University of Michigan-Dearborn Syllabus

CIS 4952/4962 Senior Design 2 - 2 credit hours
Summer 2016

Prof. Bruce R. Maxim
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Office Hours: 2:00-3:00 MW, 2:30-4:30 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, 1165 SSB
URL: http://www-personal.umd.umich.edu/~bmaxim/
       http://www.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
May 9	Project Teams Check-in
May 16	Paper Presentations
May 23	Paper Presentations
May 30	Memorial Day Holiday
Jun 6	Design Document/Prototype Presentations
Jun 13	Design Document/Prototype Presentations
Jun 20	Paper Presentations
Jun 27	Summer Break
Ju1 4	Holiday
Jul 11	Paper Presentations Project Teams Check-in
Jul 18	Test Plan Presentations
Jul 25	Test Plan Presentations
Aug 1	Paper Presentations
Aug 8	Paper Presentations Client Acceptance Letter Due
Aug 15	Paper Presentations
Aug 26	Post Mortem Presentations and Final Project Demos 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 Disability Resource Services (DRS) every semester they are enrolled. DRS is located in Counseling & Support Services, 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 DRS as described above and notify your professor.

Safety:

All students are strongly encouraged to register in the campus Emergency Alert System, for communications during an emergency. The following link includes information on registering as well as safety and emergency procedures information: http://umemergencyalert.umd.umich.edu/ Finally, all students are also encouraged to program 911 and UM-Dearborn's Public Safety phone number (313) 593-5333 into personal cell phones. In case of emergency, first dial 911 and then if the situation allows call UM-Dearborn Public Safety.