**ABET Course Syllabus – CS4961**

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| **Code** | CS4961 | **Credits** | 3 |
| **Title** | Software Design Laboratory I | **Coordinator** | Raj Pamula |

**Course Information**

1. **Catalog Description:** Selection of a design project and develop a software system for a community organization or a corporate partner; determine customer needs; understand software solutions and profession in broader context. Graded ABC/NC.
2. **Prerequisites:** Completion of blocks A and B4, an additional course from block B, and at least one course each from blocks C and D. Minimum C grade in all courses listed; CS 3112, CS3220, CS3035, CS3337, CS3186, CS3801. Prerequisites or co-requisites: CS4440 and EE3445.
3. **Contact Hours:** 9 hours/week
4. **Required/Elective:** This course is required in the BS program.

**Textbook**

No new textbook is required.

**Course Goals**

The Student Learning Outcomes that are addressed by the course are:

* SLO 5. Students will have the training to analyze problems and identify and define the computing requirements appropriate to their solutions.
* SLO 6. Students will have the training to design, implement, and evaluate large software systems working both individually and collaboratively.
* SLO 7. Students will be able to communicate effectively orally and in writing.
* SLO 8. Students will have the knowledge, skills, and attitudes for lifelong self-development.
* SLO 9. Students will have the ability to analyze the local and global impact of computing on individuals and society.
* SLO 10. Students will have a fundamental understanding of social, professional, ethical, legal, and security issues in computing.

Other outcomes of instruction:

At the end of the course, students are able to

* Improve their ability undertake complex software projects by guiding them through the early stages of a project development cycle, which include problem and requirement analysis, and the research of tools, libraries, and technologies.
* Perform independent learning of new technologies and concepts.
* Improve their oral communication skills through oral presentations and interaction with project stakeholders.
* Improve their written communication skills through the writing of a Project Requirement Document and Project Design Document.

**Topics Covered**

* Undertake complex software projects and see them through a complete software development cycle from pre-requirements to delivery.
  + Software development processes, project planning, software quality, requirements engineering, system and architecture design, testing, implementation.
* Planning and scheduling individual and team efforts to complete required work by the established deadlines
* Working productively within the team despite inevitable conflict
* Learning new technologies and utilizing resources available for the completion of the project.
* Assuming various specialized roles within the group.
* Decision making considering societal, ethical, environmental, political, and economic factors
* Customer relations during the development process
* Broad impacts of computational and software solutions encompassing humanities and social sciences
* Effective communication of project design and findings