

Course Syllabus
CS4310 Software Engineering I: Requirements Engineering

Instructor: Dr. Oscar A Mondragon
E-mail: oamondragon@utep.edu
Office hours: Virtually on MS Teams: Monday 11:00 to 12:00 or by appointment
Management Status Report Wednesday: 12:00 pm to 1:30 pm

Class Time: **CRN 11662**, Tuesday and Thursday 9:00 am to 10:20 am at CCSB G.0208
Class Time: **CRN: 17342** Tuesday and Thursday 3:00 am to 4:20 am at Coll Bus Adm 326

This is a project-based class and your customers are from the Cyber Experimentation & Analysis Division (CEAD). You must present to your customer seven artifacts: Interview (1 hr 20 mins per class), Use case diagram presentation (20 mins per team), Class diagram presentation (20 mins per team), Data flow diagram presentation (20 mins per team), State transition diagram presentation (20 mins per team), Prototype presentation (30 mins per team), Final presentation (30 min each team).

Prerequisites: Senior Standing in CS

TA (CRN 11662): Ricardo Sillas
E-mail: rrsillas@miners.utep.edu
Office hours: Virtually on MS Teams: By appointment only

TA (CRN: 17342): Leonel Lopez
E-mail: llopez37@miners.utep.edu
Office hours: Virtually on MS Teams: By appointment only

Management Learning System: Blackboard.

Communication Network. Blackboard class forums, MS Teams, and Email (only for personal themes).

Communication. Communication of course announcements, assignments, and resources will be done through Blackboard. The customer forum and class forum are on the blackboard. You must subscribe to both forums and check them daily.

Text Book. Dick, J, Hull, E., and Jackson, K. *Requirements Engineering 4th Ed. 2017 Edition* Springer (<https://www.springer.com/us/book/9783319610726>)

Supplement: Wiegers, K. and Beatty, J. *Software Requirements 3/E.* Microsoft, ISBN 978-0-7356-7966-5 (<https://www.microsoftpressstore.com/store/software-requirements-9780735679665>)

Course Goals. To prepare students to become proficient in applying software requirements engineering methods and techniques, working in cooperative teams, and managing projects. This course is also designed to promote your overall success, inside and outside the classroom. Our coursework will help you to improve in key areas such as Communication, Confidence, Critical Thinking, Leadership, Problem Solving, Social Responsibility, and Teamwork. To find out more about the university's plan to improve student engagement and learning, visit the UTEP Edge.

This course is the first semester of a two-semester capstone project in which students work with a customer to capture and specify requirements for a real-world application. **To register for CS4311, students must pass this course with a C or better.**

Grading. Table 1 describes the grading policy.

Table 1: Grading Policy

| Description | Weight |
|--|--------|
| Team and instructor participation assessment. (Base on team surveys, attendance to class – TA team meetings – management status report, customer presentations, and class participation) | 10% |
| Assignments, presentations, and quizzes. | 10% |
| Project | 40% |
| Exams | 40% |

To pass this class, you will need to have the following (Please read this again since it is not your typical grading policy):

- a. 70% or above for the project, AND
- b. 70% or above in the exams, AND
- c. The overall average is 70+ as well.

The course letter grade is determined as follows in Table 2:

Table 2: Course Letter Grade

| Letter Grade | Overall Class Score |
|--------------|----------------------|
| A | ≥ 90 |
| B | ≥ 80 AND < 90 |
| C | ≥ 70 AND < 80 |
| D | < 70 |

Assignments and quizzes. Assignments given as homework are **due at the beginning of the class. No late homework assignments will be accepted.** Problems that have been assigned as individual work can be discussed with other students in a general way, but the solutions must be done independently and the work must be unmistakably your own. Assignments completed as a team must include all student names on the first sheet. By signing your name, you are stating that you agree with the answers and can explain them to the TA or instructor. Students are expected to do assigned readings and be prepared to discuss the material in class. Quizzes will be given after assignments to check for a general understanding of the material.

Project. Each deliverable of the project is graded independently. Please be **proactive in asking questions** about the deliverables and comments by the guidance team.

Each team member is responsible for **documenting his/her work on the project. The Guidance Team will periodically evaluate the evidence. Each member is also responsible to review notes in BB**

The project grade includes:

1. Interview report
2. Feasibility report
3. Prototype
4. Model reports
 - a. Use case model report

- b. Class diagram model report
 - c. Data flow diagram model report
 - d. State diagram model report
5. Traceability report
 6. Software Requirement Specification (SRS)

No late project work will be accepted.

Exams. No make-up exams. Exams are tentatively scheduled for:

Exam1: Weight 7%
Exam2: Weight 13%
Final Exam: Weight 20%

TH 09:00 am → Tuesday, December 6th 10:00 am – 12:45 pm
TH 03:00 pm → Thursday, December 8th 4:00 pm – 6:45 pm

Attendance Policy. Students are expected to attend and participate in **all class meetings, guidance team meetings, customer presentations, and team meetings.** Participation is determined by completion of the following activities:

- a. Reading/Viewing all course materials to ensure understanding of assignment requirements
- b. Participating in an engaging discussion with your team members, peers, and Guidance Team
- c. Other activities as indicated in class and on Blackboard.

A tardy will be recorded each time a student shows up to **Ten minutes after the start of class.** Your final grade will be lowered by **one point for every three tardies or every two unexcused absences.** Students who exceed **six or more tardies or three or more unexcused absences** will be dropped from the course. If you are unable to attend class, please email the instructor with justification as soon as possible.

Standards of Conduct. Students are expected to conduct themselves professionally and courteously, as prescribed by the Standards of Conduct:

<https://www.utep.edu/student-affairs/osccr/student-conduct/index.html>

Scholastic Dishonesty. Students may discuss assignments in a general way with other students, but the *solutions on individual work must be done independently.* Again, graded work must be unmistakably your own. Any student who commits an act of scholastic dishonesty is subject to discipline. Professors are required to report academic dishonesty and any other violation of the Standards of Conduct to the Dean of Students.

Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, and submission for credit of any work or materials that are attributable to another person. Cheating is copying from the test paper of another student. Communicating with another student during a test to be taken individually. Giving or seeking aid from another student during a test to be taken individually. Possession and/or use of unauthorized materials during tests (i.e. crib notes, class notes, books, etc.). Substituting for another person to take a test. Falsifying research data, reports, academic work offered for credit. Plagiarism is using someone's work in your assignments without the proper citations. Submitting the same paper or assignment from a different course, without direct permission of instructors. To avoid plagiarism see: https://www.utep.edu/student-affairs/osccr/_Files/docs/Avoiding-Plagiarism.pdf. Collusion is unauthorized collaboration with another person in preparing academic assignments.

Special Accommodations. If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148 or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. CASS' staff are the only individuals who can validate and if need be, authorize accommodations for students.

COVID-19 Precautions. Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can support you and help with communication with your professors. The Student Health Center is equipped to provide COVID 19 testing.

The Center for Disease Control and Prevention **recommends** that people in areas of substantial or high COVID-19 transmission **wear face masks when indoors in groups of people**. The best way that **Miners can take care of Miners** is to **get the vaccine**. If you still need the vaccine, it is widely available in the El Paso area and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org

Since this is a highly interactive class with a large amount of group work and proximity to your classmates, I highly encourage everyone to wear a mask during our in-person classes.

Teams: We believe that the ability to work with other software developers is essential. Therefore, students will be required to work effectively in teams throughout the semester. Students will be assigned to management roles within teams for particular project development support activities and/or work products. The role manager is responsible for identifying tasks to either support specific project support activity or build assigned work product; facilitating the assignment of tasks; and integrating the work product. The team leader and planning manager ensure the team meets the deadlines; monitor work progress; verify and validate work products, and provide project status to management. The quality manager is responsible for planning and executing peer reviews and making sure defects get a fix before submitting work to customers and management.

Empowering self-directed teams (policy):

Students will work in teams. Students should develop soft skills to properly and effectively work as team members. Team members are expected to have a positive attitude, deliver quality work on time, participate in peer reviews, and support other team members. Because you are working in a self-managed team, your team has empowerment and it is expected that the team should use it professionally and ethically. **If a team member is not working, performing poorly**, breaking ground rules, or being irresponsible, the team must let the member know about the problem by acknowledging **a warning** as soon as possible (verbally during a meeting or by sending an email). **If the team member continuous breaking ground rules and negatively affecting the team**, the team must let the member know about the problem and acknowledge a **yellow card** by sending him/her an email and copying the instructor (show a yellow card). The team member should let the team know a strategy to improve performance and request help from the team and instructor if needed. **If the team member continues performing poorly or irresponsible negatively affecting the team**, the team has the empowerment to remove him/her from the team by showing him/her a **red card** (show a red card). A student can only receive credit for the team project work if he/she is a contributing member of a team. Yellow and red cards are designated by consensus by all the team members but the affected party. The team leader shall send an e-mail to the instructor and all team members including the affected team member with a brief explanation of the circumstances.

Important Dates.

| | |
|---------------|---------------------------------------|
| Aug 22nd | Fall classes begin |
| Aug 22nd-26th | Late Registration (Fees are incurred) |
| Sept 5th | Labor Day Holiday - University Closed |
| Sept 7th | Fall Census Day |
| Oct 28th | Fall Drop/Withdrawal Deadline |
| Nov 24-25th | Thanksgiving Holiday – Univ. Closed |

| | |
|-------------|--------------------------------------|
| Dec 1st | Fall – Last day of classes |
| Dec 5-9th | Fall Final Exams |
| Dec 10-11th | Fall Commencement |
| Dec 14th | Grades are Due |
| Dec 15th | Grades are posted to student records |

Learning Outcomes

Level 1. Knowledge and Comprehension

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. The material has been presented only at a superficial level. Upon successful completion of this course, students will be able to:

- Define basic software engineering concepts and principles (abstraction, anticipation of change, modularity, stepwise refinement, and separation of concerns).
- Define quality attributes such as availability, correctness, efficiency, interoperability, maintainability, portability, reliability, security, modifiability, availability, testability, and usability.
- State the main features of process improvement models, e.g., CMM, ISO, PSP, QPI, Plan-Do-Check.
- Define security design principles and the rule of least astonishment.

Level 2: Application and Analysis

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work on a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

- Determine which life cycle model to use by analyzing different scenarios.
- Apply techniques for eliciting requirements.
- Analyze requirements to determine if they meet the attributes of well-written requirements.
- Identify risks in software development and project management.
- Analyze the course project and determine the local and global impact on computing on individuals, organizations, and society, including consideration of professional software engineering code of ethics.
- Relate the importance of professional societies.
- Engage in self-directed study to learn new techniques & tools for software requirements definition.

Level 3: Synthesis and Evaluation

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery. Upon successful completion of this course, students will be able to:

- Construct a feasibility report that demonstrates the ability to engage in self-directed study.
- Conduct verification and validation using techniques such as inspections and walkthroughs.
- Construct a prototype, which adheres to basic HCI principles and applicable security design principles, to validate the user interface.
- Construct a software requirements specification.
- Analyze and model aspects of a problem by applying various modeling techniques.
- Demonstrate an ability to assemble and orally present technical work and compose technical documents that are grammatically correct and technically sound.
- Apply effective techniques for project management, collaboration, and problem-solving within groups.