Syllabus
Fundamentals of Software Engineering
22C:180, 55:180 (Sections 001)
CS:5800, ECE:5800 (Sections 001)
Session: Fall 2019 Class: 5:00 - 7:30 PM Tuesday
40 SH Schaeffer Hall

1. Course Overview
The quality of the engineered software depends on the maturity of the process used. Software engineering is a study of methods and techniques used to develop software and how they can be effectively used within a well-defined process to engineer high-quality software in cost-effective ways. The course concentrates on five main subject areas; **Process models, Process definition, Project Management, Development methodologies, and recent trends in software development technology.**

2. Instructor
Raman Aravamudhan
Department of Computer Science, University of Iowa
Lecture Hours: Tuesday 5:00-7:30 PM Classroom: 40 SH Login to ICON for course content
Office: 201F MLH
Office Hours: By appointment only during Tuesday 3:00PM-5:00 PM Additional time after class will be provided for meetings with students. (Office hours will be used for Project group meetings, software engineering related discussion groups. Individual students are requested to take appointments to meet with the instructor).
Email: raman-aravamudhan@uiowa.edu Web Site: http://www.cs.uiowa.edu/~aravamud/
Teaching Assistant(s):

Karan Pahlani	karan-pahlani@uiowa.edu
Siddarth Kannan	siddarth-kannan@uiowa.edu

3. Class Organization, Objectives of course
The class meets once a week on Mondays. The course will be based on intensive class participation and discussions. During the semester **at least** 4 to 6 Homework assignments will be given. There will many Reading assignments (publications and articles) to help students gain additional knowledge and perform better in the course. The course will lay specific emphasis on practical use of the important theories and techniques learnt. Students will be grouped into teams and a Project assigned to each group. The Project work will require each team member of the group to carryout individual responsibilities within a team asper defined procedure and complete the project as a team. **Students are expected to have prior exposure to programing. All students are expected to attend class regularly and participate in the programming activities, project and assignments.** Reading assignments (publications and articles) will be posted to help students gain additional knowledge and perform better in the course. Most announcements are made in class and the only way to get them is to attend lectures. Quiz will be administered in class **unannounced** / **surprise** and may be used as extra credit towards exam grades. Only students attending class on that particular day can take the quiz. No makeup quiz is possible.
All students are expected to have substantial prior exposure to programing and Relational databases. All students are expected to participate in the programming activities of the project and assignments. Students from all sections need to submit assignments on time.

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4. Evaluation & Grades (**Grading Policy & Distribution subject to change**)

Evaluation Criteria		
Midterm(s)	25%	One Midterm (Students of all sections are required to take the exam at the same time). A second midterm is possible **but the total weightage is the same.**
Assignments	15%	Three or Four assignments
Group Project	35%	Students are expected to work as a group in the assigned team. Each member of the team may receive different scores. Additional project procedures will be published during the semester
Final	25%	Comprehensive (includes all covered topics)
Quiz		May be extra credit assigned to Exam or added to Exam group
Total	100 %	

Grade Distribution		
Grade A+ 97 – 100 %	Grade A 93 – 96 %	Grade A- 90 – 92 %
Grade B+ 87 – 89 %	Grade B 83 – 86 %	Grade B- 80 – 82 %
Grade C+ 77 – 79 %	Grade C 73 – 76 %	Grade C- 70 – 72 %
Grade D+ 67 – 69 %	Grade D 63 – 66 %	Grade D- 60 – 62 %
Grade F Below 60 %		

5. Textbooks
It is highly recommended that students attend the lectures regularly and also follow the lecture material (posted in the course website) closely. In addition the following BOK at the URL is recommended.

Guide to the Software Engineering Body of Knowledge (SWEBOK(R)): Version 3.0 ISBN: 07695-51661

The pdf version is available online at https://www.computer.org/web/swebok/v3

Topic specific supplementary materials and publications will be discussed in class

Additional reference(s) ***(A few are listed below -*** *earlier editions are good as well)*

Sommerville, Ian., Software Engineering 10th edition Addison Wesley
Pressman, Roger S., Software Engineering: A Practitioner's approach, 8th Edition
Students may elect to use these books as additional reference; even earlier editions are good

Some research papers will also be used as reading material.

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6. Tentative Weekly Schedule (The lecture schedule and topics may change based on the students' pre-acquired knowledge level in the topics)

Week	Date	Topic
1	8/27/19	Course Overview, Introduction, What is Software Engineering?
		Software Process Models: Life-Cycles
2	9/3/19	Software Process Models , User Requirements Definition
3	9/10/19	**Project groups formed, Project scope released, Teams are required to work in a professional manner and submit weekly progress report. Mandatory first team meeting (in class). Groups will submit their work plan**
4	9/17/19	Software Project Management**,** Project Planning
5	9/24/19	Software Metrics, Function Point Analysis, LOC, COCOMO, Planning Poker, Story Points
6	10/1/19	Project Planning, Scheduling and Tracking
		Change Management, Risk Analysis and Management.
		Software Quality Assurance, Automated Testing, Test Driven Development
7	10/8/19	Requirements Analysis Modeling - SSAD / (DFD,ER,STD)
8	10/15/19	**Mid Term-1 in class Exam**
9	10/22/19	Requirements Analysis Modeling – OOAD / UML
10	10/29/19	Requirements Analysis Modeling – OOAD / UML
		ISO 9000 & SEI 's Capability Maturity Model Programming Strategies & Software Quality
		Possible **Team Project presentation** Midterm **(All Sections/ All teams)**
11	11/5/19	Design Concepts and Principles
		High Level Design, Architecture, Techniques & Strategies
12	11/12/19	Automated Testing, Test Driven Development
13	11/19/19	Agile, XP (Extreme Programming), SCRUM
14	11/26/19	**Thanks Giving Break No classes**
15	12/3/19	Continual Integration, Software Configuration Management; possible Exam 2 Group Project Presentations - 7-10 minutes each team **(All Sections/ All teams and members are expected to attend)**
16	12/10/19	Continual Integration, Software Configuration Management;
17	**FINALS Week**	**FINALS TBA Follow University Schedule**

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7. Important Announcements:

1. **Administrative Home** The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and other policies. These policies vary by college (https://clas.uiowa.edu/students/handbook).
2. **Accommodations for Disabilities** UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student should then discuss accommodations with the course instructor (https://sds.studentlife.uiowa.edu/
3. **Academic Integrity** All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty. Misconduct is reported to the College, resulting in suspension or other sanctions communicated to the student through the UI email address (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code)

   The instructor will announce co-operative activities where students are allowed to discuss and work with each other.

   - **Exams and Quizzes:** The exam(s) and quiz in this course are **not** a collaborative effort and must be completed by the student without help from others. Exams showing strong similarities and/or duplication will be considered the result of academic dishonesty and will be failed and the students involved reported to the College. Do not share your final exam with others in the class. These rules will apply for both take-home and proctored exams. If you have questions about this policy, it is your responsibility to ask. ”

   - **Homework:** In this class, students are **not** allowed to collaborate with others on homework, labs, and other graded assignments. Do not share your work with others or ask others to see their completed assignments since both are considered academic misconduct. If you need help, please meet with the TAs or stop by during my office hours. Students are responsible for understanding this policy; if you have questions, ask for clarification.”

   - **Team Project:** Your Team project **is** collaborative; intra team collaboration is allowed. However, each team is expected to do the project without any collaboration with other teams or anyone outside the team. Each student on a team is expected to complete a similar amount of work and to contribute equally to the final project. Each student may be asked to complete a self-evaluation and a group evaluation, describing this equality or the lack of it during the group’s work. This will be an input to the Instructor to detect Academic dishonesty. For more information, see the assignment sheet, the grading rubric, and the self-evaluation form or the project. Students who misrepresent themselves as equal partners in this collaborative project but who are actually letting others do the bulk of the work will be reported to the College for academic dishonesty. If you have questions, it is your responsibility to ask.”

Exams, Homework Assignments, Quiz	No collaboration, Only individual student effort
Team Project	Collaboration allowed within a team
Reading Exercises and Lecture notes	Collaboration allowed

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4. **Communication and the Required Use of UI Email** Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2).
5. **Nondiscrimination in the Classroom** UI is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (diversity.uiowa.edu)
6. **Absences and Attendance** Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing the absence policies for their courses, which will vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, unavoidable circumstances, or University authorized activities (https://clas.uiowa.edu/students/handbook/attendance-absences). Students may use this absence form to communicate with instructors: https://clas.uiowa.edu/sites/default/files/ABSENCE%20EXPLANATION%20FORM2019.pdf
7. **Team Work** Students are expected work in teams with mutual respect for each other and help motivate other members of the team. Additional procedures for project work will be defined in course content and Project scope. Students are expected to attend class regularly.
8. **CLAS Final Examination Policies** The final exam schedule for each semester is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this final exam information. No exams of any kind are allowed the week before finals (https://clas.uiowa.edu/faculty/teaching-policies-resources-examination-policies
9. **Making a Complaint** Students with a complaint should first visit with the instructor or course supervisor and then with the departmental executive officer (DEO), also known as the Chair. Students may then bring the concern to CLAS (https://clas.uiowa.edu/students/handbook/student-rights-responsibilities)
10. **Understanding Sexual Harassment** Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, definitions, and the full University policy (https://osmrc.uiowa.edu/).
11. **Reacting Safely to Severe Weather**
    In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety website.