

University of Michigan-Dearborn Syllabus



CIS 678 Research Advances in Software Engineering - 3 Credit Hours

Semester and Year: Winter 2017

Prof. Bruce R. Maxim

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Office Hours: 4:00-6:00 M, 4:00-6:00 W, 2:00-4:00 Th, by appt. F

Dearborn Discovery Core Category or Categories:

Capstone Experience, Creative and Critical Thinking

Course Meeting Times and Format(s): 6:00-8:40 M, Seminar, 2080 EC

URL: <http://www-personal.umd.umich.edu/~bmaxim/>

<http://www.umd.umich.edu/CIS/course.des/cis4952.html>

Course Description:

CIS 678 is a research-oriented class. An in-depth study of one or more topics in the field of software engineering such as automated software maintenance, software testing, model-driven engineering, human factors in software engineering, software specifications, software management, emerging technology and applications, applying optimization techniques in software engineering and empirical software engineering.

Course Objectives:

Most of the sessions will be organized around the discussion of different research papers taken from software engineering journals and conference proceedings. The students will be expected to read each paper covered, write a short summary and a brief review/evaluation of each paper, and be prepared to discuss it in class. In addition, students will be required to lead several in-class discussions.

To summarize, students who complete this course will:

- Learn how to conduct empirical studies to solve a real-world software engineering problem
 - develop skills for conducting research in software engineering
 - be familiar with quantitative aspects of software engineering
 - be able to evaluate existing empirical studies
- develop ability to study and critique advanced software development methods
- acquire hands-on experience with an advanced development methodology

Required Materials and/or Technology:

Several research papers will be used during the semester. In general they will be taken from the following high impact software engineering journals such as:

- IEEE Transactions on SE (TSE): <http://dblp.uni-trier.de/db/journals/tse/index.html>
- ACM Transactions on SE and Methodology (TOSEM):<http://dblp.uni-trier.de/db/journals/tosem/index.html>
- Empirical Software Engineering Journal (EMSE):<http://dblp.uni-trier.de/db/journals/ese/index.html>
- Software Quality Journal (SQJ): <http://dblp.uni-trier.de/db/journals/sqj/index.html>
- Journal of Software:<http://dblp.uni-trier.de/db/journals/smr/index.html>
- Information and Software Technology (IST): <http://dblp.uni-trier.de/db/journals/infsof/index.html>

Assignment and Grading Distribution:

The term project for this class is a small research study written up as the first draft of a research paper that could be submitted to a software conference or journal. The project should focus on designing a new technique/method to solve a software engineering problem. The students will:

- Propose an experiment investigating some aspect of the software method of their choice.
- Conduct the study and write up the findings.
- Present the study in class.

Paper to presentations	20%
Paper evaluation review forms	15%
<i>Phase I</i> State of the art: oral presentation	15%
<i>Phase II</i> Mid-project presentation: Oral presentation	15%
<i>Phase IV</i> Coding and evaluation: source code	05%
<i>Phase V</i> Presentation and the final project report	30%

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-

The course topics include:

- Software lifecycle and process models such as waterfall, spiral, and agile methods
- Software metrics and anti-patterns
- Design generation, design representation, and heuristics for good design.

- Dynamic software verification: unit, integration, regression, and acceptance testing.
- Static software verification: reviews, walk-throughs.
- Software development tools such as version control and unit testing frameworks.
- Standard representations for requirements, such as user stories and interaction prototypes.

Tentative Course Outline:

Date	Activity and Content
Jan 09	Graduate Student Success
Jan 16	MLK Celebration - no class
Jan 23	Library Research Skills
Jan 30	Writing Research Papers
Feb 6	Paper Presentations
Feb 13	Paper Presentations
Feb 20	Project Approvals
Feb 27	Spring Break
Mar 6	State of the Art Prtoject Presentations
Mar 13	Paper Presentations
Mar 20	Mid-Project Presentation
Mar 27	Project Discuissions
Apr 3	Paper Presentations
Apr 10	Code Review
Apr 17	Career Management
Apr 24	Final Project Presentations 6:30-8:00

Writing Center

The Writing Center provides support for all UM-Dearborn students wishing to improve their writing. Students needing regular one-on-one help in developing basic writing skills, as well as more advanced students wishing to improve their writing, will find the center useful. The center is located in 3035 CB (Mon-Thurs 8:30-7:00 and Fri 8:30-1:00) with smaller satellites on the first floor of Mardigian Library (Mon-Thurs 10:00-1:00) and Fairlane Center North 138 (Mon-Thurs 2:00-8:00). The center tries to accommodate walk-ins but prefers students make appointments online at

http://casl.umd.umich.edu/writ_center/

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/). 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.