

CS/EE/CpE/Biom 481 – Capstone Project - Implementation

Instructor: Ramana Reddy

Office: AER 252

Email: Ramana.Reddy@mail.wvu.edu

In this course, you are expected to build, test and demonstrate the project you designed in 480. During the last week of classes, you will have an opportunity to showcase your project during the Lane Capstone Expo. All your project activities should be documented in the Ecampus system using the Blog tool.

The class meets during one period for lectures and class presentations. The other two periods are used to work on your project in the labs (ESB G28 and ERB 214), meetings with the instructor or mentor and group meetings.

Lecture Topics

1. Course Plan; Workplace Assignment; Setting Goals, etc.
2. Five-minute summary of each project - The “elevator Pitch”
3. Business Development
4. Intellectual Property
5. Engineering Ethics (Prof. Woerner)
6. Engineering Ethics (Prof. Reddy)
7. Engineering Ethics Case-Studies (Student Groups)
8. Global Project Management (Prof. Reddy)
9. Preliminary / Mid-term / Final Presentation (Student Groups)
10. Senior Design Expo

ABET Outcomes

The following is a list of expected learning outcomes for each undergraduate program in our Department. Assignments in 480 and 481 are designed to document these outcomes.

CS Student Learning Outcomes

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
3. Communicate effectively in a variety of professional contexts.

4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

Cybersecurity learning Outcomes

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply security principles and practices to maintain operations in the presence of risks and threats.

EE, CpE, and BSE Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. 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
3. An ability to communicate effectively with a range of audiences
4. 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
5. 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
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Grading Policy

The quality of the final prototype and the associated system documentation (Part 1 – Assignments A4 – A7) will determine the final group grade. However, significant deficiencies in Part 2 (Assignments A1 – A3) and group work documentation on the Blog will result in reduction of the final grade. The prototype will be evaluated using the “Contract” (Assignment A1) as a reference.

In addition to the evaluations by the instructor and the mentor, another faculty member of the LCSEE Department or an outside expert may be asked to provide an external perspective, where appropriate.

1. Grade “A” will be assigned only to projects that are functionally complete, well packaged, tested and documented. The project must be demonstrable by anybody, who is not a member of the group with the sole help of the User’s Manual. There should be no “hard coding” of any user modifiable parameters.
2. Grade “B” will be assigned to projects that meet the standards of #1 above except that some minor functionality may be missing.
3. Grade “C” will be assigned to projects that are substantially complete and well documented but may have an incomplete user interface and may not have been fully tested.
4. Grade “D” will be assigned to projects that are incomplete but have the potential for success.
5. Grade “F” will be assigned to all projects that show little value addition beyond the base technology.

Based on the peer report, individual grade may be adjusted upwards or downwards.

Assignments used in determining the final grade (Part 1)

1. A4 – System Manual and User Manual (10%)
2. A5 – Scholarly Paper on the project in IEEE format (5%)
3. A6 - Poster and Brochure (5%)
4. A7 – Project Demo (80%)

Assignments used to document ABET outcomes (Part 2)

5. A1 – Contract of Deliverables
6. A2 – Continuing Education Report
7. A3 – Ethics Report

Attendance Policy

1. Missing six classes or group meetings will result in reduction of one letter grade
2. Missing seven classes or group meetings will result in reduction of two letter grades
3. Missing more than seven classes or group meetings will result in a grade of F.

This policy will be strictly enforced except in cases involving physician certified absences due to illness.

Social Justice

Special Concern Days

WVU recognizes the diversity of its students and the needs of those who wish to be absent from class to participate in Days of Special Concern, which are listed in the Schedule of Courses. Students should notify their instructors by the end of the second week of classes or prior to the first Day of Special Concern, whichever is earlier, regarding Day of Special Concern observances that will affect their attendance. Further, students must abide by the attendance policy of their instructors as stated on their syllabi. Faculty will make reasonable accommodation for tests or field trips that a student misses as a result of observing a Day of Special Concern.

Academic Integrity

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code:

http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code.

Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Inclusion Statement

“The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.”

Note on Scheduling

1. Mentors may schedule regular meetings with each group.
2. Instructor will meet with each group on a scheduled basis (M, W, F) to monitor progress.
3. All documents must be submitted on Ecampus when due.
4. Students should be available to meet with the instructor during any class period.

Copyright Notice

All the course materials, including lectures, class notes, quizzes, exams, handouts, presentations, and other materials provided to students for this course are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the Campus Student Code.