructor regarding the course. If you email the instructor directly, you will be asked to make a private post on Piazza.

Under no circumstances should you use any unapproved communication channel as it creates an unfair advantage over other students.

Late Policy

You have **7 late days** (in daily increments) total in this semester to use across your in-class exercises and labs. After the late days are exhausted, your submission will be deducted 20% a day late.

No late submission for ANY PART of the final project will be accepted.

University Wide Syllabus Statement

Santa Clara University fosters a culture of academic integrity through honoring the Academic Integrity Pledge, which can be found in the Syllabus Statement. **Flagrant or repeat violations of the pledge will result in an F in the course and a report to the Dean.** The syllabus statement consists of additional information that is shared across all courses taught in SCU.