

Course Syllabus

Course

CS 410-01 Software Engineering, Winona State University

Course Description

Software Engineering is the discipline of problem solving through the development of software systems. Only through a disciplined and repeatable approach with a focus on quality can a business expect to continuously develop software that meets the needs and expectations of their customers. In this course we will examine the many aspects of Software Engineering including the software development lifecycle, project management, quality assurance, design methodologies, and verification and validation techniques.

Software Engineering involves the efforts of many people who collaborate and communicate towards the production of a software product. To ensure optimal productivity towards this end, it is very important to set proper expectations for everyone involved so that they know what is expected of them and when, and what is not acceptable effort. This syllabus then communicates expectations for the student and instructor for this course. The instructor will review this syllabus on the first day of class, but it is the student's responsibility to both read and understand its contents, or clarify content that is not clear with the instructor.

Course Administration

Instructor

Kevin Larsen is a Product Marketing Manager for the Lotus brand at IBM. Employed there since 1992, he spent several years as a programmer in the AS/400 software development laboratory, working on the OS/400 operating system and AS/400 applications. He spent 5 years educating iSeries customers on IBM Web products and technologies, architecture design, and implementation. He is now responsible for marketing and channel enablement for a wide array of Lotus offerings. He holds a B.A. in Mathematics with a minor in Computer Science from Winona State University (1991), an M.S. in Software Engineering from the University of Minnesota (1999), is pursuing a Masters of Business Administration from the University of St. Thomas.

e-mail: kev_twins_fan@yahoo.com
Office hours: By phone or immediately before class

Text

The following book is required for the course and is available in the WSU Rochester bookstore:

- **The Mythical Man-Month: Essays on Software Engineering, Anniversary Edition (2nd Edition)**
Frederick Brooks 1995

The class lecture slides are also for sale in the WSU Rochester bookstore. The student is encouraged to purchase these slides, as the exams will be based entirely upon them.

There is no specific textbook required for this course. However, the student may wish to purchase one of the following textbooks as a reference. This is not required for the course and no information specific to this textbook will be candidate test material.

- **Software Engineering (7th Edition)**
Ian Sommerville
- **Software Engineering – A Practitioners Approach (6th Edition)**
Roger S. Pressman

Class Environment

Class meets Thursday evenings from 6:00pm to 8:40pm in EH105 at the Rochester Campus. Alternate class hours and/or locations will be arranged with the students if necessary. Classes will strictly be lecture format, however, student interaction will be required and encouraged during class periods as we will discuss and debate a number of topics throughout the semester. Two 10-minute break periods will be provided during each class (except during exams).

Communication

The course web site is located at www.roch.edu/faculty/klarsen/cs410. The instructor will use a bulletin board linked at this site to communicate general announcements and changes to this syllabus and course schedule, thus the students is responsible for checking the bulletin board on a regular basis and immediately before class. In addition, students should use this site to post questions related both to course content and structure. The instructor will make every attempt to return such communication within one (1) day.

Attendance

Attendance for this course is **mandatory and will be taken at each class period**. The student is allowed 2 absences from class, either excused or unexcused. More than 2 absences will result in a drop of a full letter grade for the course. Attendance is important as all of the learning and exam material will come from in-class discussion.

Role will be called at 6:15PM during each class. If the student is not present as 6:15, they will be marked absent. No exceptions will be made with regards to distance traveled to class. Risk management is a key activity in Software Engineering, and you have accepted to take on additional risk if you choose to travel long distances to get to class. Remember, showing up to class late is disruptive to other students. Habitually showing up to class late will result in disciplinary action. Showing up late for an exam will result in a withdrawal from the exam.

Course Deliverables

Reading Assignments

The student will be required to read important web-based new articles related to current events in Software and Software Engineering as well as important historical Software Engineering and Computer-related research articles. The student will not be graded on these reading assignments but is expected to discuss them in class.

Writing Assignments

This course is a Flag course and can be used to satisfy both University Studies and major requirements. As such, the student will be required to complete two writing assignments.

The goal of each assignment is twofold:

1. The student is to research a specified topic (detailed below) and understand its scope and content.
2. The student is to communicate learned knowledge in the form of a written report. Each written report is a graded deliverable for this course and is due immediately at the start of class in which it is due (see **Course Schedule**). Late assignments will receive 0 points.

The quality of the communication of the knowledge learned is the key to the writing assignments. For each assignment, the student's grade will be determined by three factors – (1) the ability to identify and understand the major themes regarding the topic, (2) the organization of the themes and supporting material in a manner that convinces the reader of the theme's relevance and importance to the topic, and (3) the clarity in which the material is communicated and flows as it is reviewed. It's not sufficient to simply understand the material and develop raw content: your report must be well organized and structured so that it can be understood by a someone outside of the Computer Science domain

Each report must illustrate the following characteristics:

- It must be typed in 12 point font, and double-spaced. A cover page is not necessary.
- It may not have extra spaces between paragraphs.
- The student must explicitly develop his or her own organization and content. Directly copying or manipulating existing material and representing it as one's own work is a violation of WSU's and this course's cheating policy (see section **Cheating Policy** on page 8).
- Its structure must organized as follows:
 - ✓ A **heading**, which introduces the topic and states the goals for the report. The heading must be interesting and capture the reader's attention (so they will continue to read the report). The heading is a single paragraph.
 - ✓ A **body** that identifies and details important themes and points that the student chooses to explore. The body is multiple paragraphs.
 - ✓ A **conclusion** that summarizes the major points. The conclusion is a single paragraph.

Writing Assignment #1: Book Report

The Mythical Man-Month by Frederick Brooks is a seminal work in Software Engineering and is often regarded as required reading for Software Engineers. For this writing assignment the student will read and prepare a book report on the contents of this book. The report must be a minimum of 3 pages in length. This is a difficult assignment as the book is composed of what seem to be many disjoint topics. Nonetheless, the author weaves several key themes through many chapters, and so the student should identify those themes and show how the topics in various chapters support or discuss those themes.

Writing Assignment #2: Research Paper

The student will also be required to prepare a research paper on a topic of their choice from the two detailed below. These topics contain elements that run counter to the Software Engineering themes we will discuss in class.

- **Topic 1:** The Open Source software movement is gaining momentum with corporate backed funding of the product most associated with Open Source - the Linux operating system. Research this topic, discuss its origins and motivations, current open source products and industry trends, and show how movement to an Open Source approach is affecting or could affect Software Engineering and software quality.
- **Topic 2:** Research the current state of the Software Engineering profession. Discuss the level of IT spending as opposed to past years, and how U.S. software and technology jobs have been affected through off-shoring by U.S. companies. Detail expected trends in the software industry over the next 10 years.
- **Topic 3:** Open standards are permeating the software industry. These are technology standards that are defined by software company cooperation and consortiums, yet no one company controls the standards. As businesses are diversifying their software assets, open standard supports allows for interconnection across business units, enterprises, and across an industry such as healthcare. Research open standards. Discuss the origins open standards, today's key standards and the consortiums/groups developing them. Explain the benefits of open standards to organizations that adopt them.

A minimum of three resources (any combination of books, periodicals, web-based) must be used to develop the research paper, and each must be listed in a **bibliography** that is attached at the end of the research paper. Each resource in the bibliography should be documented with the title of the resource, the author(s), date of publication, and page numbers or URL if using a web resource. It is the student's responsibility to locate appropriate resource materials, as this is a task confronted by an engineer on a continuous basis. The size of the research paper must be a minimum of 5 pages, and those over 10 pages long are probably too long.

Note: You may use a one or more quotes from existing material to embellish your papers, but you must source them, meaning that you enclose the quote in quotation marks and identify the source. Quotes may be one or two sentences at most. A paper that is 'overloaded' with long quotes or too many quotes will receive a lower grade.

Exams

Two exams will be given in this course: a mid-term exam and a final exam. Both will be closed notes and closed book. Only the material from the lectures will be candidate material for these tests. In addition, the final exam will only cover material discussed after the midterm exam. This course is quite different from traditional Computer Science courses, and presents the student with a large quantity of information. This is also an advanced course in the University curriculum, thus you can expect the exams to be challenging. The student is encouraged to continuously review and study the course material to best prepare for the exams. Studying for the exams in groups is highly encouraged. Cramming for the exams is not an effective study technique.

Course Grading

Each graded course deliverable has a specific maximum number of points that can be achieved (deliverable points) which contribute to the total number of points that a student can achieve in the course (course points). The breakdown of deliverable points is as follows:

Graded Course Deliverable	Deliverable Points	Percentage of Course Points
Book Report	200	25%
Mid-term Exam	200	25%
Research Paper	200	25%
Final Exam	200	25%
Course Points	800	100%

For each deliverable, the student will receive a portion of the maximum point value, not exceeding the maximum number of points for the deliverable. In this class, the student has the right to make an (constructive) argument regarding their assigned deliverable points if they feel their deliverable was graded incorrectly. The instructor will take the argument under advisement and reconsider the points assigned. The student can only make this argument during the course period when the deliverable is returned. The student's course letter grade will be the percentage of course points achieved by the student. That percentage will be rounded to the nearest whole number (for example: if the student achieves 89.5% of the total course points, this will be rounded to 90%. If the student achieves 89.4%, this will be rounded to 89%). The following scale will determine the letter grade for the course that will be assigned for the student:

Course Letter Grade	Percentage of Course Points Required	Course Deliverable Points Required
A	90% – 100%	716 – 800
B	80% – 89%	636 – 715
C	70% – 79%	556 – 635
D	60% – 69%	476 – 555
F	< 60%	< 475

Notes: Students must average a letter grade of 'C' (70%) between the two course exams to receive at least a 'C' for the course, regardless of the letter grade received for the other course deliverables. Students not averaging a letter grade of 'C' will receive at best a 'D' for the course, regardless of grades achieved on other course deliverables.

It is the student's responsibility to earn as many course points as possible, and their course letter grade will be a complete reflection of this effort. The instructor, in assigning a student's course letter grade, will not take individual considerations into account.

The instructor will make graded Final Exams available to students for a period of 1 month after the exam is taken. Students must arrange to pick up the exam at the instructor's convenience. After 1 month, all exams will be destroyed.

Additional Course Information

Cheating Policy

Cheating in any form will NOT be tolerated in this course. Any student who is discovered cheating in this course will immediately receive a letter grade of 'F' for their course grade, regardless of intent or lack of knowledge as to what constitutes cheating. Examples of cheating include, but are not limited to:

- Using notes on exam days to help with exam questions.
- Copying one or more sentences from an existing source(s) into any writing assignment and representing them as the student's unique material.
- Copying content from existing source(s) and modifying it slightly (in content or structure) to make it appear unique to the student.

Cheating not only impacts a student's academic career, but it may also degrade their reputation within the department and university, which could have implications when attempting to secure letters of recommendation, for example. The integrity of the education delivered by Winona State University will be upheld in this course. **Do NOT make assumptions as to what is allowed behavior – consult the instructor if you are unsure.**

Personal Crises/Emergencies

If a personal or family crisis develops during the course of the semester, the student must consult the instructor immediately if they feel the situation could impact their ability to attend class and/or complete the course deliverables. Appropriate arrangements can be made to reschedule deliverable due dates provided appropriate documentation from a physician or Winona State University counselor is provided. Except for personal emergencies that develop immediately before (1-2 days) or on the day of the exams, it is not acceptable to request a delay on course deliverables immediately prior to the due date of a deliverable.

Incomplete

The *Incomplete* grade indicates that the instructor has (1) reasonable expectations that the student can complete an unfinished course on her/his own no later than the end of the semester, and (2) believes that reasons exist to justify extending the deadline for course completion as per defined by university policy.

Policy on Laptop Computers

The use of laptop computers during class lectures is not allowed. You may use your laptop before class and during breaks, but during lectures, all laptops must be closed. Using a laptop during lectures is disruptive and disrespectful, and removes you from attendance for that class.