# CS331E: Elements of Software Engineering II
# Unique Number: 52410, 52415
# Instructor: Dr. Fares Fraij

## Spring 2021 – Course Syllabus
## General Information

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**Course Description**

This is an advanced course in software engineering. It will include the creation of a dynamic website with a database backend using tools such as Digital Ocean or Google Cloud Platform, Bootstrap, Flask, Namecheap, PostgreSQL, RESTful APIs, Slack, and SQLAlchemy. It is also focused on using tools to improve the quality of software development, including automated builds with make, source control with git and GitLab, unit testing with unittest, code coverage with coverage, continuous integration with GitLab CI, and automated documentation with pydoc.

**Prerequisites**

Computer Science 330E.

**Lecture Time and Location**

Lectures will be recorded and uploaded to Canvas. But I highly recommend you to take notes during the lecture.

**T Th** 09:30 a.m.- 11:00 a.m. **online** (52410)
**T Th** 11:00 a.m.- 12:30 p.m. **online** (52415)

**Textbooks**

The following textbook is required for reference:

- Database Design with UML and SQL

**Instructor**

Fares Fraij

Office hours will be conducted online using Zoom. To participate in an office hour, you can access the office hours on Zoom via Canvas (go to **Canvas > Zoom)**.

- Office hours: **T TH** 1:00 p.m.- 2:00 p.m. **online via Zoom**
- Contact: fares@cs.utexas.edu

*Note*: Most questions should be submitted to Piazza rather than by sending an email to the instructor.

**Teaching Assistants**

Office hours will be conducted online using Zoom. To participate in an office hour, you can access the office hours on Zoom via Canvas (go to **Canvas > Zoom)**.
TBA

**Grade Basis**

Each student's overall raw score, out of 1000 points, is distributed as follows.

- Projects: **360 points**. (**3** projects: **120 points** for each project).
- Technical reports: **180 points.**
- Assignments: **300 points.**
- Quizzes: **160 points.**

**Letter Grade**

The mapping from overall raw scores to letter grades will depend somewhat on the overall performance of the class. The nominal cutoffs are as follows.

A/A- : 940
A-/B+ : 900
B+/B : 870
B/B- : 840
B-/C+ : 800
C+/C : 770
C/C- : 740
C-/D+ : 700
D+/D : 670
D/D- : 640
D-/F : 600

These nominal cutoffs will not be increased; for example, a student achieving a raw score of 940 is guaranteed to receive an A in the course. However, these cutoffs might be lowered if necessary in order to improve the grade distribution.

## Student Guidelines

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**Time**

This is course includes significant amount of self-learning. Each student should continuously and constantly be reading and practicing. To do well in this class, you should expect to commit an average of **7 quality hours** per week outside of class as follows 2 hours per week of reading/studying and 5 hours per week of programming. You are expected to write up around **1,000 lines of code**.

**Materials**

The **syllabus**, the **schedule**, the **course material**, and the **projects** of the course are available on-line and can be accessed through the **instructor's web page**. **Additional course material** will be made available through Canvas.
You are **responsible** for **knowing** about all the **material** distributed for this class, whether it is mentioned in the **syllabus**, posted on the **class website**, posted on **Canvas**, posted on **Piazza**, or announced **during lectures**.
You should also expect a disconnect between the lecture material and the projects specially when working in groups to build a website using many tools that may not be taught.

**Self-Learning**

This course involves **various software development tools**. I am not expert in many of them. In class, we'll introduce the **basics** of some of the **tools**, but you also need to conduct **significant self-learning**.

**Piazza**

- **Piazza**, **Canvas** and **Zoom** will be the main **media of communication** between the instructor and the students.
- You are responsible for **checking Piazza regularly** and making sure you read **all** the posts.
- You receive **extra** credit for **answering** questions on Piazza.

**Attendance and In-class participation**

- Attendance is **mandatory**. You are expected to **show up** and **stay** for the whole class.
- There will be frequent in-class **tasks** and **participation.**
- I'll present a piece of code and ask you some questions about it.
- The goal of participation is to **increase** the level of **interaction** in the class and help you **learn**.
- Therefore, you are not responsible to come up with a correct answer.
- I'll also split students into groups to do some in-class work.

**Assignments**

- There will be several assignments throughout the semester.
- Assignments **must** be **submitted** in the specified file format.
- After submitting your assignment, **make sure** that your submission has been **properly uploaded**.
- No late assignments will be accepted.

**Quizzes**

- The purpose of the daily quizzes is to ensure students **read class material** and to **take attendance**.
- Coming to class and participating in class is of high value.
- If you **take the quiz and leave or don't answer when calling your name for participation**, I'll give you **a zero for the quiz**.

**Office Hours**

If you encounter any problems with the course material, you are encouraged to contact the instructor and/or the teaching assistants during office hours. However, if you prefer to send a question, please do so via Piazza rather than an email to the instructor or the teaching assistants.

**Reading**

There will be **extra readings** assigned before almost every class. Each student should **read** the assigned material **before** watching the corresponding class video.

**Regrading Policy**

- The TAs will grade and post the grades of the projects/assignments/reports within **one-week**.
- Piazza or Canvas notifications will be made within 24 hours of the projects grades being released, indicating which TA graded each project/test.
- After receiving your grades for **projects**, **assignments**, or **reports**, you have **only one week** to contest your grades.
- To request a regrade, prepare a text file with the following information:
    - Your **name**, **UT EID**, and **unique course ID** (e.g. 52410)
    - The **project/assignment number** you want regraded or point out a specific problem associated with your grade for example scores were added incorrectly.
    - Why you think the grade was in error (broken down by the problem, if possible)
- Send this information to the TA who graded the question either by **email** or Canvas message.
- If the **one week** time frame is **passed**, **no changes** in grades will be made.

*Note:* that regrades will not be considered for "judgement calls" (e.g. you think a mistake should only be -5 points, but it was marked as -7).

**Academic Honesty**

Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on academic dishonesty will be strictly enforced. For further information please visit the Student Judicial Services Web site: Student Judicial Services.

Programming assignments will be compared using Moss.
You **may** share **design ideas** with your fellow students. You **may not** share **code** in **any way** with your fellow students.

Sending the quiz code, the questions, or the answers to anyone is a violation of the honor code of the University.

The penalty for academic dishonesty will be a course grade of **F** and a referral of the case to the Dean of Students. Further penalties, including suspension or expulsion from the university may be imposed by that office.

**Warning**

**Class recordings** are confidential to the class and only for educational purposes, they should not be shared outside the class in any form, and any violation of this will be subject to Student Misconduct proceedings.

**Incompletes**

To be eligible for an **incomplete**, you must have a letter grade of **C** or better and a written, verifiable excuse for missing the last test. This is a **necessary** but **insufficient** condition for receiving an incomplete.

**Accommodations for Religious Holidays**

By UT Austin policy, you must notify me of your pending absence at least **14 days** prior to the date of observance of **a religious holy** day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

**Disabilities**

Students with disabilities may request an official letter outlining authorized accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, you can either call 512-471-6259 or visit the following website Services for Students with Disabilities

You must provide this letter to me by the **12th** class day. **Project deadlines** will **not** be **extended** for special-needs students.

## Knowledge Assessment:

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**Projects**

- There will be **3** projects.
- The projects **must** be done in a **group**, with **pair programming**. **One** solution will be turned in for the **group**.
- Each member will assign cooperation points to each teammate based on their contribution to the group.
- The you average of cooperation points must be above 50% in every phase.
- Three less than 50% average of cooperation points will result in a one letter grade drop in the final course grade.
- A project that does **not** run will count as **zero**.
- For every **day** that a project is **late**, **one-fifth** of the points will be lost, so that in **five days** it will be worth **zero**. **Corrupt** or **incomplete** submissions will count as **one day** late. You **must** e-mail the grader when submitting late or re-submitted projects.
- The solution to the project **will not** be provided. The grader will grade, comment, return, and post the grade of the project within **one week**. The grade can **only** be disputed within the following **one week**. All grade disputes must be made in **writing** by **e-mail** to the grader with supporting evidence or arguments.
- Projects will **first** be graded without regard to **penalties** or **bonuses**. After that grade is determined, **penalties** will be subtracted and **bonuses** will be added, up to the **max** score.
- The solution to the project **will not** be provided. The grader will grade, comment, return, and post the grade of the project within **one week**. The grade can **only** be disputed within the following **one week**. All grade disputes must be made in **writing** by **e-mail** to the grader with supporting evidence or arguments.
- All group members must participate in the project's presentation. You are responsible to check Piazza frequently to identify the day/time slot for your presentation.

**Assignments**

- There will be several assignments throughout the semester.
- You must follow the instructions on Canvas, Piazza or Zoom recordings for the details of the assignments.
- No late assignments will be accepted.

**Quizzes**

- There will be **regular** quizzes throughout the semester.
- Accessing the internet or any application on your machine during the quizzes is prohibited.
- We may have **more than one** quiz per class.

- Each quiz may cover the material of the **previous** class and/or the **current** class and the assigned readings.
- There will be **no** make up quizzes **for any reason**.
- The **lowest 4 quizzes** scores will be **dropped**.

**Report**

- You must work in a group to prepare and present a tutorial.
- The tutorial must introduce a tool that can be used to extend the class's projects.
- No late reports will be accepted.
- All group members must participate in the report's presentation. You are responsible to check Piazza frequently to identify the day/time slot for your presentation.

**Extra Credit**

A student can earn an additional **5 pt** for filling out the class **evaluation** at the end of the term.

## Tentative Course Schedule (subject to change)

| *Week* | *Mon* | *Tue* | *Wed* | *Thu* | *Fri* |
|---|---|---|---|---|---|
| **1. Jan 16** | | First class<br>---<br>Syllabus<br>---<br>Introduction | | HTML | |
| **2. Jan 23**<br>makefile<br>---<br>Git Guide | | Project #1<br>---<br>CSS<br>Forms<br>JavaScript | | Flask<br>---<br>Assignment #1 | |
| **3. Jan 30**<br>Flask tutorial | | Flask - Jinja template engine | | Google Cloud Platform (GCP) | |

| *Week* | *Mon* | *Tue* | *Wed* | *Thu* | *Fri* |
|---|---|---|---|---|---|
| **4. Feb 6**<br>Bootstrap | | Bootstrap | | Introduction to Database<br>ER Diagrams<br>---<br>Assignment #2 | |
| **5. Feb 13**<br>Python API Tutorial | | Extract Data from an API | | Project #1 | |
| **6. Feb 20**<br>Database Normalization | | Project #2 | | Mapping ER to schema<br>Mapping Algorithm<br>Normalization | |
| **7. Feb 27**<br>DD: Basics of UML and SQL | | Postgresql | | Setup Postgresql on GCP<br>Flask SQLAlchemy setup<br>---<br>Assignment #3 | |

| *Week* | *Mon* | *Tue* | *Wed* | *Thu* | *Fri* |
|---|---|---|---|---|---|
| **8. Mar 6**<br>DD: UML Design | | Flask SQLAlchemy setup<br>1.one_to_many | | Flask SQLAlchemy setup<br>2.one_to_one<br>3.many_to_many<br>---<br>**Due date for suggesting a Technical Report topic** | |
| **9. Mar 13** | | **Spring Break** | | **Spring Break** | |
| **10. Mar 20** | | Project #3 | | ShowDatabases.[sql \| html]<br>ShowGrants.[sql \| html]<br>Create.[sql \| html] | |
| **10. Mar 27**<br>DD: SQL Technique | | Select.[sql \| html]<br>---<br>Join.[sql \| html]<br>---<br>notes_1.txt | | Joins.[sql \| html]<br>---<br>Project #2<br>---<br>notes_2.txt | |

| *Week* | *Mon* | *Tue* | *Wed* | *Thu* | *Fri* |
|---|---|---|---|---|---|
| **12. Apr 3** | | Subqueries.[sql \| html]<br>---<br>notes_3.txt | | Sets.[sql \| html]<br>---<br>Aggregation.[sql \| html]<br>---<br>Technical Report | |
| **13. Apr 10** | | Insert.[sql \| html]<br>---<br>Delete.[sql \| html]<br>Update.[sql \| html] | | **Presentations**<br>(Technical Report)<br>---<br>Assignment #4 | |
| **14. Apr 17** | | **Presentations**<br>(Technical Report) | | **Presentations**<br>(Technical Report)<br>---<br>Project #3 | |
| **15. Apr 24** | | **Presentations** | | **Presentations** | |

| *Week* | *Mon* | *Tue* | *Wed* | *Thu* | *Fri* |
|---|---|---|---|---|---|
| **16. May 1** | | **Presentations** | | **Presentations** | |