

3460:680 Software Engineering Methodologies (SEM) Fall 2018

Section 001 76994 Monday and Wednesday 2:45 - 4 pm Arts & Sciences (CAS) 135

Instructor: Dr. Michael L. Collard

Homepage: mlcollard.net

Email: collard@uakron.edu

Office: Arts & Sciences (CAS) 228

Mailbox: Arts & Sciences (CAS) 221

Phone: (330) 972-7191

Office Hours: Posted on the instructor's homepage. Also available by appointment.

Course Description The theoretical basis, analysis, artifacts, and processes of software engineering through the phases of requirements, analysis and design, implementation, testing and validation, release, maintenance and evolution.

Successful software engineering is highly dependent on the proper handling of document artifacts through the entire lifetime of the software. Therefore, the course will have a strong focus on the applicability of approaches/artifacts through the evolution of software, i.e., development and maintenance.

The course will include the following (but not be limited to or necessarily covered in this order):

- Software Process Models
- Software Architecture
- Software Measurements & Metrics
- Static & Dynamic Analysis
- Software Evolution
- Traceability
- Empirical Software Engineering
- Version Control & Configuration Management
- Modeling Static & Dynamic System Aspects
- Theoretical Basis for Software Testing
- Forward & Reverse Engineering
- Software Visualization

Most of the material will come from the instructor's own notes, and from selected published research papers. Due to the breadth of the subject the textbook will be used for general background.

Learning Objectives Students successfully completing the course will be able to:

- Understand the role of version control and the evolution of software
- Demonstrate fundamental knowledge of all software process models
- Create artifacts for all phases of software development
- Evaluate analysis and modeling techniques on existing systems
- Understand the benefits and usage of software transformation, traceability, and visualization
- Create a research paper on the subject of software engineering

Prerequisites: Graduate Standing. Completion of an undergraduate software engineering course or industrial software development. Strong object-oriented programming skills in C++ or Java is expected. **Credits:** 3

Optional Textbook: Sommerville, Software Engineering 10th Edition, Addison Wesley, 2011 ISBN 978-0133943030

Grading	Exercises	10%	A	≥ 93%	C	≥ 73%
	Projects	20%	A-	≥ 90%	C-	≥ 70%
	Research	20%	B+	≥ 87%	D+	≥ 67%
	Midterm	25%	B	≥ 83%	D	≥ 63%
	Final	25%	B-	≥ 80%	D-	≥ 60%
			100%	C+	≥ 77%	F

Exercises To provide immediate practice of material presented in class, exercises will be assigned periodically throughout the semester and will count for 10% of your overall grade. They may be integrated into the lecture, i.e., assigned and completed during a class period, or be assigned as homework.

Projects There will be multiple projects that include the generation and maintenance of artifacts of the software-engineering process, and analysis of existing systems using standard software engineering analysis techniques. Project grades will depend on the correctness, readability, style, quality, and application of the concepts presented in the course. Collectively, the projects are worth 20% of the overall grade, with each project worth an equal amount. Some projects may include controlled collaborative work with other students in the course.

Research Paper The course will include a Research Paper that will be presented at the end of the semester, and will count for 20% of the overall grade

Midterm The midterm counts for 25% of your overall grade, and will be given after the 8th week of the course . The specific date will be announced at least one week prior.

Final Exam The final exam is comprehensive and is worth 25% of your overall grade. It will be held in the regular classroom on the day/time determined by the University. Consult ZipLine for exact day/time.

Policies The class will be taught using a variety of sources. Notes will be from web sources, the instructors own web pages, and written on the board. Examples may be entered by the instructor and discussed during class. On-time attendance is necessary for complete understanding of the material, and therefore expected.

In order that work can be graded and returned promptly, late assignments will not be accepted without a valid excuse. It is up to the student to make up any missed material. Make-ups of any work for this class will only be given in the case of an excused absence or a documented, valid emergency. I encourage you to contact me if an emergency arises.

Academic Honesty Any work that you do for this class is to be your own. This includes all material submitted for this course including, but not limited to, writings, programs, designs, and data. Any collaboration or group work will be strictly controlled. Any violation means that the work will not be accepted and further action will be taken. Submission of work that is even partly not yours will be reported to the *Office of Student Conduct and Community Standards*.

Special Notice Any student who feels she/he may need an accommodation based on the impact of a disability should contact the Office of Accessibility at 330-972-7928. The office is located in Simmons Hall, 105.

The University of Akron is committed to providing an environment free of all forms of discrimination, including sexual violence and sexual harassment. This includes instances of attempted and/or completed sexual assault, domestic and dating violence, gender-based stalking, and sexual harassment. Additional information, resources, support and the University of Akron protocols for responding to sexual violence are available at uakron.edu/Title-IX