CSCE 4963 Capstone II (3 credits), Required CE & CS

Catalog Description: CSCE students complete a comprehensive capstone project during their final year of undergraduate studies. The project is done over two consecutive semesters in phases: concepts, formal proposal, implementation, and presentation. The projects include and may require the integration of software, human factors, hardware elements and are developed using software engineering methodologies.

Prerequisite: CSCE 4561Capstone I

Corequisite: None

Textbook/required material: Class web site

Goals: One goal of the course is to cement skills learned in other computing courses through a comprehensive team-based project involving problem solving and software engineering. A project proposal is the major deliverable for Capstone I; design, implementation, testing, and demonstration plus a final report is the major deliverable for Capstone II. The other goal of Capstone is to prepare students for professional careers.

Student Learning Outcomes. By the end of this course, students will be able to:
- Design, implement, test, and demonstrate a team-based project.
- Give status update presentations
- Document team project

Topics covered:

- Problem solving (2 weeks)
- Software engineering (2 weeks)
- Project implementation and testing (8 weeks)
- Job skills - organization, presentation, and writing skills (3 weeks)

Grading
The grading in this course will be distributed as follows.

- Project planning and reporting: 20%
- Project results: 60%
- Team participating: 20%

Academic Dishonesty Policy
As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University's 'Academic Integrity Policy' at honesty.uark.edu. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor.

Class/laboratory schedule: Meets either 3 times a week for 50 minutes or 2 times a week for 1 hour 20 minutes for 15 weeks.

Relationship of course to ABET Computer Engineering Student Outcomes:
- CE1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- CE2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- CE3. An ability to communicate effectively with a range of audiences.
- CE4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- CE5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- CE6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- CE7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Relationship of course to ABET Computer Science Student Outcomes:
- CS1. An ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- CS2. An ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- CS3. An ability to communicate effectively in a variety of professional contexts.
- CS4. An ability to recognize professional responsibilities and make informed judgements in computing practice based on legal and ethical principles.
- CS5. An ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- CS6. An ability to apply computer science theory and software development fundamentals to produce computing-based solutions.

Relationship of course to ABET Computer Science Topics:
- T3. Local and global impacts of computing solutions on individuals, organizations, and society.
- T11. A major project that requires integration and application of knowledge and skills acquired in earlier course work.

Prepared by: Alexander Nelson   **Date:** August 21, 2023