

# Syllabus

## Course Information

Course Number: CSCE 606  
Course Title: Software Engineering  
Section: 600, 601  
Time: 600: 1:50pm – 2:40pm  
601: 3:00pm – 3:50pm  
Location: HRBB 124  
Credit Hours: 3

## Instructor Details

Instructor: Philip C. Ritchey  
Office: PETR 423  
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Office Hours: [See Canvas](#)

## Teaching Assistants

Akshit Kharbanda, [akshit.kharbanda@tamu.edu](mailto:akshit.kharbanda@tamu.edu)  
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## Course Description

Development of advanced concepts in software engineering; software development environments as a mechanism for enhancing productivity and software quality; the classification, evaluation and selection of methodologies for environments; rapid prototyping and reusability concepts; artificial intelligence techniques applied to software engineering.

## Course Prerequisites

The official prerequisite is CSCE 431 or approval of instructor. In practice, the necessary prerequisite is to be experienced in object-oriented software development.

## Special Course Designation

This course meets the Software breadth course requirement for Computer Science graduate degrees.

## Course Learning Outcomes

Study of software construction as an engineering activity. Review of life cycle models and their phases, including topics in requirements elicitation, system specification and design, configuration management, and testing. Topics in cost estimation, software reuse, analyzing software, formally specifying software, software modularity, and software design methodologies (and methodologies for design of software families).

The course topics will include:

- software lifecycle and software processes
- requirements elicitation and specification

- modeling software
- software design at various levels
- coding practices, interfaces, modularity, contracts
- verification and validation, testing
- managing a code base (version control, organizing releases, etc.)
- testing (unit and regression testing)
- practical designs (typical software architectures, design patterns, API designs)
- effort estimation

The learning objectives of the course are to (1) gain understanding of the difficulties and risks of software projects, and knowledge of the commonly applied techniques and methods to mitigate those risks and to increase the likelihood of success of software projects; (2) learn new and increase existing skills related to practical software construction; and (3) gain familiarity with the current research problems in software engineering.

## Textbook and/or Resource Materials

*Engineering Software as a Service: An Agile Approach Using Cloud Computing*, Armando Fox and David Patterson, Strawberry Canyon LLC, 2020. The textbook web site (with other class information) is [here](#). The second edition in PDF is [here](#). It is still being edited. The Kindle and paperback version is available at [Amazon](#).

The course will be hosted on [Canvas](#). We will use [Piazza](#) for question and answers. We will use many other cloud-based resources during the course.

## Grading Policy

Homework	50%
Project (Team)	50%

The project grade will consist of iteration reports, final report and final poster presentation and project demonstration.

Grades are assigned based on the standard curve: 90-100 A, 80-89 B, 70-79 C, 60-69 D, <60 F. If necessary a curve will be used.

## Late Work Policy

Late work may be permitted if negotiated with the instructor in advance. Note that this is separate from makeup work due to an excused absence, described below.

## Course Schedule

A tentative lecture schedule is given below. Homework assignments will correspond to the lecture material, and will be announced. There will be multiple project iteration reports, before the final poster and project demos, which will take place on Zoom and recorded sessions. The corresponding textbook reading will be updated as the second edition of the textbook is updated.

Date	Topic	Textbook Reading
19 Jan	Introduction to the Course	
21	TBA	
24	Introduction to SaaS, Agile, and Cloud	1.1 – 1.5
26	Introduction to SaaS, Agile, and Cloud	1.6 – 1.12
28	Ruby	2.1 - 2.4
31	Ruby	2.5 - 2.8
2 Feb	Ruby	
4	TBA	
7	Client-Server Architecture, HTTP, URIs	3.1 – 3.3
9	Service-Oriented Architecture, REST	3.4 – 3.9
11	MVC Architecture	4.1
14	Rails	4.2 – 4.3
16	Rails	4.4 – 4.5
18	Rails	4.6 - 11
21	BDD and User Stories	7.1 – 7.3
23	Points and Velocity	7.4 – 7.5
25	BDD and Cucumber	7.6 – 7.11
28	Cucumber and Capybara	
2 Mar	Cucumber and Capybara	
4	TBA	
7	TDD, RSpec and Ruby	8.1 – 8.4
9	RSpec on Rails	8.5
11	More TDD	8.6 – 8.12
14 – 18	Advanced Rails	5.1 – 5.3
21	Associations	5.4 – 5.7
23	Legacy Code	9.1 – 9.9
25	Agile Teams	10.1 – 10.9
28	JavaScript 1: Intro, DOM	6.1 – 6.4
30	JavaScript 2: AJAX	6.5 – 6.8
1 Apr	TBA	
4	JavaScript 3: AJAX, JSON	6.9 – 6.12
6	Design Patterns 1: S	11.1 – 11.3
8	Design Patterns 2: O, L, I	11.4 – 11.6
11	Design Patterns 3: D, 6S	11.7 – 11.11
13	Dev/Ops 1: Three-Tier Arch., SLOs	12.1 – 12.3
15	Dev/Ops 2: Caching and Indices	12.5 – 12.8
18	Dev/Ops 3: Releases, Security	12.4, 12.9 – 12.12
20	TBA	
22	TBA	
25	TBA	

27	TBA	
29	TBA	
2 May	TBA	
3	TBA	
9	Poster/Project Demos	

## University Policies

### Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

### Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" ([Section 20.1.2.3, Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).

## Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

## Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](#) (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).

## Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org).

## COVID-19 Temporary Amendment to Minimum Syllabus Requirements

The Faculty Senate temporarily added the following statements to the minimum syllabus requirements in Fall 2020 as part of the university's COVID-19 response.

### *Campus Safety Measures*

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- Self-monitoring—Students should follow CDC recommendations for self-monitoring. **Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.**
- Face Coverings—[Face coverings](#) (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the [Face Covering policy](#) and [Frequently Asked Questions \(FAQ\)](#) available on the [Provost website](#).
- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the [Student Conduct office](#) for sanctions. Additionally, the faculty member may choose to teach that day's class remotely for all students.

### *Personal Illness and Quarantine*

Students required to quarantine must participate in courses and course-related activities remotely and **must not attend face-to-face course activities**. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence (See [Student Rule 7, Section 7.2.2.](#)) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7.