CSE 491-002: Information Management and the Cloud

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Office Hours: TBA   Lectures: Tue/Thur 10:20am-11:40am
Office: EB Rm 3145   Class Room: Plant and Soil Sciences A155

Course Description

Introduction to information management and cloud computing.

Course Objectives

To develop an understanding of the systems commonly used for information management. To apply information management systems to software application development. To apply information retrieval methods. To develop an understanding of cloud computing methodologies. To apply cloud computing to software application development. To understand security and privacy implications of cloud computing and client server applications.

Course Status

This course is designed to be a new required 300 level course (CSE 380) in MSU's CSE curriculum. The course is running as a 491 this semester while its official designation is approved. This course will still count as a 400 level technical elective while it is CSE 491. Because this is the first time this course is being offered, things might change throughout the semester as I see how things are going. Any changes will be announced to the class via email or Piazza. At some points I might refer to this class as CSE 380, please forgive me in advance for this mistake, as this is what I have been calling the class for months.

Teaching Assistants

Abigail
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Haobo
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Potential Materials

Cloud Computing Concepts, Technology & Architecture 2019 Printing
Zaigham Mahmood and Ricardo Puttini
ISBN: 978-0-13-338752-0

A First Course in Database Systems Third Edition
Jeffrey D. Ullman & Jennifer Widom
ISBN: 978-0-13-600637-4

These textbooks are not required. I do not recommend that you buy them, as I did not follow them exactly, and the lectures will provide all the information you need. However, if you do want to purchase the books, older versions of the textbook will work, and are encouraged due to price.

Prerequisites

CSE 232

Piazza / D2L

Link to our Piazza:
https://piazza.com/msu/spring2024/cse491002/home

We will be using D2L for grading and posting documents related to the course. You should currently be added to our D2L. If you are not, let me know ASAP.

Piazza Policy: Questions on Piazza will be actively monitored and answered by instructors during the following times:

Mon-Thur: 9am-7pm
Fri: 9am - 4pm

During the posted times you can expect an answer within approximately 2 hours. We may answer questions during other times if available, but it will not be actively monitored outside of the posted times.

Questions regarding projects will not be answered on the project due date after 5pm. You will have at least two weeks to complete each project, so it is in your best interest to start early.

Office Hours

The instructors will hold regular office hours in-person. These times can be found at the top of this document. Additional times can be scheduled by email if the regular times do not fit your schedule.

Questions regarding project grading must be directed to the TAs.

Because there are over 50 students in the class this semester, we will have a strict time limit of 10 minutes per student. If there are people waiting in line you can rejoin the office hours line after your 10 minutes. We will be ending office hours at the specified time, so it is therefore in your best interest to come early to office hours and to come well before the project due date to make sure you can get any help that you might need.

Course Work

You can expect coding projects, quizzes, exams, and a final exam this semester.

Coding Projects

There will be four coding projects this semester. These coding projects will be completed individually and will give you experience in developing common applications used in cloud computing scenarios.

Project specifications will be released on D2L and the method for submission is TBA. Submission instructions can be found on each specific project specifications, once it is finalized.

If the code you submit does not run, you will be given a zero for the assignment. No exceptions.

No extensions will be given for coding projects. Collaboration on coding projects or plagiarism is not allowed in any form. Anyone found to have violated MSU's Integrity of Scholarship and Grades policy will be given a zero for the course.

Projects in this class will often build off of previous projects. We will not be releasing solutions to the projects, so if you do not finish a project, you will still be responsible for completing the project so you can continue with the next project. However, during office hours after the project deadline we will give you more explicit advice for you to finish the previous project quickly.

Quizzes

Throughout the first part of the semester we will have quizzes during class. These quizzes will cover everything in the class before the current class period. For example, during a Thursday class, if we have a quiz, the material on the quiz will come from any lecture from the beginning of the semester to the previous Tuesday.

These quizzes will take around 40-50 minutes and test your understanding of the concepts covered during the class.

These quizzes will be used to test your knowledge of SQL querying as well as other topics relating to databases. Sample databases and query questions will be released to practice, but will not be graded. The sample questions released will be a great way for you to prepare for the quizzes.

Any answers to a quiz with unreadable handwriting will be marked as incorrect.

Exams

We will have three exams in the course, spread throughout the semester. These exams serve as checkpoints for your progress in the class, as we will not have a traditional midterm exam.

Each exam will be split into two parts: fundamentals, and application. The fundamentals portion of each exam will contain questions that test your fundamental knowledge of what has been taught in the course. The application portion of each exam will be testing your ability to take what we've learned in class and apply it to different scenarios.

The fundamentals portion of each exam will contain questions on your fundamental understanding of everything taught in the class up to that point. This means that you need to be constantly reviewing concepts throughout the semester, as a topic covered in week 1 could be in the fundamentals section of Exam 3. The fundamentals questions will not be trying to trick you, but will make sure that you are keeping up with the material. Because of this, you are required to achieve a 75% average on the fundamentals sections of all three exams. This means that if you take the average grade of your fundamentals portions of each exam, it must be at or above 75%. If you cannot achieve this average score, then you will not be eligible to pass this course.

This percentage may change as the semester progresses, but it will not be any higher than 75%. It may only be adjusted to be lower. Any changes to this will be communicated through email or Piazza.

Any answers to an exam with unreadable handwriting will be marked as incorrect.

Final Exam

The final exam will be on Friday, April 26th from 7:45am to 9:45am in our normal lecture room.

Similar to our exams, the final exam will be split into two parts: fundamentals, and application. Also similar to the exams, you need to achieve a score of 75% on the fundamentals portion of the exam to be eligible to pass this course. The final exam will be cumulative, covering material from the entire semester.

The required score for the fundamentals portion of the final exam maybe be adjusted as the semester progresses. Any changes will be sent to the class either by email or Piazza.

Any answers to an exam with unreadable handwriting will be marked as incorrect.

Extenuating Circumstances

In extreme circumstances we will work with you to ensure you do not fall behind in class. If you have an unexpected emergency and will miss class you must email the Instructor with a written explanation and supporting documentation of the emergency **before** the class. We will be unable to help you if you do not inform us before class time.

Detailed below in the Course Policies section of this syllabus are MSU's Grief Absence and Religious Observance Policies. Any circumstances not covered by these policies will be left to the discretion of the Instructor. As a note, trips, including interviews will not be considered an excused absence. Students must schedule other activities so as to avoid conflict.

Grading Distribution

Your final grade will be based on the course work described above, and their weights towards your final grade are below.

40% Projects (10% each)
15% Quizzes (5% each)
30% Exams (10% each)
15% Final Exam

Grading Policy

The typical Michigan State grading scale (below) will be used. We reserve the right to curve the scale dependent on overall class scores at the end of the semester. Any curve will only ever make it easier to obtain a certain grade.

$\geq$ 90.00% = 4.0
85.00% - 89.99% = 3.5
80.00% - 84.99% = 3.0
75.00% - 79.99% = 2.5
70.00% - 74.99% = 2.0
65.00% - 69.99% = 1.5
60.00% - 64.99% = 1.0
< 60.00% = 0.0

In order to pass this course, you must achieve a minimum score of 50% of the points on the projects and and 50% in each category of the course, including projects, quizzes, exams, and the final exam. This policy is in addition to the policy regarding the 75% requirement on the fundamentals portion of the exams.

Also note that this does not mean that getting exactly 50% on all the categories in the course means you will pass the course. If you have a total grade below 60% then you will not pass. The 50% is saying that to be eligible to pass the course you need to meet those thresholds.

Some General Advice for Success in CSE 491

The projects, quizzes, and exams in this class assume that you are working throughout the semester and not waiting until the last minute to do your work. You will have two weeks to do all of the projects, and I highly suggest that you start early. If you try to complete these projects the night they are due, you will likely be unable to finish them. Many of the projects build off of each other, so failure to finish a project will result in extra work to complete the next project. We will not be releasing solutions to projects, so if you do not complete a project by the deadline, you will still need to finish it to continue with the next project. After the deadline we will give you more explicit advice during office hours to help you complete the previous project quickly, but it will still be up to you to finish the previous project. If, for any reason, you do not finish a project, please come to office hours early and we will help you as much as we can to make sure you finish the previous project.

The quizzes and exams are worth a significant amount of your final grade, and can contain anything covered during class. This assumes that you will be studying new material every week, and reviewing old material throughout the semester. This will ensure that you are not simply cramming for a final exam and not actually learning. If you stay on top of the material as the class progresses you should have little trouble with the quizzes and exams. However, if you do not stay on top of the material as the class progresses you will find the quizzes and exams very difficult.

Course Policies

Attendance Policy

Students are expected to attend class and participate in discussions. A student who needs to miss class , be late for class, or leave class early, due to an irresolvable conflict, must notify the instructor by email in advance. Any missed quizzes or exams will not be able to be made up.

Email Policy

We require all emails sent to class instructors to come from your official MSU email. Emails coming from any other address will not be considered.

All emails must have a subject line that starts with "[CSE 491]" to ensure they are not lost. Failure

to include this in the subject of your email might result in no response or significant delay in response from instructors.

Integrity of Scholarship

The Department of Computer Science and Engineering expects all students to adhere to MSU's policy on Integrity of Scholarship and Grades, which includes the statement, "...all academic work will be done by the student to whom it is assigned, without unauthorized aid of any kind" (Academic Programs, General Procedures and Regulations). General Student Regulation 1.00 in the student handbook (Spartan Life) also addresses this issue. The complete text of the University policy is posted under: University Policy on the Integrity of Scholarship and Grades. Students who violate this policy will receive a failing grade in the course.

Anyone found to be using a computer or phone during a quiz will be automatically considered to have committed academic dishonesty. This will result in an ADR being filed and an automatic failure of the course. Do not even take your computer or phone out during quiz, if your phone or computer is on your desk, then it will automatically be considered academic dishonesty.

Chegg and Similar Sites Policy

This course has adopted the Chegg and Similar Sites policy. Submission of student work (e.g. assignments and/or exam solutions) based on those found on Chegg, Brainly, Quizlet, and other similar websites will result in an Academic Dishonesty Report (ADR) and an automatic failing grade of zero (0.0) for the course. The ADR for students personally posting questions from assignments or exams to these sites will request additional sanctions.

Grief Absence Policy

Michigan State has a Grief Absence Policy. If there are any unfortunate circumstances related to MSU's Grief Absence Policy that will lead to absences you can follow the guidelines given in the link above. After you've contacted the Associate Dean and we've received confirmation we will make accommodations within reason to help you remain in the class.

Religious Observance Policy

Accommodations will be made for religious observances in line with MSU's Religious Observance Policy. As religious observances are usually known when the semester begins you must request accommodation at the beginning of the semester.

VISA (Verified Individualized Services and Accommodations)

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at (517) 884-RCPD or on the web at rcpd.msu.edu. Once a student's eligibility for an accommodation has been determined, they are issued a Verified Individual Services Accommodation (VISA) form. Please inform the Instructor at the start of the semester as soon as possible if you have a VISA form.

Changes to this Syllabus

We reserve the right to make changes to this syllabus if the need arises. If this occurs the instructors will provide notification by email or Piazza of the changes before they are made.

Class Topics

Introduction to Database Systems
Data Formats
Data Models
SQL Querying
Database Design
Optimizing Information Retrieval
Data and Database Security
Motivation and Use Cases of the Cloud
Major Offerings of the Cloud
Containerization
APIs
Microservices
Serverless Computing
Cloud Security

Tentative Schedule of Major Dates

Date	Event
January 23rd	Quiz 1
February 1st	Quiz 2
February 15th	Quiz 3
February 16th	Project 1 Released
February 22nd	Exam 1
March 6th	Project 1 Due
March 8th	Project 2 Released
March 14th	Exam 2
March 20th	Project 2 Due
March 22nd	Project 3 Released
April 3rd	Project 3 Due
April 5th	Project 4 Released
April 11th	Exam 3
April 17th	Project 4 Due
April 26th	Final Exam

We reserve the right to make changes to this timeline. If any changes occur we will notify the class by email or Piazza.