Course title and number	CSCE 431: Software Engineering
Term	Winter 2019
Meeting times and location	MTWRF 8am – 12pm in SUTD Think Tank TBD
	31 Dec. 2018 – 11 Jan. 2019

Course Description and Prerequisites

Application of engineering approach to computer software design and development; life cycle models, software requirements and specification; conceptual model design; detailed design; validation and verification; design quality assurance; software design/development environments and project management.
Prerequisites: CSCE 315 or approval of instructor.

Learning Outcomes or Course Objectives

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

Students will:
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.
3. gain familiarity with the current research problems in software engineering.

Prerequisite: You should be experienced in object-oriented software development.

Instructor Information

Name	Philip Ritchey
Telephone number	979-458-1059 (abroad: TBD)
Email address	pcr@tamu.edu
Office hours	TBD and by appointment
Office location	HRBB 326 (abroad: TBD)

Textbook and/or Resource Material

Engineering Software as a Service: An Agile Approach Using Cloud Computing, Armando Fox and David Patterson. ISBN-13: 978-0984881246. Strawberry Canyon LLC, 2016. http://www.saasbook.info.

This book is available in both trade paperback and Kindle versions at Amazon (http://www.amazon.com/EngineeringSoftware-Service-Approach-Computing-ebook/dp/B00CCEHNUM/). The Kindle version is kept up-to-date and includes live links to references and code fragments.

The nature of this class is that no single textbook will cover all the material needed in the course. There are a wide variety of books out there related to software development, and we might draw material from or reference several of them during the class. References to these other books will be provided when possible, but some material might be provided only in class lectures.

Grading Policies

Review the Student Rules regarding Academics at http://student-rules.tamu.edu.

Attendance policy:
You are required to attend every class, arrive on time, and stay the whole time. You are responsible for learning the material covered in class, regardless of your attendance. As this is a study abroad program, your time in class is extremely valuable. Each day of class abroad corresponds to approximately 2 weeks of class during a regular semester.

Late policy:
Late submission beyond the deadline will not receive full credit earned in general, unless a University sanctioned excuse is provided ahead of time. In general, late submission will be penalized with a loss of 25% of the total points earned per day late. Partial credit will be given based on the work submitted. For teamwork, late submissions will affect all team members.

Make-up policy:
Make-ups for quizzes, assignments and exams will be given only under circumstances beyond student's control (a university sanctioned excuse). Prior arrangements with the instructor must be made when feasible and official verification of circumstances necessitating the absence will be required.

Questions about Graded Work:
After grades distributed/returned, there is a one-week time limit to notify the instructor of any questions or concerns in the grading.

Make-up policy:
Make-ups for quizzes, assignments and exams will be given only under circumstances beyond student's control (a university sanctioned excuse). Prior arrangements with the instructor must be made when feasible and official verification of circumstances necessitating the absence will be required.

Grade Weighting:
50%   Project (Team)
15%   Midterm Exam
10%   Readings
10%   Programming Assignments
10%   Quizzes
5%   Class Participation

Grading Scale

The grading scale expected to be used is:

A ≥ 90% > B ≥ 80% > C ≥ 70% > D ≥ 60% > F.

In addition to this, the instructor reserves the right to provide a relative or absolute curve to the final class grade (note that such a curve has not always been applied, and should not be assumed). Also, the instructor may raise the grades of any students very near a borderline based on a subjective evaluation of class participation and effort.

Course Topics, Calendar of Activities, Major Assignment Dates		
Day	**Topic**	**Required Reading**
Before	Introduction to Software Engineering Ruby Intro Rails Intro Project Management	ESaaS Ch. 1 ESaaS Ch. 3 ESaaS Ch. 4 ESaaS Ch. 10
Friday 28 Dec.	8:00am arrive in Singapore Lunch at Expo Welcome Dinner at Din Tai Fung	
Monday 31 Dec.	Behavior-Driven Design Reading 0 Due Iteration 0 Due ICD Blog Address Due Night: Siloso Beach Party	ESaaS Ch. 7 The Future of Software Engineering
Tuesday 1 Jan.	No class Test-Driven Development	ESaaS Ch. 8
Wednesday 2 Jan.	BDD + TDD Reading 1 Due	ESaaS Ch. 7, 8 The Crisis in Software
Thursday 3 Jan.	The Architecture of SaaS Applications	ESaaS Ch. 2
Friday 4 Jan.	Design Patterns Cultural Cooking Class HW 1 Due Reading 2 Due	ESaaS Ch. 11 Development and Deployment at Facebook
Saturday 5 Jan.	Experience Singapore! Sightseeing Tour	
Sunday 6 Jan.	Experience Singapore! Singapore Zoo and Night Safari	
Monday 7 Jan.	Midterm Exam Design Patterns Reading 3 Due Iteration 1 Due	 ESaaS Ch. 11 The Joel Test: 12 Steps to Better Code
Tuesday 8 Jan.	Advanced Rails	ESaaS Ch. 5
Wednesday 9 Jan.	Performance, Releases, Reliability, and Security HW 2 Due Reading 4 Due	ESaaS Ch. 12 API Design Matters or SE at Google
Thursday 10 Jan.	Progress Presentations	
Friday 11 Jan.	Experience Singapore! Farewell Dinner at National Kitchen by Violet Oon Reading 5 Due	 Scaling Ruby on Rails
Saturday 12 Jan.	11:00am depart Singapore	
After 14 Jan. 28 Jan. 11 Feb. 18 Feb.	JavaScript Maintenance, Refactoring, and Agile Project Work Days Iteration 2 Due Iteration 3 Due Iteration 4 Due Final Report and Final Demo Due	ESaaS Ch. 6 ESaaS Ch. 9
TBD	SUTD Lab Tour Hawker Center Food Tour	

Other Pertinent Course Information

Class Meetings:
As a study abroad offering, the course is scheduled for 36 hours of class time while abroad in Singapore. Upon return to TAMU, students will have several weeks to complete the project and deliver the final report and demonstration. The class is presented in a "flipped" format, with lecture material being read or watched by the students before coming to class. Time in class will be spent discussing the readings or videos and working on the programming assignments and project.

Working Environment:
Before arriving in Singapore, students are expected to have their working environment set up. This includes having an Amazon EC2 (students may opt to use Cloud9) or LightSail instance, a Heroku account, Ruby on Rails installed on the EC2/LightSail instance, and having completed the Ruby on Rails and Heroku "Getting Started" tutorials.

ICD Requirement:
Students will keep a journal (either publicly in the form of a blog, or privately in the form of a diary submitted periodically to the faculty leader) that documents their thoughts and experiences while studying abroad. To document fulfillment of the university's International and Cultural Diversity requirement, students will be directed to comment on such topics as their perception of the interconnectedness of their own lives with those of Singaporeans and of the U.S. with Singapore, as well as on their perception of the similarities and differences between Singapore and the U.S. with respect to food, language, traditions, customs, laws, technology, and education. In keeping with the "30 percent/50-year rule", most of the cultural topics the students will study and experience will be contemporary issues, with no more than about one-third of that experience being motivated and placed into context by the history of Singapore that extends beyond 50 years into the past.
While this is not a grade for CSCE 431, it is necessary to satisfy the ICD requirement for study abroad. If you know that you do not need ICD credit, you are not required to participate in the travel journal activity. However, I think you still should since it will be fun and your pictures and stories will help us recruit students for next year's trip.

Client Meetings:
The client for the project is most likely going to be the instructor (me). While in Singapore, you will see me every day and will have ample opportunity to meet with me (as the client) to discuss progress on the project. When you return to the USA, you must continue to meet with me (as the client) each week until the project is completed.

Typesetting:
All reports must be typed and submitted as a PDF. You are strongly encouraged to typeset your work using LaTeX. Resources for LaTeX can be found on the course website and on the Internet. Microsoft Word and OpenOffice Write are vastly inferior but acceptable alternatives.

Version Control:
You are required to use a version control system to track changes and back up your work. Texas A&M has an enterprise GitHub server (https://github.tamu.edu) that you can use.

Piazza:
All questions and comments about the course should be posted on Piazza (https://piazza.com). Piazza is designed and managed so that you can get help quickly and efficiently from classmates, PTs, TAs, and me. If you email a question or comment about the course to me or a TA, you will very likely be redirected to Piazza.

Email Formatting:
When you send email to me or a TA, the subject must be prefixed with [CSCE 431-Singapore] and you must sign your name to the email. Putting [CSCE 431-Singapore] in the subject will let us know in which course of ours you are enrolled. Signing your name will let us know who you are. If you do not sign your name, we may assign you one at random in our reply.

Discussion of Grades:
Federal law prohibits the instructor, TAs, and graders from discussing grades over email or phone. If you have a question about your grade, you must discuss it with us in-person, such as during office hours.

Harassment and Discrimination:
Texas A&M is committed to the fundamental principles of academic freedom, equality of opportunity and human dignity. To fulfill its multiple missions as an institution of higher learning, Texas A&M encourages a climate that values and nurtures collegiality, diversity, pluralism and the uniqueness of the individual within our state, nation and world. All decisions and actions involving students and employees should be based on applicable law and individual merit.
Texas A&M University prohibits harassment and discrimination against any member of the University community based on race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran.
Students who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the Office of the Dean of Student Life at 979-845-3113.

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

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

For all academic work in this and every course, it is expected of you that you shall neither give nor receive any unauthorized aid.

All violations of the Aggie code of Honor will be reported to the Aggie Honor System Office.

For more information, see https://aggiehonor.tamu.edu.

Last Updated: 6 August 2018