University of Michigan-Dearborn Syllabus

CIS 4952/4962 Senior Design 2 - 2 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): 12:00-1:45 M, Seminar, 1330 PEC
URL: http://www-personal.umd.umich.edu/~bmaxim/
        http://groups.engin.umd.umich.edu/CIS/course.des/cis4952.html

Course Description:

This course continues the work on Advanced Software Engineering Principles and Professional Practice Issues from CIS 4951/4961. The purpose behind this course is to give CIS students the opportunity to sharpen their software analysis and client communications skills. Students will work with real-world clients and take software project from the requirements analysis phase through the implementation and delivery of the product to the customer's site (prior to the end of the semester). Classroom activities focus on student directed discussions of current profession issues and presentations based on project milestones from the software development activities. You must receive an acceptance letter from your client for your team project work to receive a grade in this course.

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:

a. Capstone Experience
- Students are able to identify, obtain, research, and describe major issues associated with a specific topic of inquiry.
- Students are able to identify and discuss critical questions leading to a deeper

engagement in the study of a specific topic of inquiry or technology.
- Students are able to apply knowledge, skills and abilities in the creation and execution of a concrete project informed by specific topic of inquiry.

b. Critical and Creative Thinking
- Students are able to identify, summarize, and understand the problem, question, and/or issue.
- Students are able to identify, locate, and critically or creatively evaluate evidence using appropriate sources or technology.
- Students are able to consider and interpret alternative perspectives to support analysis.
- Students are able to develop and communicate conclusions and implications by synthesizing technical, aesthetic, conceptual knowledge or supporting evidence.

Course Objectives:

a. Outcomes of instruction
- The student will be able to conduct one 30 minute seminar discussions of ethics or professional issues papers requiring independent library and/or Internet research
- The student will be able to conduct a project post-mortem to determine the effectiveness of the project plan
- The student will be able to conduct one 30 minute seminar discussions of ethics or professional issues papers requiring independent library and/or Internet research
- The student will be able to create and execute a test plan for a real-world software system, including test case creation, based on the specified requirements
- The student will be able to describe the design trade-offs considered in formulating the software architecture for a software system designed to meet the needs of a real-world client
- The student will be able to implement a software system that meets the needs of an external customer
- The student will be able to lead a software development team in the successful completion of a software project for an external customer
- The student will be able to make 5 group PowerPoint presentations, each about 15-20 minutes in length
- 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 successful completion of a software project for an external customer
- The student will be able to participate on a team to design and implement a software system to solve a real-world problem
- The student will be able to write 2 milestone documents (about 40 pages each) and a final project report (about 250 pages in length)
- The student will be able to write a complete design document for a real-world software system

b. Student outcomes addressed in the course
- Outcome b – An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution *(Not assessed here)*
- Outcome c – An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs *(Not assessed here)*
- Outcome d – An ability to function effectively on teams to accomplish a common goal (Assessed here)
- Outcome e – An understanding of professional, ethical, legal, security, and social issues and responsibilities (Assessed here)
- Outcome f – An ability to communicate effectively with a range of audiences (Assessed here)
- Outcome g – An ability to analyze the local and global impact of computing on individuals, organizations and society *(Assessed here)*
- Outcome h – Recognition of the need for, and an ability to engage in, continuing professional development (Assessed here)
- Outcome i – An ability to use current techniques, skills, and tools necessary for computing practices *(Not assessed here)*
- Outcome k – An ability to apply design and development principles in the construction of software systems of varying complexity *(Assessed here)*

Required Materials and/or Technology:

REQUIRED: Cyberethics: Morality and Law in Cyberspace, 6th Edition, R. Spinello, Jones & Bartlett, 2017.
RECOMMENDED: Software Engineering: A Practitioners Approach, 8th Edition, Roger S. Pressman and Bruce R. Maxim, McGraw-Hill, 2014.
TECHNOLOGY: Various programming languages and software engineering tools.

Assignment and Grading Distribution:

2 Project Assignments (Written and Oral)	30%
Paper Presentation	20%
Final Report	20%
Project Demonstration	20%
Attendance	10%

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
Jan 09	Project Teams Check-in
Jan 16	MLK Celebration – no class
Jan 23	Paper Presentations
Jan 30	Paper Presentations
Feb 6	Paper Presentations
Feb 13	Design Document/Prototype Presentations
Feb 20	Design Document/Prototype Presentations
Feb 27	Spring Break
Mar 6	Paper Presentations
Mar 13	Test Plan Presentation
Mar 20	Test Plan Presentation
Mar 27	Paper Presentations
Apr 3	Paper Presentations
Apr 10	Client Acceptance Letter Due
Apr 17	Final Project Presentations
Apr 21	Senior Design Day 1:00-3:00
Apr 26	Post Mortem Presentations 11:30-2:30

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.