Course Syllabus
Software Engineering I: Requirements Engineering
CS4310 (12502)

Instructor: Dr. Ann Q. Gates
Office: CCSB 3.1002
Phone/e-mail: 747-7689/agates@utep.edu
Office hours: Tuesday: 9:00 to 10:00 am; by appointment
Class Time: 7:30 to 8:50 am TR, CCSB 1.0202/SE Lab in CCSB 1.0702
Prerequisites: Senior Standing in CS

Assistant: Elsa Tai
Office: CRBL 404
E-mail: elsa.tai@gmail.com

TA: David Reyes
Office: CCSB 1.0706
E-mail: dreyes15   @miners.utep.edu
Office hours: Monday and Wednesday 1:00 to 3:00pm; Friday 12:00 to 1:00pm; by
           appointment.

Communication Network. https://www.ibm.com/cloud-computing/social/us/en/

Communication. Communication of course announcements, assignments, and resources will be
done through IBM Connections Cloud. You will be receiving an invitation as soon as the course
roster is validated. Once you are assigned to a team, you will be given a space to post your
weekly efforts. Please check IBM Connections Cloud on a daily basis and post questions about
the course. This is the best way for us to know what parts of the course need clarification.

Text Book. Hull, E., Jackson, K., and Dick, J. *Requirements Engineering 3/E.* Springer, ISBN
978-1-84996-405-0 (http://www.springer.com/computer/swe/book/978-1-84996-404-3)

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 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. **In order to register
for CS4311, students must pass this course with a C or better**.

Grading.   Assignments and quizzes   5% (includes participation)
          Connections Cloud entries   5%
Project40%
          Exams 50% (Final exam is 20% of the grade)

Handwritten notes in a spiral notebook will be allowed during all quizzes. Students are strongly
encouraged to take notes during class and enhance their notes with other resources.

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 read assigned sections of the book and to be prepared to discuss the material in
class. Quizzes will be given after each assignment to check for general understanding of the
material.

Project. Draft project assignments are graded. Because a draft is work-in-progress, comments by the guidance team are general. The assigned letter grade, if applicable, reflects the effort *at that point in time*. The final grade is calculated independently of the rough draft.

Each team member is responsible for documenting his/her work on the project on Connections Cloud**.** The percentage of the project grade calculated towards the final course grade is determined through this documentation and the individual's contribution toward creating an effective team environment. The entries will be maintained through Connections Cloud. **No late project work will be accepted.**

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

Exam1: September 15, 2015
Exam2:   October 15, 2015
Exam3:   November 17, 2015
Final Exam: December 11,   2015, Friday, 7:00 am – 9:45 am (comprehensive Final)

Attendance Policy. Students are allowed at **most three unexcused absences**. Students who exceed the limit will be dropped from the course.

A tardy will be recorded each time a student shows up ten minutes after the start of class. Your final grade will be lowered by one point for every three tardies.

Standards of Conduct.   Students are expected to conduct themselves in a professional and courteous manner, as prescribed by the Standards of Conduct:
http://admin.utep.edu/LinkClick.aspx?link=HOOP-Section+II.pdf&tabid=30181&mid=63285

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. Collusion and plagiarism will not be tolerated. Professors are required to report academic dishonesty and any other violation of the Standards of Conduct to the Dean of Students.

Important Dates.

Sep 7   Labor Day
Oct 30 Course Drop Deadline
Nov 26-27   Thanksgiving Holiday
Dec 3   Last day of classes and complete withdrawal from the University
Dec 4   Dead Day

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:

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

d. State the phases of the software development process
e. State the phases of software requirements engineering

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 a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

a. Determine which life cycle model to use by analyzing different scenarios.
b. Apply techniques for eliciting requirements.
c. Analyze requirements to determine if they meet the attributes of well-written requirements.
d. Identify risks in software development and project management.
e. Evaluate behaviors and work habits of individuals and groups with respect to the professional software engineering codes of ethics.
f. Analyze a software project to determine its local and global impact with respect to individuals, organizations, and society.
g. Describe the role of professional societies.
h. Engage in self-directed study to learn new techniques and 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:

a. Construct a feasibility report that demonstrates an ability to engage in self-directed study.
b. Construct a software requirements specification document that meets IEEE standards and contains well-written requirements.
c. Conduct verification and validation using techniques that include inspections, walkthroughs, and forward and backward tracing.
d. Construct a prototype, which adheres to basic HCI principles, to validate the user interface of the course project.
e. Analyze and model aspects of a problem by applying various modeling techniques that include object, data-flow, and state-transition modeling.
f. Develop use cases and scenarios.
g. Demonstrate an ability to assemble and orally present technical work to different constituencies.
h. Compose technical documents that are grammatically correct and technically sound.
i. Apply effective techniques for project management, collaboration, and problem-solving within groups.

CS 4310 Tentative Course Outline and Deliverables

	1 25-Aug-15	2 1-Sep-15	3 8-Sep-15	4 15-Sep-15	5 22-Sep-15	6 29-Sep-15	7 6-Oct-15	8 13-Oct-15	9 20-Oct-15	10 27-Oct-15	11 3-Nov-15	12 10-Nov-15	13 17-Nov-15	14 24-Nov-15	15 1-Dec-15	16 8-Dec-15
Introduction/Cooperative Teams	Resume															
Elicitation/Use Cases				Use Cases												
Interview			Interview Questions	Interview Report												
Feasibility Study						Feasibility										
GUI /Rapid Prototyping							GUI		Final GUI							
Software Requirements Specification											Final SRS					
V & V	Inspection/Walkthrough			Inspection/Walkthrough					Inspection/Walkthrough						Traceability Report	
Modeling			Class Diagram			StateChart			DFD		Model Refinement					
			Exam 1					Exam 2				Exam 3			Final	

Tentative Due Dates:		Exam Dates:		Week:	Topics:
Resume	8/27/2015	Exam 1	9/15/2015	1	Resume, Intro to SE, Shapes
Interview Questions and Memo (Draft)	9/10/2015	Exam 2	10/15/2015	2	Principles of SE/ Intro to V&V, Teams
Interview Questions and Memo (Final)	9/14/2015	Exam 3	11/17/2015	3	Elicitation, Use Cases
Interview	9/17/2015	Final	12/11/2015	4	Interview client, Scenarios, Class Diagrams
Draft Interview Report	9/21/2015			5	Class Diagrams/Scenarios, Exam
Final Interview Report, Inspection Report for Interview Report	9/25/2015			6	Feasibility, SRS, V&V--Tracing
Draft Feasibility Report	10/5/2015			7	State Chart, Prototype
Final Feasibility Report, Inspection Report for Feasibility Report	10/12/2015			8	Requirements, Exam
GUI Evaluation, Inspection Report for GUI	10/20/2015			9	Prototype Demos, DFD
Draft SRS	11/12/2015			10	Quality attributes, QAS
Final SRS, Inspection Report for SRS	12/3/2015			11	Requirements--non-functional, DFD
Draft V & V Traceability Report	11/24/2015			12	Life cycles, process models
Final V&V Traceability Report	12/4/2015			13	Project Management, Exam
Final Presentations	12/4/2015			14	Ethics, Impact computing
				15	Work in class
				16	Presentation
Use Case L1 Model Review and Presentation	Weekly Meeting				
Use Case L2 Model Review and Presentation	Weekly Meeting				
Class Diagram Model Review and Presentation	Weekly Meeting				
Use Case Scenario Review and Presentation	Weekly Meeting				
StateChart Model Review and Presentation	Weekly Meeting				
DFD Model Review and Presentation	Weekly Meeting				
DOORS Training	Week 6				