

# University of Michigan-Dearborn Syllabus



## CIS 375 Software Engineering 1 - 4 credit hours

Semester and Year: Summer 2017

Prof. Bruce R. Maxim

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Office Hours: 4:00-6:00 MW, 4:00-6:00 TTh, by appt. F

Dearborn Discovery Core Category or Categories: Upper Level Writing

Course Meeting Times and Format(s):

1212 ML (May/Jun), 1021 CASL (Jul/Aug), 4-5:45 TR, Recitation

URL: <http://www-personal.umd.umich.edu/~bmaxim/>  
<http://groups.umd.umich.edu/cis/course.des/cis375.html>

### Course Description:

This course presents an in-depth treatment of the following software engineering topics: software engineering paradigms, requirements, specification, functional design, object-oriented design, user interface design, software verification and validation, and the maintenance and management of software engineering artifacts, as well as an introductory discussion of software reliability. Various phases of the software engineering process will be modeled using UML.

### Program Goals:

- Our graduates will be successfully employed in a computer and information science-related field or another career path, in an industrial, commercial, academic, governmental, or non-governmental organization, or will be a successful graduate student in a program preparing them for such employment
- Our graduates will lead and participate in culturally diverse teams, becoming global collaborators and adapting to an ever changing field
- Our graduates will continue their professional development by obtaining continuing education credits, professional registration or certifications, or post-graduate study credits or degrees

### Dearborn Discovery Core Goals:

- Students are able to demonstrate advanced competency by writing for a specific audience and integrating disciplinary ideas and concepts (requirements document).
- Students are able to effectively evaluate and use research methods, sources, or technology appropriate to the field (design document).
- Students are able to engage in critical inquiry and thinking to synthesize or create a new rendering of perspective (milestone documents in the term project).

## Course Objectives:

### a. instructional objectives

- The student will be able to create a risk table for a software development project and risk information sheets for each critical or catastrophic risk
- The student will be able to create and execute a test plan for a software system, including test case creation, based on the specified requirements
- The student will be able to implement a software system that meets the needs of an external customer and that involves the creation of a significant user interface and help system
- The student will be able to make use of appropriate software engineering tools in the development of a software product
- The student will be able to manage the completion of a software project for an external customer
- The student will be able to participate in several peer design walkthroughs, including the presentation and critiquing of each other's designs during class time
- The student will be able to participate on a multi-disciplinary design team to design and implement a software project
- The student will be able to write a complete design document for a software system
- The student will be able to write a management plan for a software project that involves time and resource estimates, personnel scheduling detail, and the determination of its production costs

### b. student outcomes (ABET)

- Outcome b - An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- Outcome c - An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs
- Outcome d - An ability to function effectively on teams to accomplish a common goal
- Outcome e - An understanding of professional, ethical, legal, security, and social issues and responsibilities
- Outcome f - An ability to communicate effectively with a range of audiences
- Outcome g - An ability to analyze the local and global impact of computing on individuals, organizations and society
- Outcome i - An ability to use current techniques, skills, and tools necessary for computing practices
- Outcome k - An ability to apply design and development principles in the construction of software systems of varying complexity

**Required Materials and/or Technology:**

REQUIRED: Software Engineering: A Practitioners Approach, 8th Edition, Roger S. Pressman and Bruce R. Maxim, McGraw-Hill, 2014.

RECOMMENDED: Classical and Object-Oriented Software Engineering, 8th Edition, Stephen R. Schach, McGraw-Hill, 2011.

TECHNOLOGY: Various programming languages and software engineering tools.

**Assignment and Grading Distribution:**

4 Exams	(25 points each)	20%
4 Project Assignments	(50 points each)	75%
Class Participation		5%

**Grading Scale:**

96%- 100%	A+	77%-79%	C+
92%- 95%	A	74%-76%	C
90%- 91%	A-	70%-73%	C-
87%- 89%	B+	67%-69%	D+
84%- 86%	B	64%-66%	D
80%- 83%	B-	60%-63%	D-

**Tentative Course Outline:**

Date	Activity and Content	Reading
May 9	Software Engineering and Process Models Paper Tower, Airplane (class in 1212 ML)	SEPA 1-4
May 11	Agile Process Models SCRUM Card Game	SEPA 5-6
May 16	Requirements Engineering Understanding Requirements and Ambiguity	SEPA 7-8
May 18	Requirements Engineering User Stories	
May 23	Requirements Engineering Use Cases	SEPA 9-11
May 25	Requirements Modeling UML	SEPA App1
May 30	Reviews	SEPA 20
May 30	Exam 1a	

Jun 1	Inspections	SEPA 20
Jun 6	Configuration Management	SEPA 29
Jun 8	Project Estimation Software Requirements Specification due	SEPA 31,33
Jun 13	Project Management Scheduling	SEPA 34
Jun 15	Risk Management	SEPA 35
Jun 20	Product and Process Metrics	SEPA 30, 32
Jun 20	Exam 1b	
Jun 22	Team Presentations Project Plan Due	
Jun 26 - 30	Summer 1 exams - no class	
Jul 4	Independence Day - no class	
Jul 6	Architectural Design (class moves to 1021 CASL for rest of semester)	SEPA 12, 13
Jul 11	Component Design	SEPA 14
Jul 13	User Interface Design and Reviews	SEPA 15
Jul 18	Paper Prototypes and User Modeling	SEPA 15
Jul 20	Design Patterns	SEPA 16
Jul 20	Exam 2a	
Jul 25	Technical Reviews Design Document Due	
Jul 27	Software Quality - Defect Life Cycle	SEPA 19
Aug 1	Software Testing Strategies - Understanding Testing	SEPA 22
Aug 3	Testing Software - Test Cases and Plans	SEPA 23
Aug 8	Testing - Cost Effective Testing	SEPA 24
Aug 10	Software Quality	SEPA 21
Aug 15	Security Inspection	Notes
Aug 15	Exam 2b	

Aug 17	Technical Reviews Test Plan due	
Aug 24	Oral Presentation of Term Project (3:00-6:00)	

**University Attendance Policy:**

A student is expected to attend every class and laboratory for which he or she has registered. Each instructor may make known to the student his or her policy with respect to absences in the course. It is the student’s responsibility to be aware of this policy. The instructor makes the final decision to excuse or not to excuse an absence. An instructor is entitled to give a failing grade (E) for excessive absences or an Unofficial Drop (UE) for a student who stops attending class at some point during the semester.

**Academic Integrity Policy:**

The University of Michigan-Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University’s standards of academic conduct as set forth by the Code of Academic Conduct (<http://umdearborn.edu/697817/>), as well as policies established by each college. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses and violations can result in penalties up to and including expulsion from the University.

**Disability Statement:**

The University will make reasonable accommodations for persons with documented disabilities. Students need to register with Counseling & Disability Services (DS) every semester they are enrolled. DS is located in 2157 UC ([http://www.umd.umich.edu/cs\\_disability/](http://www.umd.umich.edu/cs_disability/)). To be assured of having services when they are needed, students should register no later than the end of the add/drop deadline of each term. If you have a disability that necessitates an accommodation or adjustment to the academic requirements stated in this syllabus, you must register with DS as described above and notify your professor.

**Safety:**

All students are encouraged to program 911 and UM-Dearborn’s University Police phone number (313) 593-5333 into personal cell phones. In case of emergency, first dial 911 and then if the situation allows call University Police.

The Emergency Alert Notification (EAN) system is the official process for notifying the campus community for emergency events. All students are strongly encouraged to register in the campus EAN, for communications during an emergency. The following link includes

information on registering as well as safety and emergency procedures information:  
<http://umdearborn.edu/emergencyalert/>.

If you hear a fire alarm, class will be immediately suspended, and you must evacuate the building by using the nearest exit. Please proceed outdoors to the assembly area and away from the building. Do not use elevators. It is highly recommended that you do not head to your vehicle or leave campus since it is necessary to account for all persons and to ensure that first responders can access the campus.

If the class is notified of a shelter-in-place requirement for a tornado warning or severe weather warning, your instructor will suspend class and shelter the class in the lowest level of this building away from windows and doors.

If notified of an active threat (shooter) you will Run (get out), Hide (find a safe place to stay) or Fight (with anything available). Your response will be dictated by the specific circumstances of the encounter.