## 70-440-1 Software Engineering

**TR 11:00-12:15**

**Instructor:** Dr. Cindy Howard, Associate Professor, Computer and Mathematical Sciences

* Office: AS-131-L
* Office Hours: TR 12:30-2:00 and by appointment
* Office phone number: 815-836-5134
* Email: [howardcy@lewisu.edu](mailto:howardcy@lewisu.edu)

### Catalog Description:

Methods, strategies, and tools for implementing software systems, particularly as part of a development team. Topics include the software development life cycle, Unified Modeling Language, software testing techniques, software security, open-source development, requirements gathering and documentation, maintenance, and basic software project management. 3 Credits.

**Prerequisites:**

70-245 (Object-Oriented Programming)

**Course Objectives:**

The objectives of this course are the following:

* Learn about the activities and artifacts created in each phase of the software development life cycle
* Provide students the opportunity to participate in a group software development process

**Student Learning Outcomes:**

On the successful completion of this course the student will:

* identify and describe the four activities fundamental to software engineering
* compare and contrast various software process models
* be able to elicit and analyze requirements of a proposed application
* write clear and complete requirements documents
* identify the events to which the software must respond and document them as a set of use cases
* identify security issues in a software projects requirements and design
* use techniques to produce self-documenting code
* use coding strategy to produce secure code
* draw diagrams to model work flows
* develop and use diagrams to model classes and the interaction of classes
* understand and practice unit testing and functional testing
* understand the techniques used to test non-functional requirements such as performance and security
* develop a project schedule
* work as a team to complete a sophisticated software project

**Relationship to mission**

Lewis University is a Catholic University in the Lasallian Tradition. Our Mission is integrated into all aspects of University life, including this course. This course embraces the Mission of the University by fostering an environment in which each student is respected as an individual within a community of learners. In the spirit of the vision of Lewis University, the goals and objectives of this course seek to prepare students to be successful, life-long learners who are intellectually engaged, ethically grounded, socially responsible, and globally aware.

**Textbook:**

Tsui, Karam and Bernal, *Essentials of Software Engineering*, 3rd Edition, 2014. ISBN: 978-1-4496-9199-8. PowerPoint Slides and additional material will be posted on Blackboard

**Course Requirements:**

Individual homework assignments, online quizzes and group software project work. There will be two in-class exams.

**Grading Policies:**

Your final grade in the course will be based on the following:

Homework and quizzes 30%

Exam 1 20%

Exam 2 20%

Project and group work 30%

Final course letter grade will be determined using the following approximate scale:

A 90-100 C- 70-72

B+ 87-89 D+ 67-69

B 83-86 D 63-66

B- 80-82 D- 60-62

C+ 77-79 F 59 and below

C 73-76

**Course Policies:**

Since the course involves group work, attendance is mandatory. If you miss a class it is your responsibility to find out what you've missed. Students must turn in all assignments, and take all scheduled exams. **Extensions for assignments and make-up exams will not be given and partial credit for late assignments will not be given.** Any form of plagiarism will result in a 0 points for that work, and your grade will be reduced by one level at the end of the semester. If you are found cheating a second time, you will fail the course.

Surfing the web during class is about as useful as just not showing up at all. Do not surf the web during class. I will not help you if you come to me with questions that were covered during class if I strongly suspect that you spent the time surfing.

**Course Outline:**

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| Week | Topic | Reading Assignment |
| 1 | Introduction to Software engineering | Chapters 1-3 |
| 2 | Software process models | Chapters 4-5 |
| 3 | Requirements engineering | Chapter 6 |
| 4 | Project management | Chapter 13 |
| 5 | Configuration management  Ethics | Chapter 11 |
| 6 | **Exam 1** Web Development |  |
| 7 | Web Development and Databases |  |
| Spring Break | | |
| 8-9 | Design and design metrics | Chapters 7-8 |
| 10 | Implementation  **Easter Break** | Chapter 9 |
| 11 | Secure coding |  |
| 12 | Code tuning |  |
| 13 | Testing | Chapter 10 |
| 14 | Maintenance  **Exam 2** | Chapter 12 |
| 15 | Project completion |  |

***Sanctified Zone***

*This learning space is an extension of Lewis University’s Sanctified Zone, a place where people are committed to working to end racism, bias and prejudice by valuing diversity in a safe and nurturing environment. This active promotion of diversity and the opposition to all forms of prejudice and bias are a powerful and healing expression of our desire to be Signum Fidei, “Signs of Faith,” in accordance with the Lewis Mission Statement. To learn more about the Sanctified Zone, please visit:* [*http://www.lewisu.edu/sanctifiedzone*](http://www.lewisu.edu/sanctifiedzone)*.*