



17-626: Requirements for Information Systems

Class Time: Tuesday and Thursday, 9:50-11:10

Location: REMOTE ONLY

Semester: A2, Fall 2020, 6 units

Instructor(s): Prof. Travis Breaux

Office Hours: Online, Mon, 2:30-3:30 pm

Email: tdbreaux@andrew.cmu.edu

The practical engineering and design of software requires a technical understanding of the problem space and product domain, in order to envision the right solution. In this course, you will study a variety of ways to understand the problem you're solving, the various factors that constrain the solution space, and approaches to deciding among alternatives.

Learning Objectives. After completing this course, you will be able to:

- Interact with potential users in order to gather data about work contexts
- Analyze marketing and user data, and bring it to bear on system design
- Identify requirements conflicts, then reconcile using functional alternatives

Assessments. Students learn more by applying and explaining ideas to others, thus, the course requires the following activities:

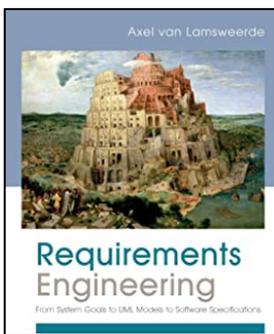
- **Homework assignments**, including questions to help you focus on important points in the readings and to exercise particular skills
- **Critique reports**, to sharpen your skills in analysis and critique of other people's work, and to deliver your critique in a clear, respectful, constructive manner
- **Class participation**, to enrich the discussion with your insight, relevant experience, critical questions, and analysis of the material. The quality of contribution is more important than the quantity.
- **Final Exam**, to demonstrate your cumulative knowledge on practical examples.

| Assessment | Final Grade % | Grade | Percentage Interval |
|----------------------|---------------|-------|---------------------|
| Homework assignments | 50% | A | 90-100% |
| Quizzes | 10% | B | 80-89% |
| Final exam | 25% | C | 70-79% |
| Class participation | 5% | D | 60-69% |
| | | R (F) | 59% or below |

The course includes the following homework assignments:

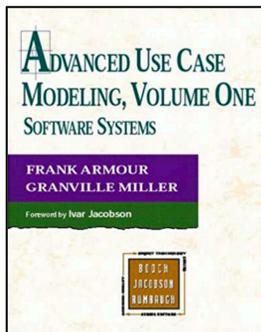
- **Personas.** Given market research, including demographics and technology use, design two contrastive personas.
- **Goals.** Given an interview transcript and a technical article, identify goals and goal refinements for a prospective system.
- **Obstacles.** Given a description of a system failure, identify obstacles and propose mitigations.
- **Use Cases.** Create a scenario from the interview transcript and article using one of your two personas. Create an activity diagram from the scenario. Elaborate three use cases from the activity diagram, including soft goals as non-functional requirements.

Required Textbooks



Author: Axel van Lamsweerde

Requirements engineering (RE) deals with the variety of prerequisites that must be met by a software system within an organization in order for that system to produce stellar results. With that explanation in mind, this must-have book presents a disciplined approach to the engineering of high-quality requirements. Serving as a helpful introduction to the fundamental concepts and principles of requirements engineering, this guide offers a comprehensive review of the aim, scope, and role of requirements engineering as well as best practices and flaws to avoid. Wiley, 2009. [Order it from Amazon.](#)



Author: Frank Armour, Granville Miller

Software developers often employ use cases to specify what should be performed by the system they're constructing. Although use case-driven analysis, design, and testing of software systems has become increasingly popular, little has been written on the role of use cases in the complete software cycle. This book fills that need by describing how to create use case models for complex software development projects, using practical examples to explain conceptual information. Addison-Wesley, 2000.

[Order it from Amazon.](#)

Course and Grading Policies

- **Late-work policy:** All work is expected to be handed in at the indicated due date and time. For fairness to the whole class, no late submissions will be accepted for the group work. In the first week of classes, you should receive your course schedules; please use those to plan ahead.

Each student is allowed one late submission for the individual homework assignments. You should immediately notify the course TA(s) before the submission deadline that you will submit late. Late work must be submitted as soon as circumstances allow, ordinarily within 24 hours of the due date. If you have any questions you should raise them immediately rather than waiting for conflicts to arise.

- **Participation policy.** Class participation will be graded by in-class engagement, including asking relevant questions based on a critical review of required readings, on lectures, and on comments made by your peers. The lack of attendance, and the use of mobile devices, including phones and laptops, which regular engagement will count against your participation grade.

Learning Disabilities. If you have a documented learning disability, please notify the instructor during the first week of class.

Academic Integrity. Honesty and transparency are important to good scholarship. Plagiarism and cheating, however, are serious academic offenses with serious consequences. If you are discovered engaging in either behavior in this course, you will earn a failing grade on the assignment in question, and further disciplinary action may be taken. For a clear description of what counts as plagiarism, cheating, and/or the use of unauthorized sources, please see the [University's Policy on Academic Integrity](#).

If you have any questions regarding plagiarism or cheating, please ask the instructor as soon as possible to avoid any misunderstandings.

Student Wellness. As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. CMU services are available, and treatment does work. You can learn more about confidential mental health services available on campus at: <http://www.cmu.edu/counseling/>. Support is always available (24/7) from Counseling and Psychological Services: 412-268-2922

Course Schedule

The following schedule provides a general overview of topics and assignments. Please refer to the syllabus online in Canvas for specific lecture topics, reading assignments and due dates.

| Class | Date | Topic and Lectures |
|--------------|-------------|--|
| 1 | 10/27 | System Boundaries |
| 2 | 10/29 | System Boundaries |
| 3 | 11/3 | Software Practice in Organizations |
| 4 | 11/5 | Data-driven Personas and Affinity Diagrams |
| 5 | 11/10 | Persona Applications |
| 6 | 11/12 | Goal Modeling and Goal Refinement |
| 7 | 11/17 | Goal Model Critique |
| 8 | 11/19 | Risk and Obstacle Analysis |
| 9 | 11/24 | Use Cases |
| 10 | 12/1 | Use Case Analysis |
| 11 | 12/3 | Use Case Critique |
| 12 | 12/8 | User Interface Design |
| 13 | 12/10 | User Interface Design Walk-throughs |