CSE *3213/CSE *3223
Software Engineering Senior Project I/II

REQUIRED/ELECTIVE:
Computer Science — Elective
Software Engineering — Required
Computer Engineering — Elective

CATALOG DATA:
CSE 3213: (Prerequisite: CSE 4214 with a grade of C or better). Four hours laboratory. Software requirements elicitation and specification, cost estimation, scheduling, development of project management and quality assurance plans, reviews.

CSE 3223: (Prerequisite: CSE 4214 with a grade of C or better). Four hours laboratory. Team work, software design, construction, implementation of project management and quality assurance plans, and configuration management.

PREREQUISITE BY TOPIC:
1. Computer Programming
2. Software requirements determination
3. Software design
4. Software quality
5. Object Oriented paradigm
6. Quality Assurance and Testing
7. Technical Writing
8. Basic file structures and data representations

TEXTBOOKS AND OTHER REQUIRED MATERIAL:
No textbook.
Relevant software-engineering document templates are provided by instructor.

COORDINATOR:
Dr. Edward B. Allen

COURSE OBJECTIVES:
1. Provide an actual experience in the software-engineering discipline. (CSE3213/CSE3223)
2. Work with an actual customer and exercise the entire software-engineering lifecycle. (CSE3213/CSE3223)
3. The student will be placed in a project-management environment and required to work as part of a software development team. (CSE3213/CSE3223)
4. The student will be able to perform software analysis (CSE3213), design (CSE3213/CSE3223), test (CSE3223), and implementation (CSE3223).
5. The student will demonstrate proficiency in managing a software project to customer requirements. (CSE3213/CSE3223)
6. The student will be able to apply standard, accepted software-engineering techniques to system delivery. (CSE3213/CSE3223)
7. The student will demonstrate proficiency in eliciting requirements from a customer and refining the high level requirements to an end product. (CS 3212)
8. The student will demonstrate an ability to document their work to an acceptable standard. (CSE3213/CSE3223)

TOPICS COVERED:
Lecture       Number of class hours
( None)        ( None)

Laboratory       Number of lab weeks

1. Requirements elicitation, analysis, and specifications  3
2. Project Management  6
3. Software design  3
4. Software testing  5
5. Software maintenance  4
6. Software Documentation  2
7. Quality Assurance  2
8. Object Oriented Methods  3
9. Customer Relationships  3

CONTRIBUTION TO PROFESSIONAL COMPONENT:
Engineering Topics of Engineering Science and Design

ASSESSMENTS:
1. Instructor review of progress
2. Instructor and customer review of documentation
3. Customer and Peer evaluations

RELATIONSHIP TO PROGRAM OUTCOMES:
Note: Parenthesized list indicates the ABET and Software Engineering outcomes addressed by each criteria.

Performance Criteria:
1. The student will be able to describe, discuss, and apply the software-engineering discipline. (c,e,f,g,SE1, SE5)
2. The student will be able to select the correct process for a given software-development scenario. (c, SE9)
3. The student will be placed in a project-management environment and required to successfully work as part of a software-development team. (d, g, SE1, SE2, SE9)
4. The student will be able to implement object-oriented software analysis, design, test, and implementation. (c, SE3,SE7)
5. The student will demonstrate proficiency in managing a software project to customer requirements. (c, SE2, SE6)
6. The student will be able to apply standard, accepted software-engineering techniques to system delivery and to apply appropriate metrics.(b, c, SE5)
7. The student will demonstrate proficiency in eliciting requirements from a customer and refining the high level requirements to an end product. (g, SE9)
8. The student will demonstrate an ability to document their work to an acceptable standard. (g, SE2, SE5)
9. The student will demonstrate an ability to effectively work with a customer in the context of professionalism and need. (h, j, SE8,SE9)

PREPARED BY:
Edward B. Allen, Associate Professor, Department of Computer Science and Engineering, March 9, 2005

ESTIMATED CSAB CATEGORY CONTENT:

CORE   ADVANCED
ORAL AND WRITTEN COMMUNICATIONS:
Students are expected to be able to effectively communicate with their customer and to capture user requirements in writing. This is demonstrated through documentation of deliverables to the customer and the instructor. Significant oral interaction with the customer is required during the course over two semesters. All written and oral communication assignments are collaborative efforts by each student team. Individual contributions are assessed by the instructor.

Over two semesters, every student team is required to submit at least 12 written reports (not including exams, tests, quizzes, or commented programs) of typically 20 pages and to make 8 oral presentations of typically 30 minutes duration. This includes only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.

SOCIAL AND ETHICAL ISSUES:
The students are expected to analyze security, intellectual property, and ethical issues related to the development and use of the system they develop. Resulting analysis is required to be incorporated into oral communication with the client and written deliverable documents and is assessed as part of those documents.

THEORETICAL CONTENT:
None. This laboratory is a practical application of the practice of software engineering.

PROBLEM ANALYSIS:
The students are given a project that results in working on a software development project. The earlier steps of this project require that the students elicit software requirements from the customer, and analyze the requirements.

SOLUTION DESIGN:
The students are given a project that results in working on a software development project. The later steps of this project require that the students design the software, test the design, and deliver a documented product.