CS5316/7316 Software Requirements

1. Instructor Information

Dr. LiGuo Huang

Email: lghuang AT smu DOT edu
Phone: 214-768-3709
Office: Caruth Hall 421
Office Hours: to be announced in class
Email communication: I strive to respond to course-related emails within 24 hours on weekdays. Inevitably I may overlook some messages; if more than 24 hours has passed during the week days, feel free to send me a reminder.

2. Course Description

This course covers the elicitation, analysis, modeling and specification of software engineering requirements, as well as requirements traceability. Requirements engineering has attracted much interest in the software engineering research community and is increasingly recognized by practitioners as one of the most important stages in the software development life cycle to ensure the quality of software systems. This course aims to provide pragmatic team skills to help you and your team perform effective requirements management, understand user and stakeholder needs, define a system based on those needs, manage scope of software intensive systems, refine the system definition and finally build the right system.

There is no pre-requisite for enrollment. CS5316/7316 will be organized as a research seminar, with active student participation. Each student is required to study and present a research paper on Requirements Engineering (RE) which represents the state-of-the-art RE research and to answer any questions that audience may raise during the presentation. This course attempts to enhance the advanced research component in the SMU's software engineering program. It is particularly suited for students interested in pursuing a Ph.D. degree or Doctor of Engineering in software engineering/computer science/other engineering disciplines, and for MS/SE students or junior/senior undergraduate students who want to get a firsthand knowledge about the software requirements research and practice affecting their field of study. It comprises the core curriculum of SMU Master of Science majoring in Software Engineering.

3. Course Topics

The course covers the following topics on software requirements engineering:

- Basic concepts
- Problem frames
- Data models
- Context analysis
- Requirements modeling and modeling approaches
- Requirements specifications
  - Functional requirements
  - Non-functional requirements
  - Sequence Enumeration
- Requirements management and analysis
  - Requirements traceability
  - Requirements evaluation
- Requirements elicitation and negotiation
4. **ABET Learning Outcomes:**

- EAC (e) an ability to identify, formulate, and solve engineering problems
- CAC(b) an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

5. **SACS Learning Outcomes:**

- SACS (III) ability to analyze and solve problems

6. **Selected Student Learning Outcomes**

- understand roles of requirements engineering in software engineering life cycle
- understand key concepts of requirements engineering
- understand and apply the requirements elicitation techniques
- analyze stakeholder needs
- create models of functional and non-functional requirements using a variety of notations and techniques
- master informal, semi-formal and formal requirement specification techniques
- perform requirement traceability analysis

7. **Textbooks and Course Material**

- **Lecture slides and papers**

8. **Workload and Grading**

The course grade that each student receives will reflect the weighted average of 3-4 homework assignments, two exams, and a term project.

A tentative weight of assignment grading is as follows (Please note that the distribution may be subject to adjustment.):

- Homework (30%)
- Research Paper Study and Presentation (10%)
- Final Term Paper/Project (20%)
- Exam 1 (20%)
- Exam 2 (20%)

All assignments will be posted on the course webpage and submitted onto Canvas. Grades for course assignments (i.e., homework, projects, exams) will be posted on Canvas. Final letter grades will be based on the curve (grade distribution) of the entire class and posted on my.smu.

**CS5316 (undergraduate session) students will skip the last question on Exam 1. The CS5316 (undergraduate session) and CS7316 (graduate sessions) will be graded separately.**
Final Term Paper/Project:
Please refer to Final Term Paper/Project Description for details.

Assignment Submission: Please put your Name, SMU ID, Class Section #, Email Address on your title page. In addition, the electronic submission system tends to become slow or unavailable right before the deadline time (depends on your connection speed and traffic to the electronic submission system). **We will not be able to help you if you cannot get your assignment in on time, so submit early. It is you own risk to submit right before the deadline time.**

- On-campus students: Homework is due by 11:59pm on the specified due date for on-campus students, unless otherwise noticed.
- Off-campus students: Homework is due by 11:59pm on the specified due date for off-campus students, unless otherwise noticed.

Late Assignment Submission Policy: Late homework will receive a 25% penalty per day. In case of emergencies, please talk to me to make special arrangements. If you are out of town for a non-emergency (e.g., an interview), you should arrange to turn in the assignment early, rather than late, to avoid a penalty.

Collaboration and Attribution: Collaboration is an essential skill for software engineering. I encourage student to collaboration on discussing and studying the course materials. **Please do not, however, share answers, code, designs that solve an assignment directly with other students.** Solutions to homework should be written or typed from scratch and must not be pieced together from other students.

9. Class Attendance and Participation Policy

On campus students: I expect all on-campus students to attend classes and participate in class discussions. I understand that occasionally circumstances may arise to prevent you from attending class. This is fine, but I would appreciate if you send me an email in advance letting me know the reason that you won't be able to attend class. Chronically missing class is not acceptable, and I reserve the right to penalize the course grade in the event of persistent absence.

Off campus students: I expect all off-campus students to first watch the class video for the latest course announcements and lectures before delivering your questions. If questions asked have been clearly announced or addressed in the lecture video, I reserve the right to penalize the course grade due to the missing class attendance.

10. University Policies

Academic Dishonesty. Academic dishonesty may be defined broadly as a student's misrepresentation of his or her academic work or of the circumstances under which the work is done. This includes plagiarism in all papers, projects, take-home exams, or any other assignments in which the student represents work as being his or her own. It also includes cheating on examinations, unauthorized access to test materials, and aiding another student to cheat or participate in an act of academic dishonesty. Failure to prevent cheating by another may be considered as participation in the dishonest act.

Honor Code. Intellectual integrity and academic honesty are fundamental to the processes of learning and evaluating academic performance; maintaining them is the responsibility of all members of an educational institution. The inculcation of personal standards of honesty and integrity is a goal of education in all the disciplines of the University. The faculty has the responsibility of encouraging and maintaining an atmosphere of academic honesty by being certain that students are aware of the value of it, that they understand the regulations defining it, and that they know the penalties for departing from it. The faculty should, as far as is reasonably possible, assist students in avoiding the temptation to cheat. Faculty must be aware that permitting dishonesty is not open to personal choice. A professor or instructor who is unwilling to act upon offenses is an
accessory with the student offender in deteriorating the integrity of the University. Students must share the responsibility for creating and maintaining an atmosphere of honesty and integrity. Students should be aware that personal experience in completing assigned work is essential to learning. Permitting others to prepare their work, using published or unpublished summaries as a substitute for studying required materials, or giving or receiving unauthorized assistance in the preparation of work to be submitted are directly contrary to the honest process of learning. Students who are aware that others in a course are cheating or otherwise acting dishonestly have the responsibility to inform the professor and/or bring an accusation to the Honor Council. Students and faculty must mutually share the knowledge that any dishonest practices permitted will make it more difficult for the honest students to be evaluated and graded fairly, and will damage the integrity of the whole University. Students should recognize that their own interest, and their integrity as individuals, suffer if they condone dishonesty in others.

The Honor System. All undergraduate students at SMU are under the jurisdiction of the Honor Code, and as such will be required to sign a pledge to uphold the Honor Code. The Honor Council is composed of 22 students appointed by the Student Senate to represent the undergraduate schools and classes of the University. The Council's responsibility is to maintain and promote academic honesty. Students are required to warn or to report to the Honor Council or faculty any student suspected of violating the Honor Code, and to inform the instructor of a course in which violations are suspected that he or she may not be achieving an atmosphere conducive to academic honesty. Suspected violations reported to the Honor Council by a student or by an instructor will be investigated and, if the evidence warrants it, a hearing will be held by a Board composed of five members of the Honor Council. Suspected cases of academic dishonesty may be either handled privately by the appropriate faculty member in whose class the alleged infraction occurred, or referred to the Honor Council. Appeals of actions by the Honor Council shall be submitted to the All-University Judicial Council in writing no later than three class days after the hearing. Appeals of actions taken by instructors independently of the Honor Council may be made through the traditional academic

Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit http://www.smu.edu/Provost/SASP/DASS to begin the process. Once approved and registered, students will submit a DASS Accommodation Letter to faculty through the electronic portal DASS Link and then communicate directly with each instructor to make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (https://www.smu.edu/StudentAffairs/Chaplain/ReligiousHolidays).

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (See 2020-2021 SMU Undergraduate Catalog under “Enrollment and Academic Records/Excused Absences.”)

11. Disclaimer

Please note that this syllabus is subject to change based on the learning progress in class during the semester.