

Agricultural & Biological Engineering 486

Senior Design Experience

Spring 2015

Course Description: Practical faculty supervised team experiences with projects having contemporary relevance and economic importance to issues in Agricultural & Biological Engineering and Agricultural Systems Management. Emphasis will be on project management, the application of technical skills and technical creativity to specific projects, informal communication skills, formal written report production, and formal oral presentation production and delivery.

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| Instructors: | Dr. Bernie Engel ABE 219 Office Hours: | engelb@purdue.edu 765-494-1162 By Appointment |
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| Dr. Bob Stwalley ABE 321 Office Hours: | rms3@purdue.edu 765-494-1791 By Appointment |
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Meeting Times: MW 15:30 – 17:20 Lecture ABE 204 & 205, ABE Shop, ADM

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| <u>PLUS++</u> | → <i>As Arranged with Instructors</i> | ← 30 minutes/week |
| | → <i>As Arranged with Technical Mentors</i> | ← 15 minutes/week |
| | → <i>As Arranged with Project Sponsors</i> | ← 15 minutes/bi-weekly |

- Global Learning Objectives:** Upon the completion of the course, students shall be able to:
- Identify strategic project objectives and key tasks associated with specific objective completion;
 - Design an environmental and natural resources system or a machine system to solve a specific need;
 - Plan the timeline and details of an intermediate term project;
 - Provide informal progress updates to mentors and instructors regarding project progress;
 - Interface with and seek guidance from project sponsors;
 - Model, prototype, and test project designs within a team environment;
 - Learn how to accomplish specific tactical goals for a project within a larger operational environment (ie University Machine Shop & Business Office; Corporate Sponsor’s Organization);
 - Understand the compromises and load sharing necessary for effective team harmony;

- Understand the concepts of professionalism, ethical responsibility, and integrity when applied to technical projects;
- Enhance written communication skills through the production of a comprehensive final report;
- Enhance oral communication skills through the production of a summary technical presentation;
- Learn how to respond to questions and criticism; and
- Understand the concepts of deadline, closure, and delivery.

Specific Classroom Policies: The instructors' rules and expectations are:

- 1) Students should attend instruction periods when scheduled as 'active learners' and be considerate of others in the formal class periods.
- 2) No Phones on during formal class periods. **No computers on**, unless asked to use them. You will be asked to leave for the period, if you are a distraction to the instructors or other students. A second violation will incur a harsher penalty.
- 3) It is your responsibility to complete your project. Don't ask the instructors how much time per week you should put into your project. Your overall objectives should be clear. Complete your project! It will take whatever it takes. You must attend the Poster Session in April to pass the course.
- 4) You are expected to devote at least 10 – 15 hours per week to your project. It may take more to do a good job. Do not shortchange your project!
- 5) There are no extensions or make-ups! You must attend scheduled presentations, update sessions, and mandatory classroom activities to get a passing grade.
- 6) There is no leeway on formal report submission! You must turn-in your formal report by the published deadline to pass the course and receive a passing grade.
- 7) Your team must meet once per week with a course instructor to provide an update on project progress.
- 8) Your team must prepare a mid-semester project review for the faculty, project sponsors, and alumni.
- 9) Your team must prepare a final project poster and discussion presentation for the faculty, project sponsors, and alumni.
- 10) Your team must prepare an extensive final project report for the instructors, faculty, and project sponsors.
- 11) Enjoy yourself; this class and the overall experience should be fun and satisfying for everyone.

Grading: If you do the work required, we promise you will have the chance to get a good grade. The total possible score for the class is broken-down as follows:

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| Weekly Update Sessions | 15% |
| Mid-term Progress Report | 10% |
| Mid-term Progress Presentation | 10% |
| Final Poster Presentation | 15% |
| Final Report | 25% |
| Instructor Evaluation | 25% |

The basic course scoring will be on a 90/80/70/60 scale. However, this will be based upon the top score in the class. A grade, like your ultimate success in life, is both a reflection of how well you performed on your assignment and how well you took advantage of the resources and opportunities presented to you for completing your task.

Weekly Meetings: All teams will need to schedule a mandatory weekly meeting (beginning in week #2) with an instructor during the first class session. You will be expected to sign-in at these meetings. A revised MS Project submission, including Gantt chart and major task definitions, for the semester is due by 17:00 Friday 16 January 2015. This submission should incorporate suggestions from the fall semester review sessions and any reflective thoughts or improvements that have occurred to team members over winter break. The MS Project file will be a living document. We will work from this submission and revise it according to progress and the needs of the project as it unfolds during the semester. There will be two opportunities for team member evaluations during the term. At mid-term and the end of the semester, course participants will anonymously evaluate their team peers. Dr. Engel and Dr. Stwalley will utilize that information as well as input from the Technical Mentors and Project Sponsors when determining their Instructor Evaluation points for the course.

→ All Material Submissions for the course are to be emailed to: rms3@purdue.edu ←

Tentative Semester Schedule:

| <u>Date</u> | <u>Activity</u> |
|---------------|----------------------------------------------|
| 16 January 15 | MS Project Semester Summary Due |
| 21 January 15 | Quarter Scale & PUP Faculty Design Review |
| 2 March 15 | Mid-term Reports Due; Mid-term Presentations |
| 20 April 15 | Posters Due |
| 23 April 15 | Posters Presentations (Tentative) |
| 1 May 15 | Reports Due |

Miscellaneous Mandated Material from Mitch: The schedule is subject to change due to weather emergencies or other circumstances beyond the control of the instructors. We will figure out how to fix things, if it becomes necessary to do so. Everything that can be done to make this a safe learning environment has been done. If there is a problem, everyone will cooperate and follow the instructors' instructions regarding shelter, evacuation, or any other procedure necessary.