# California State University San Marcos School of Business/Management Information Systems Department MIS 484-6, Cloud Management, Fall 2020

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| Instructor(s): | Dr. Thomas Underhill |
| Office Location: | Virtual only. Campus closed due to COVID-19 |
| Telephone: | None |
| Email: | tunderhill@csusm.edu |
| Office Hours: | By Appointment using the link in Cougar Courses. Individual tutoring is not possible during these appointments. Please be prepared to effectively use your timeslot. Out of respect for your classmates, please limit yourself to no more than one appointment every two weeks and utilize the group sessions to supplement.  **You must authenticate to Zoom using your CSUSM credentials to join any Zoom session. This added step prevents Zoom bombers. All Zoom details are in Cougar Courses.**  **Weekly Optional Q&A Session** on Monday from 5:00 pm to 6:00pm. **This will be recorded.**  **Weekly Optional Group Tutoring Session** on Wednesday from 5:00pm to 6:00pm. If you need technical help, please attend this session. **This will be recorded - if you are seeking assistance, then your screen will be shared and recorded. You should hide any private information prior to sharing your screen.**  For both the Q&A and Group Tutoring sessions, please be respectful of your classmates and professor. If multiple students attend, then I will be providing equal opportunities to ask questions and obtain assistance. Individuals who attempt to monopolize the session and who do not self-moderate themselves will be muted to provide others with an opportunity to speak. **Note that I am unable to assist with any issues relating to your specific computer setup or software configuration. You MUST either use the Cougar Apps environment or the browser-based environment provided by the cloud provider during the group tutoring sessions.**  **Finally, we will observe the "15-minute rule" for these sessions. If no students join within the first 15 minutes, then the remainder of the session will be cancelled.**  **Biweekly Optional Cloud Happy Hour.** The details are in Cougar Courses. |

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| Meeting times: | **Asynchronous Lectures (pre-recorded) - subscribe to my** [**YouTube Channel**](https://www.youtube.com/channel/UC3vqKF4jspXh8hxFLpTfsyw) **for lecture updates as soon as they are available.**  **Optional** Project Checkpoint Meeting with the Professor in either Week 12, 13, 14, or 15. You may schedule using the link in Cougar Courses.  **Optional** Synchronous Q&A and Group Tutoring sessions weekly. **Optional** Cloud Happy Hour biweekly.  The Microsoft Teams room link and join code are in Cougar Courses. |
| Prerequisites and/or co-requisites: | MIS 302 or MIS 304 with a C or better |

## Course Description

Introduces concepts of cloud computing to students. Provides a survey of various cloud service delivery models that students may encounter in their careers.  Exposes students to specific cloud technologies using hands-on activities and culminates in presenting a cloud adoption/migration business case to executives.

## Course Learning Objectives

* Be able to define cloud computing and how it differs from traditional models
* Be able to describe the basic capabilities, service delivery models, and deployment models of cloud computing
* Be able to utilize Linux command-line interfaces
* Be able to describe how cloud enablement technologies work
* Be able to deploy cloud resources
* Be able to utilize IaaS, PaaS, and SaaS systems to solve business problems
* Be able to understand and propose different migration strategies based on business requirements
* Be able to identify risks associated with migrations to cloud-based systems, assess the risks, and identify appropriate mitigation measures
* Be able to identify regulatory/legal/industry compliance requirements, and determine whether a cloud vendor meets those requirements
* Be able to utilize common Cloud automation and security technologies to implement and manage Cloud infrastructure
* Be able to produce a business case report for executive management, and make a compelling presentation to an executive

## Course Format

Online (Asynchronous). There are **optional** synchronous components. Students are welcome to work at their own pace keeping in mind due dates and late policies.

## Necessary Technical Competency Required for Students

* Ability to navigate Cougar Courses
* Ability to use Cougar Apps if the student does not have a computer with a modern web-browser
* Ability to utilize web-browser based applications
* Ability to follow written and video technical instructions, which often require the exercise of independent judgement and critical thinking
* Ability to communicate in a discussion forum
* Ability to download, save, and upload files
* Ability to use office applications such as Microsoft Word
* Ability to independently exercise analytical reasoning/critical thinking and experimentation skills to dissect and solve challenging problems with minimal direction

## Required Texts/Readings

### Textbook

None required

### Other Readings

All readings will be provided in Cougar Courses

### Other equipment / material requirements

Required: Microphone, Computer (running Windows, macOS, or Linux), and a modern web browser or access to CougarApps.

Recommended: Webcam

## Course Requirements

### Discussions

Each week you must make a discussion post that addresses the discussion prompt.  You must also engage in discussion with peers.  **A minimum of two posts each week are required for ANY credit – one is your own post and the other is a response to another student.**There is no length requirement for either posting as long as it is substantive and addresses the discussion prompt.  The discussions will close on Sunday at 11:30pm and will not be reopened under any circumstances.  **If you miss a discussion or only post once, you forfeit the points for that week.  If you have a documented medical emergency (proof will be required), then you will need to request an alternative assignment. There will be a total of 15 discussions. The topics for each week are below.**

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| **Week #** | **Discussion Topic** |
| 1 | Introductions |
| 2 | Impact of Cloud Computing on Businesses |
| 3 | Advantages/Disadvantages of Command Line Interfaces |
| 4 | Cloud Service Delivery and Deployment Models |
| 5 | Cloud Identity Management |
| 6 | Cloud Networking |
| 7 | Source Code Repositories |
| 8 | Cloud Automation |
| 9 | Cloud Cost Management |
| 10 | Logging and Event Management |
| 11 | Cloud Compliance and Legal Issues |
| 12 | Cloud Governance |
| 13 | Presentation Skills |
| 14 | Building a Cloud Business Case |
| 15 | Course Retrospective |

### Exams

**There are no exams in this course.**  Knowledge of the course material will be assessed using the homework and project.

### Homework

There are seven (7) homework assignments in this course.  You will complete one homework assignment every two weeks to prepare you for your project.  Please review the late policy for homework.  **It is in your best interest to keep up with these assignments as these prepare you for the project.**

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| **Homework #** |  |
| 1 | Getting Started with Cloud Infrastructure |
| 2 | Getting Started with the Linux Command Line |
| 3 | Cloud Security |
| 4 | Cloud Architecture |
| 5 | Version Control Systems |
| 6 | Cloud Automation Part 1 |
| 7 | Cloud Automation Part 2 |

### Project

There is a substantial project in this course that is worth 35% of your grade.  **This is an individual project, but you are encouraged to form virtual peer tutoring groups and help each other out.**A Microsoft Teams room is provided for this purpose.

The project is centered around the following hypothetical scenario:

*CougarFlix is the largest video streaming service for college-aged students.  The company currently runs its own IT infrastructure in a Mira Mesa data center and a disaster recovery facility in Virginia.  The company’s production facilities are in a large skyscraper in downtown San Marcos, which has been closed due to COVID-19.  After seeing the success of the Saturday Night Live @ Home series, the company has decided to move all production to the homes of employees.  This poses a problem, because the existing IT infrastructure is not adequate for a distributed workforce let alone video production and distribution.  Your manager, the VP of IT, has asked that you put together a proposal for the company to shift all IT infrastructure to cloud-based providers.  Your proposal will consist of 5-7 slides and a 1-minute “elevator pitch” video that highlights the advantages of cloud adoption.  In addition, you will design and implement a pilot cloud deployment for the organization’s corporate website using common automation and security software.* ***You may not simply propose using a SaaS (Software as a Service)-based service like WordPress.com, Wix, or Squarespace.  You must propose using either Amazon Web Services (AWS) or Google Cloud Platform (GCP) as an Infrastructure as a Service (IaaS) platform for this project.***

You will submit **ALL**project deliverables at the same time at the start of Finals Week, but I have outlined the recommended pace for completing each of them to prevent you from falling behind.  The estimated level of effort below is based on an average student’s pace – everyone may require a different amount of time and should plan accordingly.

I speak from experience when I tell you that students who try to procrastinate have a very high probability of failing the course. Please keep up with the work in this course as best as you can. Seek help early - the longer that you wait to seek help, the less likely that you can catch up.

The project consists of the components below.  Further details for each of these will be in Cougar Courses.

#### Project Components

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| --- | --- | --- | --- | --- |
| **Deliverable** | **Description** | **Percentage of Points** | **Estimated Level of Effort** | **Recommended Completion to be on-track** |
| Executive Presentation (Slides and Video) | You will create an executive presentation slide deck in PowerPoint format (5-7 slides) and separately record a 1-minute “elevator pitch” video (YouTube or Vimeo) pitching your proposed Cloud Adoption plan to executive leadership.    Videos exceeding 1-minute or under 1-minute will be penalized as follows:  <30 seconds (No credit)  31-40 seconds (-75% penalty)  41-50 seconds (-50% penalty)  51-60 seconds (No penalty)  61-70 seconds (No penalty)  71-90 seconds (-25% penalty)  91-120 seconds (-50% penalty)  121-180 seconds (-75% penalty)  >181 seconds (No credit) | 20% (7 points) | 4 hours | Week 12 |
| Cloud Architecture Design Drawing | You will use [LucidChart](https://www.lucidchart.com/pages/usecase/education" \t "_blank) (free for students) to create a multi-cloud architecture design drawing.  (Examples are in Cougar Courses) | 20% (7 points) | 8 hours | Week 10 |
| Cloud Infrastructure Deployment | You will deploy Cloud Infrastructure into both Google Cloud Platform and Amazon Web Services.   You will also write a paper documenting this work. | 20% (7 points) | 12 hours | Week 11 |
| Cloud Automation Deployment | You will develop automated cloud deployments using Terraform Open-Source. You will also write a paper documenting this work. | 20% (7 points) | 30 hours | Week 16 |
| Cloud Security Deployment | You will implement cloud security using Vault Open-Source. You will also write a paper documenting this work. | 20% (7 points) | 8 hours | Week 15 |
| **TOTAL** |  | 100% | 62 hours |  |

### Extra Credit Opportunities

There are extra credit opportunities available for early submissions, exceptional project performance, and for volunteering to tutor other students. The extra credit for early submissions is discussed elsewhere in this syllabus. Discretionary extra credit is available for exceptional project performance.

If you wish to obtain extra credit for voluntarily tutoring other students, please connect with other students on Microsoft Teams or in the Cougar Courses discussions. Once you have identified students in need of tutoring, please email me by the start of Week 3 with the following information: your name, names of students whom you have agreed to tutor, and the total number of hours per week that you plan to offer tutoring to those students. The extra credit computation for tutoring will be as follows:

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| **Total # of Hours of Tutoring for the Entire Semester (Hours/Week \* 15 weeks)** | **Extra Credit (added to your final course grade)** |
| 5 hours (~ 20 min/week) | 0.50% |
| 6-10 hours (~40 min/week) | 1% |
| 11-15 hours (~1 hr/week) | 2% |
| 16-20 hours (~1.33 hrs/week) | 2.5% |
| 21-30 hours (~2 hrs/week) | 3% |
| 31-40 hours (~2.6 hrs/week) | 4% |
| 41-50 hours (~3.3 hrs/week) | 5% |

To receive extra credit, please submit a final report to me via email by December 14th at 11pm that breaks down your tutoring hours for each week, which student(s) you tutored, and a general indication of what you tutored those students on (i.e. Linux CLI, AWS Security Management, etc.). In addition to the extra credit points, I will write a single letter of recommendation for tutors at or above the 3% extra credit level to a **specific, future employer or graduate program**. I am unable to write letters for those below the 3% level.

For those who request and attend tutoring sessions with your peer tutor, I am offering a flat 0.25% extra credit for leveraging your peers for assistance. Be sure that your tutor has your name in their report to receive credit. If your name is not in the tutor's report, then no extra credit will be given.

## Grading Standards

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| **Assignment** | **Percentage of Final Grade** | **Points Per Assignment** | **Total Points** |
| Discussions (15) | 30% | Each discussion is worth 2 points | 30 points |
| Homework (7) | 35% | Each homework is worth 5 points | 35 points |
| Final Project (1) | 35% | N/A | 35 points |
| TOTAL | 100% |  | 100 points |

Grades will be posted throughout the term in Cougar Courses.  **If you find any problem with your grade, you must inform me within one week from the date that the score is posted.  After one week, scores will not be reviewed.  In the case of a score dispute, the entire assignment will be reviewed, not just the question(s) in dispute.  The score could go up, down, or remain the same.** **No scores will be reviewed after the start of Week 15.**

### Letter Grades

A (94-100%), A- (90-93.9%), B+ (87-89.9%), B (83-86.9%), B- (80-82.9%), C+ (76-79.9%), C (73-75.9%), C- (70-72.9%), D+ (67-69.9%), D (63-66.9%), D- (60-62.9%), F (0-59.9%)

### Attendance/Participation Policy

This is an asynchronous course, so I do not monitor attendance.  You are expected to watch the lectures independently and ask any questions during the optional live Q&A or in the discussion provided in Cougar Courses.

## Requirements for Participation

Students are expected to actively participate in the discussions each week. Your grade will be adversely affected if you don’t actively participate each week. **No late or makeup discussions will be accepted.  The reason for lateness is irrelevant, these are not accepted late. If you do not submit on time, then you did not participate for that week. If you have a documented medical reason, then you need to let me know within 2 days of the due date and we can work out an alternative assignment.**

## Student Collaboration Policy

Students are encouraged to form virtual peer tutoring groups and work collaboratively to solve challenges in the homework and project assignments, but each student must submit their own work for credit. **If you submit someone else's work as your own, then the penalties will be severe.**

## Policy on Late/Missed Work

It is your responsibility to ensure that you submit assignments on time.  I am not required to accept late assignments, but I have elected to accept **HOMEWORK** assignments late subject to a grading penalty.  **Weekly discussions and the Final Project may NOT be submitted late. If you expect that you will not finish the Project by the due date, but are otherwise passing the course, then you may request a temporary grade of Incomplete (I) and complete an Incomplete contract. If you have a documented medical emergency that prevents you from completing the project, then we can discuss your Incomplete (I) options in accordance with University policies.**

### Late Penalties (Homework Only):

Up to 14 full days late: Grace period with no penalties.

15 or more days late: 30% penalty (i.e. if you earned 5 points on the assignment, then you will have 1.5 points in penalties and only receive 3.5 points. If you earned 2 points on the assignment, then you will have 0.6 points in penalties and only receive 1.4 points)

To discourage procrastination and encourage early submissions, I will also offer early submission extra credit to students for HOMEWORK and the PROJECT.

### Early Submission Extra Credit (Homework & Project Only):

Less than 2 full days early: No extra credit

2 to 7 full days early: Your score on the assignment is raised by 5% (i.e. a perfect 5 becomes a 5.25).

More than 7 full days early: Your score on the assignment is raised by 10% (i.e. a perfect 5 becomes a 5.5).

**There are no makeup assignments or resubmissions in this course.**

## Credit Hours Policy

Students are expected to spend a minimum of three hours outside of the classroom each week for each unit of credit engaged in learning.  This course is a 4-unit course, so you should expect to spend 12 hours per week on this course outside of class.

## Academic Honesty

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the [Student Academic Honesty Policy](http://www.csusm.edu/policies/active/documents/Academic_Honesty_Policy.html). All assignments must be original work, clear and error-free. All ideas/material that are borrowed from other sources must have appropriate references to the original sources. Any quoted or paraphrased material should give credit to the source and be punctuated accordingly using either the APA (in-text citation and references page) or MLA (footnotes and references page) formats.

Academic Honesty and Integrity: Students are responsible for honest completion and representation of their work. Your course catalog details the ethical standards and penalties for infractions. There will be zero tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor’s attention. The instructor reserves the right to discipline any student for academic dishonesty, in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole.

## ADA Statement

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the [Office of Disability Support (DSS)](http://www.csusm.edu/dss/). This office is located in Craven Hall 4200 and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Email inquiries can be sent to [dss@csusm.edu](mailto:dss@csusm.edu). Students authorized by DSS to receive reasonable accommodations should meet with me during my office hours in order to ensure confidentiality.

## Contact Information for Technical Support Assistance

For questions or assistance with a technical part of the course, your campus username/password, your campus email, etc., please contact the [CSUSM Student Technology Help Desk](http://www.csusm.edu/sth/index.html). Email inquiries can be sent to [sth@csusm.edu](mailto:sth@csusm.edu). Please review update Technology Help Desk information posted in Cougar Courses.

Course Schedule

| Week | Date | Topics/Assignments |
| --- | --- | --- |
| 1 | 31-Aug to 6-Sep | Module 1: Course Introduction, Introduction to Cloud, setting up your Cloud Accounts, Amazon and Google Graphical Cloud Consoles, Provisioning Your First Virtual Machine |
| 2 | 7-Sep to 13-Sep | Module 2: Command Line and Linux Basics |
| 3 | 14-Sep to 20-Sep | Module 3: Cloud Service Delivery and Deployment Models, Amazon and Google Command Line Interfaces |
| 4 | 21-Sep to 27-Sep | Module 4: Cloud Identity Management, Cloud Networking, Secrets Management |
| 5 | 28-Sep to 4-Oct | Module 5: Source Code Repositories and Cloud Automation |
| 6 | 5-Oct to 11-Oct | Module 6: Cloud Automation |
| 7 | 12-Oct to 18-Oct | Module 7: Catch-Up |
| 8 | 19-Oct to 25-Oct | Module 8: Cloud Cost Management |
| 9 | 26-Oct to 1-Nov | Module 9: Logging and Event Management |
| 10 | 2-Nov to 8-Nov | Module 10: Governance and Compliance / Policy as Code |
| 11 | 9-Nov to 15-Nov | Module 11: Executive-level Presentation Skills |
| 12 | 16-Nov to 22-Nov | Module 12: Project |
| 13 | 23-Nov to 29-Nov | Module 13: Project / **Thanksgiving Week**  **NO GROUP TUTORING SESSION THIS WEEK** |
| 14 | 30-Nov to 6-Dec | Module 14: Project |
| 15 | 7-Dec to 13-Dec | Module 15: Project |
| 16 | 14-Dec | Final Project is Due at 11pm on 14-Dec |