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CEN 4935 Senior Software Engineering Project (CRN 10378)
Holmes Hall 429 and Lutgert Hall 2211, Friday 9:30-12:15
Computer Science Program, College of Engineering
Spring 2009 Course Syllabus

<http://itech.fgcu.edu/faculty/zalewski/CEN4935/CEN4935.html>

1. Catalog Description

Students will gain an understanding of the systems design process, including analysis, design, implementation, quality assurance, and project planning. Teams will design and develop a prototype system that satisfies the requirements of a “real” organization. Students must have senior standing.

2. Course Objectives and Specific Learning Outcomes

Students will develop advanced concepts of software development, focusing on four phases of the simplified versions of the waterfall and spiral models: (1) Requirements Specification; (2) Software Design; (3) Implementation; and (4) Testing. Each phase will be documented in a respective deliverable. Object-oriented software engineering approach will be followed, possibly supported by software tools. Learning the concepts will be enforced by a Project, to design and develop a piece of software of practical importance. Specifically, the student will acquire:

- the ability to conduct supervised research and engage in new design approaches
- the ability to work in groups to collect, analyze, and synthesize computing systems
- the ability to rationally consider diverse perspectives on a certain issue
- the ability to design, analyze and document software systems
- the ability to test the performance of systems
- the ability to complete and document an integrated project of substantial scope
- the ability to compose specific technical documents
- the ability to present material serving diverse purposes in a variety of forms
- an awareness of the variety of information resource systems in computer science
- an awareness of the ethical issues associated with a given technology.

3. Prerequisites

COP 2532 and CEN 3031, both with a minimum grade of C, or consent of an Instructor.

4. Textbook and Readings

There is no required textbook for this class. All readings will be based on material available from Internet sources or provided by Instructor.

The basic readings include the following IEEE standards or their respective drafts:

- IEEE Std 830 Recommended Practice for Software Requirements Specification
- IEEE Std 1016 Recommended Practice for Software Design Descriptions
- IEEE Std 829 Software Test Documentation

as well as other standards on *per need* basis.

By special arrangement of the Instructor with three professional magazines:

- Circuit Cellar, <http://www.circuitcellar.com/>
- Dr Dobb's Journal, <http://www.ddj.com/>
- Embedded Systems Programming, <http://www.embedded.com/>

students will have access to their monthly issues throughout Spring 2009.

5. Course Outline

As a project-based class, weekly meetings will be devoted to discussions of development progress made in the past week, with new action assignments for the following week. Meetings will be recorded in minutes, taken by students on an individual basis.

- Weeks 1-4: January 2009; Introduction. Definition of a Project.
Development of a Requirements Specification document
- Weeks 5-8: February 2009; Development of a Design Document
Software Architecture and Detailed Design
- Weeks 9-12: March 2009; Software Implementation: Coding and Module Testing
- Weeks 13-16: April 2009; Integration Testing and Final Project Presentation (April 24, 2009)
Poster presentations of selected projects at the FGCU Research Day (TBD)

6. Administrative Issues

Project: Software Development Project is an essential part of this class. Assessment will be based on 4 phases: Software Specification, Software Design, Software Implementation and Software Testing with Project Demonstration. Detailed topics and schedule will be determined on a week-by-week basis, depending on the complexity of projects and their progress.

Readings and Assignments: Reading and other assignments related to specific project topics will be assigned on a weekly basis.

Grading Policy: Each project phase is worth 25% of the total grade. A: 90-100%; B: 80-89.9%; C: 70-79.9%; D: 60-69.9%; F: < 60%; (plus/minus grades at the discretion of Instructor)

Attendance: Since this is a project-based class, where team work is an essential condition of success and absences hurt the team, attendance is strictly required. Three absences in meetings form the grounds for decreasing a grade by one letter level. A single *absence* is defined as missing one hour or more of the time of the meeting. Please: no food or drinks in the classroom.

Ethics, Disabilities Act, and Observance of Religious Holidays. Instructor follows general university policies as spelled out, respectively, in:

- Academic Behavior Standards & Academic Dishonesty Policy in the Student Guidebook (sections on "Student Code of Conduct" and "Policies and Procedures").
See: <http://studentservices.fgcu.edu/JudicialAffairs/>
- Americans with Disabilities Act of 1990 – services provided by Office of Adaptive Services
See: <http://studentservices.fgcu.edu/adaptive/>
- Policy 4.005 Student Observance of Religious Holidays
See: <http://www.fgcu.edu/generalcounsel/policies-view.asp>

Disclaimer. This syllabus has been prepared to the best of the Instructor's knowledge, but the right is reserved to modify it slightly depending on circumstances beyond Instructor's control.