Texas Tech University
Department of Computer Science

Course Name: Software Engineering **Number: CS 3365** **Semester: Spring 2025**
Classroom: Indus. Manufac. and Sys. Engr | Room 121 **Class Hours: M/W/F 05:00 PM - 05:50 PM**

Instructor Name: Dr. Don Pathirage **Office: IMSE Room 121** **e-mail: don.t.pathirage@ttu.edu**
Instructor Office hours: MWF 5:50 PM – 6:50 PM, If you plan to visit during office hours, please speak with me after class.

When emailing put your course number and section number in the subject line: ex: CS3365: and the reason for the contact.

Catalogue Listing: Prerequisite: CS 2365, MATH 3342, or equivalent. Introduces theory and practice for software engineering. Topics include software life cycle, requirements, specification and analysis, software architecture, and detailed design, implementation, and testing.

Texts (Recommended, not required): Ian Sommerville, "Software Engineering," 10th edition, Pearson, 2016.

Course objectives:

Understanding basic principles of Software Engineering Practice software engineering techniques Learn modeling using UML modeling language Secure program design

Writing Intensive:
CS 3365 is one of the two required writing-intensive courses for the Department of Computer Science. According to the University, "the fundamental objective of a writing intensive course is for students to write often and receive critical review from the course instructor. Students should be required to rewrite, based on the instructor's critique. The writing-intensive course emphasizes the process as well as the products of writing. Faculty use writing to reinforce student learning. Students' writing should formulate ideas, raise questions, and express considered opinions. Students' written work should analyze, integrate, and synthesize as well as communicate."

Key Topics:

Software Development Lifecycle Requirements Elicitation Requirements Analysis Architectural Design Design Patterns Detailed Design Introduction to Verification and Validation Professionalism and Ethics Secure program design Local/global impacts of computing solutions on individuals, organizations, and society

Prerequisites: CS 2365, MATH 3342, or equivalent

Expected Prior Knowledge and Skills In:
The successful student should have competent skills in procedural and object-oriented programming, knowledge of data structures and algorithm analysis, and knowledge of statistical and probabilistic mathematics.

***Note**: This course is one of the courses used as a primary measure of outcomes 4, 5, and 6.*

Learning Outcomes: Students who have completed this course should have:

1. Be able to elicit and analyze customer requirements individually and with team members. (1, 5)
2. Be able to design software systems using modeling techniques individually and with team members. (2, 5)
3. Understand verification and validation techniques. (2)
4. Professionalism and ethics. (4)
5. Understand the use of software engineering tools, templates, and references. (6)
6. Be able to use secure program design techniques. (6)
7. Understand local/global impacts of computing solutions on individuals, organizations, and society (4)

Please note the following:

- The usual grading scale will be used: A (90-100), B (80-89), C (70-79), D (60-69), F (0-59).
- Late submissions will not be accepted. However, the students' late submission can be graded with a 30% penalty if they get the instructor's permission and submit it by the new deadline. The instructor can reduce or remove the penalty if the students justify the late submission with proper documentation. The student must contact the instructor within 48 hours of missing a due date to be considered for a late submission.
- Exams allow the student to demonstrate mastery of the material covered in the lecture, lab, and assignments. Exams are comprehensive in nature and build upon all material in the course.
- Make-up exams. The instructor can provide the student with a make-up exam if they justify it with proper documentation. The student must contact the instructor within 24 hours of missing an exam, in order to get a chance to make up that exam. The student may get a 30% penalty if he/she cannot justify the absence. However, if a student has already taken an exam, homework, or a lab, they will not be allowed to make it up under any circumstances.
- All exams must be taken in class, and no one is allowed to take them online or remotely. Attempting to take an exam outside of the assigned classroom will result in a grade of zero.
- Plagiarism is not tolerated. You may get a grade of "F" in the course or risk being expelled from the university.

Requirements:

You must not conflict your work schedule (or any other plans) with the class schedule. All exams must be taken in class, and no students will be allowed to take exams outside of the campus.

To participate in this course, the student should be able to have access to and use:

- An adequate Internet connection service that allows class participation, viewing and submitting assignments online, and taking exams/quizzes online with few to no incidences of connection dropping or service interruptions.
- A laptop that meets the laptop requirements of the Whitacre College of Engineering which may be found at https://www.depts.ttu.edu/coe/dean/engineeringitservices/buyingtherightcomputer.php.
- Blackboard at https://www.depts.ttu.edu/lms/
- Proctorio which is the online proctoring service provided by Texas Tech University.

Grading Policy:

The final grade for this course will be based on homework, project, and exams:

- **Homework**: 15%
  - **Assignment**. The instructor will announce each assignment in class.
  - **Submission**. Homework must be submitted to the Blackboard by the due date.
  - **Late submission**. Late submissions will not be accepted. However, the students' late submission can be graded with a 30% penalty if they get the instructor's permission and submit it by the new deadline. The instructor can reduce or remove the penalty if the students justify the late submission. However, if a student has already taken an exam or completed homework, under no circumstances will they be allowed to makeup that assessment.
  - **Incorrect homework file submission**. The instructor may not grade the students' incorrect homework files submitted to the Blackboard. However, the instructor can grade the students' new submissions with a 30% penalty if they get the instructor's permission and submit it by the new deadline.

- **Project**: 34% (Phase 1: 17%, Phase 2: 17%)
  - The instructor will give you a team-based project with its description.
  - We will organize the project teams in the class, each of which will have six members. You can choose your team members first, and then the instructor will reorganize the teams if a team does not have six members.
  - Cross Evaluation
    - A member will evaluate the other members' project contributions in a team at the end of the project.
    - Your final project grade is a portion of your contribution to the team project grade.

- **Exams**: 51% (Exam1: 17%, Exam2: 17%, Final exam: 17%)
  - **Exam Dates:** Exam dates are not fixed; this approach is implemented to ensure that students have a comprehensive understanding of a topic before undergoing an examination. For instance, if the instructor perceives that the class requires additional support in comprehending a subject, more time will be allocated to cover the relevant materials before scheduling an exam. Once students have achieved a thorough understanding of the materials, the instructor will announce the exam date one week in advance. This information will be communicated in-class, through the announcement section of Blackboard, and via email.
  - **Make-up**. Only students who miss an exam due to a university-approved absence are eligible to take the makeup exam. (Going out of town, family reunions, graduation events, weddings, vacations, having airline tickets to go somewhere, etc.., are not considered approved absences). The instructor can provide the student with a make-up exam if they justify it. The student must contact the instructor within 24 hours of missing an exam, in order to get a chance to make up that exam. The student may get a 30% penalty if he/she cannot justify the absence. However, if a student has already taken an exam or completed homework, under no circumstances will they be allowed to retake that exam/homework (not even a different version of that assignment).

- The usual grading scale will be used: **A (90-100), B (80-89), C (70-79), D (60-69), F (0-59)**.

- Beyond the conditions described above, the instructor will make all decisions.

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. All changes will be announced in class or on the course website (Blackboard). It is your responsibility to attend classes and check the course website regularly to get all change announcements:

Time	Topics	Textbook
Week 1 Jan 15 – Jan 17	Syllabus & Introduction	
Week 2 Jan 20 – Jan 24	Dr. Martin Luther King Holiday – January 20, 2025 Introduction	Chapter 1
Week 3 Jan 27 - Jan 31	Software Process,	Chapter 2
Week 4 Feb 03 - Feb 07	Agile Software Development	Chapter 3
Week 5 Feb 10 - Feb 14	Requirements Engineering	Chapter 4
Week 6 Feb 17 - Feb 21	System Modeling	Chapter 5
Week 7 Feb 24 - Feb 28	System Modeling	Chapter 5
Week 8 Mar 03 - Mar 07	A deeper view into UML	Outside materials
Week 9 Mar 10 - Mar 14	Architectural Design	Chapter 6
Week 10 Mar 17 - Mar 21	Spring Vacation - University Holiday	No classes
Week 11 Mar 24 - Mar 28	Architectural Design	Chapter 6
Week 12 Mar 31 - Apr 04	Implementation	Chapter 7
Week 13 Apr 07 - Apr 11	Testing	Chapter 8
Week 14 Apr 14 - Apr 18	Testing	Chapter 8
Week 15 Apr 21 – Apr 25	April 21st – University Holiday: no classes Software Evolution April 25: Online Lecture	Chapter 9
Week 16 Apr 28 - May 02	Software Evolution	Chapter 9
Week 17 May 05	Local and global impacts of computing solutions	Outside materials
Week 18 May 13	Final Exam – May 13th at 4:30 PM (IMSE | Room 121)	

This proposed schedule will change as the semester progresses! Always refer to announcements for exact dates

Discrimination, Harassment, and Sexual Violence Statement: 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 file 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 24-hour Crisis 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, https://www.depts.ttu.edu/rise/ (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.)

Ethical Conduct: Although students are encouraged to discuss ideas and problems with the TA, instructor, and other students, academic dishonesty will not be tolerated. Unless stated otherwise by the instructor, you are not allowed to share code or answers, use or even look at code or answers obtained from online sources, friends, or classmates. It is your responsibility to educate yourself about actions that constitute academic dishonesty. If you are not sure whether a specific action is allowed, talk to the instructor and the TA before you indulge in it. All submitted codes and assignments will be checked for plagiarism. Academic dishonesty of any kind 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: http://www.depts.ttu.edu/opmanual/OP34.12.pdf.

- Cheating will not be tolerated on any work done throughout the semester.
- Offenses must be reported to Student Judicial Programs.
- Cheating is considered to be any collaboration beyond basic discussion for anything unless specifically announced by the instructor. See Statement of Academic Conduct for Engineering Students, College of Engineering, for further information.
- "Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to ensure that all students have the opportunity to gain from time spent in class unless otherwise approved by the instructor, students are prohibited from engaging in any form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class."

Student with Disabilities: Any student who, because of a disability, may require special arrangements in order to meet the 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. (Note: **Student must meet with the instructor to make arrangements regarding his/her needs.**) For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405.

Civility in the Classroom Statement: Texas Tech University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student-student and student-faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic, threatening, abusive, or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the University (www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php).

Class Attendance:
Class attendance is mandatory. The student is responsible for informing the instructor, ahead of time if possible, of any absence and the reason. In certain circumstances(university-approved absence), make-up work due to absence(s) may be allowed on a case-by-case basis with a possible penalty only with the instructor's permission, and Make-up work should be submitted preferably before the next class period after the absence(s).

The instructor determines the effect of absences on grades consistent with university policy for excused and unexcused absences. When absences jeopardize a student's standing in a class, it is the responsibility of the instructor to report that fact to the student's dean. Excessive absences constitute a cause for dropping a student from class. The drop may be initiated by the instructor and executed by the academic dean. If the drop occurs before the 45th class day of a long semester or the 15th class day of a summer term, the Office of the Registrar will assign a grade of DG. If the drop occurs after those times,

the student will receive an F. In extreme cases, the academic dean may suspend the student from the university.

Academic Integrity:
Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers.
Although students are encouraged to discuss ideas and problems with the instructor, assistant, and other students, academic dishonesty will not be tolerated. Unless stated otherwise by the instructor, you are not allowed to share code or answers, use or even look at code or answers obtained from online sources, friends, or classmates. Posting, publishing, or otherwise sharing questions or answers to exams, quizzes, tests, finals, or other assignments, without the explicit permission of the instructor is a serious violation of the code of conduct and will result in serious repercussions.

It is your responsibility to educate yourself about actions that constitute academic dishonesty. If you are not sure whether a specific action is allowed, talk to the instructor. All submitted code and assignments will be randomly checked for plagiarism. Students may be asked to explain their work submitted. 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: http://www.depts.ttu.edu/opmanual/OP34.12.pdf.

Illness-related Absences:
Illness-related absences will require proper documentation to be considered excused. These documents will be submitted to the College of Engineering for verification. If you miss an assignment due to a medical condition, you must contact your instructor as soon as possible and complete the missed work within one week of the return date listed by the doctor. Failure to do so will result in a grade of zero.

Absence/Missed Assignments Due to TTU-Approved Absence:
If you miss an assignment due to an officially approved event, you must provide a letter from the univerisity or the professor associated with the event. You must notify your instructor at least 24 hours prior to missing the assignment and complete the missed work no later than one week from the original due date. Failure to meet these requirements will result in a grade of zero for the missed assignment.

AI USE IS PROHIBITED IN THIS COURSE:
https://www.depts.ttu.edu/tlpdc/AI_Resources/AI-Use-is-Prohibited.pdf
The use of generative AI tools (such as ChatGPT) is strictly prohibited in this course for any purpose.
Information gathered from AI cannot be used even with appropriate citation.
Submission of AI-generated content (i.e., information, text, or images) as your own work is a violation of academic integrity and may result in referral to the Office of Student Conduct.
Please contact your instructor if you have questions regarding this course policy.

Late Arrival, Late Return, and Early Departure Policy:
The Computer Science department strictly follows the official academic calendars and requires students who are enrolled in face-to-face sections must be on campus by the first-class day of

each semester and leave campus no earlier than the last day with scheduled course activities. The only exception we make is for incoming new international students who often need more time to obtain the necessary paperwork including study visa, and in such case, we accommodate late arrival for up to the 12th class day of their first semester. No exceptions will be made for late return or early departure requests from current students in general.

Safety and Wellness

The Texas Tech University (TTU) and Edward E. Whitacre Jr. College of Engineering are committed to the safety and wellness of our students by providing various services and resources.

Make sure you register with Tech Alert to get emergency notifications by phone call, text, or email. You are encouraged to review the Emergency Action Plans (EAPs) and watch the videos of Know What To Do In Emergency Events and Surviving an Active Shooter Event Training to be prepared for those emergency situations. Additionally, due to the nature of laboratory or design courses, it is mandatory for you to follow the university safety policies and any additional safety protocols required by the course instructor(s).

For your well-being, various services are available at Student Counseling Center and Student Health Services. The Student Wellness Center provides convenient walk-in services M-F from 8 AM to 5 PM. Furthermore, the Texas Tech Crisis HelpLine (806-742-5555) provides 24/7/365 assistance for students experiencing a crisis or distress.

Emergency/Crisis Phone Number

TTU Police (UPD) Emergency	911
TTU Police (UPD) Non-Emergency	806.742.3931
TTU Emergency Maintenance	806.742.4OPS (4677)
TTU EHS (M-F, 8 am – 5 pm)	806.742.3876
SafeRide	806.742.RIDE (7433)
TTU Crisis HelpLine	806.742.5555
Student Wellness Center (From Urgent Care to a Full-Service Pharmacy on site)	806.742.2848
Title IX Reporting	806.742.7233
The Dean of Students	806.742.2984