Texas Tech University
Department of Computer Science

Course Name: Software Engineering II   **Number:** CS4365   **Semester:** Spring 2018
Class room: Livermore Center 00104   **Class Hours:** 9:30 – 10:50 (Tuesday/Thursday)

Instructor: Sepideh Ghanavati   **Office:** EC306A   **Email:** sepideh.ghanavati@ttu.edu
Instructor Office Hours: Tuesday/Thursday 1:00PM –2:00PM or by email

TA: TBA   **TA-Office:** TBA   **TA-Email:** TBA
TA-Office Hours: TBA

Catalogue Listing: Advanced theory and practice for software engineering. Topics include project management, configuration management, process improvement, software security, software reuse, and quality management.

Reading Materials (required): The main textbook of the course is:
Software Engineering – Ian Sommerville – 10th Edition, 2016
- Chapters to read will be mentioned every week, under the mandatory part.

All other required reading list will be provided in another document. The instructor will include the required reading material from the list, at the end of each lecture slides.

Course objectives:

> The purpose of this course is to introduce advanced theories, methods, and tools in software engineering for developing software systems. Students who succeed in this course will:
> 1. Understand advanced principles of Software Engineering
> 2. Be able to practice advanced software engineering techniques
> 3. Be able to apply software engineering management principles

Key Topics:

> 1. Project Management
> 2. Configuration Management
> 3. Process Improvement
> 4. Software Security
> 5. Software Reuse
> 6. Quality Management

Course Prerequisites: CS 3365 (Software Engineering I)

Expected prior knowledge and skills in: The successful student should have introductory knowledge of software engineering including requirements, design, and testing, as well as proficiency in programming.

Learning Outcomes & Assessment Methods: Students who have completed this course should have the ability to:

Objectives	ABET Outcomes	Assessment Methods
1. Understand project management concepts and teamwork.	d, e, i	P, A, E, D
2. Develop secure software.	e	P, A, E, D
3. Verify and validate software systems.	c	P, A, E, D
4. Understand high productivity techniques, such as software reuse and process improvement.	c, i	P, A, E, D

Activities and Evaluation:

Students' performance will be evaluated based on class participation, assignments, group projects and a final exam.

- **Lectures** – There will be 3 hours of lectures every week, Tuesday and Thursday, in which students will learn about advanced topics in software engineering.
- **Readings** – Students will be assigned readings from the course textbook or academic papers to learn establish methods based on a strong engineering foundation. Additional readings will be selected and developed by the course instructor to include privacy theories that will be implemented using these methods.
- **(D) – Class Participation and Discussion Forum (10%)** – Students reflect on reading materials and discussions in the class as well as on the discussion forum which is worth 5%. This part is an individual assessment. We discuss different subjects related to the course in class and the participation is required. In addition, students must assess and give feedback on other students' projects which is done in groups. This part is also worth 5%.
- **(A) – Assignments (15%)** – Students have 2 take-home assignments during the semester whereby students apply methods taught in class to sample problems. Assignment 1 is an individual assignment. Assignment 2 is a group assignment. The groups have 2 and only 2 students. The groups must be different from the project groups.
- **(P) – Project (40%)** – Students will work in a group of 5 or 6 students on a project from the topics given by the instructor. The detail of the topics must be approved by the instructor by the deadline specified below. The aim of these projects is to understand advanced software development processes and engineering topics and to develop software applications that are secure and have measures to protect the privacy of the users. The students will give two presentations for the project. The first presentation which introduces their project must not be more than 10 minutes. The second presentation discusses the results of their project and demo the tool and it is given at the end of the semester in the time slot booked by the students. For the project, the students also need to write several documents. The detail of the project is given in other documents.
- **(E) – Exams (40%)** – There will be two exams in this class. Each exam is 20% of the final mark. Exams are done individually and in the classroom. The topics of each exam is given in the course schedule. It is the duty of the students to attend the exams. Under only emergency situations, the instructor may decide to give a makeup exam as case-by-case.
- **Attendance Policy** – Students are allowed to have 5 free absences (whether excused or not). More than 5 absences will be penalized. The 6th missed class will have 2 marks (2%) deduction of the overall final grade. After that, each absence, except on the days of students' presentations, will count as 1 mark (1%) deduction of the overall final grade. For example, if your total mark at the end of the semester is 90% and you have missed 6 classes, your final mark will be 88%. On the days of students' presentations, each absence, unless having valid excuse, will count as 3 marks (3%) deduction of the overall final grade, regardless of having any free absence left. If a student comes late to their own presentation, the presentation's mark will be deducted by 20% for that specific student. Note that, if the students show up more than 15 minutes later than the start of the class (i.e. after 9:45am), they will also be marked as absent. More details are given in the section, Class Attendance, below.
- **Note that, the total of possible marks in this class is 105 which means that there is a 5% bonus included in the marks.**

Grading Policy:

The usual grading scale will be used for the final marks: A (90-100), B (80-89), C (70-79), D (60-69), F (0-59). This scale may be curved to raise student grades at the instructor's discretion. The detail of the scale is as followed:

Letter Grades	Numerical Range
A+	97 – 100
A	94 - 96.99
A-	90 - 93.99
B+	87 - 89.99
B	84 - 86.99
B-	80 - 83.99
C+	77 - 79.99
C	74 - 76.99
C-	70 - 73.99
D+	67 - 69.99
D	64 - 66.99
D-	60 - 63.99
F	0 - 59.99

- Submitted work is due when specified. With the instructor's permission, you may be able to submit 1-3 days late (with a penalty). For every 12 hours of late submission, 5% marks will be deducted. That is, if you are late by 3 full days, 30% mark will be deducted. After the 3rd full day, your assignment, project and reports will be marked as 0, **with no exception.**
- Every submission has to be done through Blackboard in a digital format, either in Word or PDF. Submissions via email or in person (in paper format) will be marked as 0. If you encounter any problems with Blackboard, it is your own duty to inform the instructor **in a timely manner, before the due date**. Blackboard problems can't be used as an excuse for late submission.

Academic Integrity:

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

Academic dishonesty includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act. Students are expected to know and understand the definitions of cheating, plagiarism, collusion, falsifying academic records and misrepresenting facts found in OP34.12. (http://www.depts.ttu.edu/opmanual/OP34.12.pdf).

Academic dishonesty of any kind, if discovered, will result in one or more of the following sanctions:
- a grade of **0** for the corresponding graded item,
- a grade of **"F"** in the course,
- and further action according to the TTU operating procedures found in OP34.12. (http://www.depts.ttu.edu/opmanual/OP34.12.pdf).

Classroom Civility:

All violations of classroom civility will be reported to the Student Judicial Programs. The Texas Tech University Catalog states: "Students are expected to assist in maintaining a classroom environment that is conducive to learning." In order to ensure that all students gain from time spent in class, **students are prohibited from engaging in any form of distraction**, e.g., reading newspapers (or other articles), working on other courses, and using cell-phones or laptops for calls or messages. If you indulge in any such inappropriate behavior (without explicit consent of the instructor), you will (at the very least) be asked to leave the classroom.

Student with Disabilities:

Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405. Students requiring assistance should contact the instructor during the first week of class for pre-existing disabilities or as soon as the students receives verification from Student Disability Services. http://www.depts.ttu.edu/opmanual/OP34.22.pdf

Center for Campus Life:

The Center for Campus Life can assist in notifying the campus community of student illnesses, immediate family deaths and/or student death. Generally, in cases of student illness or immediate family deaths, the notification to the appropriate campus community members occur when a student is absent from class for four consecutive days with appropriate verification. It is the student's responsibility for missed class assignments and/or course work during their absence.

Class Attendance:

The student is responsible to inform the instructor, ahead of time if possible, of any absence and the reason. Make-up work due to absence(s) may be allowed on a case-by-case basis with a possible penalty only with instructor permission

and with reference to TTU operating procedures. Make-up work should be submitted preferably before the next class period after the absence(s).

- Student Absence for Observance of Religious Holy Day, http://www.depts.ttu.edu/opmanual/OP34.19.pdf
- Sponsorship of Student Activities and Off-campus Trips, http://www.depts.ttu.edu/opmanual/OP34.06.pdf
- Class Attendance, http://www.depts.ttu.edu/opmanual/OP34.04.pdf

Resolving Student Issues:

Should a student encounter an issue in the course, the following chain of authority should be followed and not circumvented:

- Students should first discuss the issue with the instructor of the course in an attempt to resolve the issue;
- If the issue is not resolved, or the issue is of a matter that the student is not comfortable discussing with the instructor, the student should contact the Department Chair.
- Under no circumstances should the students start a resolution process with the Chair or Deans office without having discussions with the course instructor if possible.

Alternatively, The Ombuds for Students is available to assist students with any conflict or problem that has to do with being a student at Texas Tech University. You may visit the Ombuds in 024 East Basement Student Union Building or call 742.SAFE.

TTU Resources for Discrimination, Harassment, and Sexual Violence:

Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office for Student Rights & Resolution, (806)-742-SAFE (7233) or le a report online at titleix.ttu.edu/students. Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are: TTU Student Counseling Center, 806-742-3674, https://www.depts.ttu.edu/scc/ (Provides confidential support on campus.) TTU Student Counseling Center 24-hour Helpline, 806-742-5555, (Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.) Voice of Hope Lubbock Rape Crisis Center, 806-763-7273, voiceofhopelubbock.org (24-hour hotline that provides support for survivors of sexual violence.) The Risk, Intervention, Safety and Education (RISE) Office, 806-742-2110, rise.ttu.edu (Provides a range of resources and support options focused on prevention education and student wellness.) Texas Tech Police Department, 806-742-3931, http://www.depts.ttu.edu/ttpd/ (To report criminal activity that occurs on or near Texas Tech campus.)

Emergency Procedures:

In the unlikely event of an emergency, students and faculty should follow the guidance provided at the website below. There is a possibility that this may include evacuation of the building or seeking shelter within the building. http://www.depts.ttu.edu/hs/emergency_planning/index.php, http://www.depts.ttu.edu/communications/emergency/

Course Schedule: The table (below) provides the initial distribution of topics discussed over the weeks in the semester. **This schedule is tentative and subject to change during the semester at the instruction discretion**. All changes will be announced in class or on the course website (Blackboard). Students are responsible for making sure they are informed about announcements. Note that, the topics are given at higher level and more fine-grained topics will be given during the semester.

Week	Class (TR)	Activity	Material
1	01/18	L0	Syllabus and Introduction
2	01/23	L1	Software Requirements – Overview
	01/25	L2	Software Project Management
	01/26	**-**	**Deliverable 0 (Due Date)**
3	01/30	L3	Software Project Management
	02/01	L4	Software Process Improvement
4	02/06	L5	Introduction to User Requirements Notation – **Assignment 1 (Posted)**
	02/08	L6	Goal-oriented Requirements Language (GRL)
5	02/13	L7	Business Process Modeling – Introduction to Use Case Maps
	02/14	**-**	**Deliverable 1 (Due Date)**
	02/15	L8	Introduction to jUCMNav – Hands-on Activity
6	02/20	L9	URN (GRL + UCM +jUCMNav) – Project Proposal Presentations
	02/22	L10	Project Proposal Presentations
	02/23	-	**Assignment 1 (Due Date)**
7	02/27	L11	Configuration Management
	03/01	L12	Configuration Management
8	**03/06**	**E1**	**Exam 1** – Software Project Management, Process Improvement, URN (GRL + UCM +jUCMNav), Configuration Management
	03/08	L13	Software Reuse – **Assignment 2 (Posted)**
	03/09	**-**	**Deliverable 2 (Due Date)**
9	03/13	-	Spring Break
	03/15	-	
10	03/20	L14	Software Reuse
	03/22	L15	Software Reuse
11	03/27	L16	Quality Assurance
	03/29	L17	Quality Assurance
12	04/03	L18	Quality Assurance
	04/05	L19	Software Security – Introduction to Information Privacy
	04/06	**-**	**Assignment 2 (Due Date)**
13	04/10	L20	Software Security
	04/12	L21	Software Security
	04/14		**Deliverable 3 (Due Date)**
14	04/17	L22	Software Security
	04/19	L23	Presentations - Placeholder
15	04/24	P1	Presentations
	04/26	P2	Presentations
16	05/01	P3	Presentations
	05/03	P4	Presentations
17	**05/08**	**E2**	**Exam 2** – Software Reuse, Quality Assurance, Software Security
	05/10	-	**Deliverable 4 (Due Date)**