EIND 499R

Capstone: Industrial Engineering Design
Spring 2018

Instructor: Durward K. Sobek II, Ph.D.
318 Roberts Hall, 994-7140, dsobek@montana.edu
Office hours by appointment:
https://www.montana.edu/scheduler/login/student/?fac=6315

Class: MWF 11:00-11:50 a.m., 319 Roberts Hall

Course Web: Brightspace (Desire2Learn, D2L): https://ecat1.montana.edu/
http://www.montana.edu/dsobek/teaching/eind499

Credits: 1 credit lecture, 1 credit laboratory, 1 credit recitation

Required Text: none

Prerequisites: EGEN 310: Multidisciplinary Engineering Design
EGEN 325: Engineering Economic Analysis
EIND 434: Project and Engineering Management
EIND 442: Facility and Material Handling Systems Design

Co-requisites: EIND 458: Production and Engineering Management

Catalog: Senior capstone course. Second course in senior capstone sequence. A comprehensive open-ended team design project emphasizing the application of industrial engineering tools and knowledge to create engineered solutions for real business needs or opportunities. Oral and written communication and project management emphasized.

Objectives:

- Take on a substantial, open-ended problem and successfully deliver a well-engineered solution to meet a set of client needs.
- Integrate tools and concepts from multiple industrial and management systems arenas, and apply them to a real-world situation.
- Improve skills in interacting professionally with clients and others.
- Improve teamwork, interpersonal and formal communication skills.
- Apply project planning, tracking and control concepts and tools to a live project, and actively manage it.
Course Structure:

You will be assigned to work on a team to provide a client with an engineered solution to their business or operational problem. Your team will be responsible for all phases of the project, including: understanding client needs and requirements, project scoping and definition, data collection, idea generation, engineering analysis, documentation, client communication, and project management. Class meetings will be used to take care of logistics, review project assignments, conduct just-in-time education on pertinent topics, and conduct project management. Full attendance is expected.

Teams are expected to apply modern project management practices in the execution of their projects. We will follow a scrum methodology, breaking the project timeline into seven “sprints.” This will require teams to conduct an intensive planning session for each sprint, and hold regular status meetings during the sprint to review progress and coordinate tasks. Additionally, teams will measure their project performance using earned value reporting. It is expected that team members will rotate the role of project manager so that everyone gains experience and shares the project management responsibilities over the course of the project.

Each sprint will have deliverables: an A3-style summary report of the sprint plus the deliverables defined in that sprint’s plan (i.e., a “potentially shippable” product increment, often one or more sections of the final written report). Deliverables will be submitted to both client and advisor. Sprint 5 has the added deliverable of a formal interim presentation, while Sprint 7 has the Design Fair poster/interview, final report and client debrief as deliverables.

Teams will hold sprint review meetings with their external client at the conclusion of each sprint. They should expect to meet with their internal client in the off-weeks for expectation alignment.

Journals:

Obtain a 9” x 12” (approx.) notebook with numbered pages (e.g., AMPAD #22-157 or AMPAD #22-156). The journal should be utilized as a tool to assist you and your team towards project success efficiently. At a minimum, the journal must be used for assigned reflections, which will be periodically assessed using the rubric presented during the first week of classes (5% of course grade). However, journals are most useful when they are utilized to keep record of all project-related activities and information: class notes, meeting notes, brainstorming, web or library research, sketches of design ideas, user interview notes, contact information, analyses, etc. Complete use presents a bonus opportunity for up to another 5% of the course grade.

Grading:

Grades will be based primarily on overall team performance, and secondarily on individual contribution, as follows:

35%  Sprint deliverables and management (Sprint 1=10%, Sprints 2-6=5% each)
5%  Individual journal
10%  Formal interim presentation
10% Design Fair poster and team interview
40% Final written report
+5% Up to five percent bonus for complete use of journals.

Grade adjustments may be made based upon individual contribution and peer evaluations.

Course Listserv:
An email listserv has been automatically created for this class. Since I will periodically post class announcements to the listserv, all students should check their primary MSU accounts regularly. If you’d like to add another email address to the listserv (perhaps one that you check more regularly), add yourself by following these instructions:

1. Send a message to sympa@sympa.montana.edu from the address you want to subscribe to the list.
2. Enter subscribe EIND499001 firstname lastname into the subject field of the message (replacing firstname and lastname with your real name).
3. Leave the message body blank.

A message will be sent to this address confirming your subscription to the list.

Policies:
- Follow the Lab Policies posted in Roberts Hall 415.
- Assignments are due at the specified time on the assigned due date. I do not accept late work, although exceptions may be granted for extenuating circumstances.
- The final exam time is set by the registrar’s office. We will use this time to debrief on the semester. Attendance is mandatory.
- I expect each student to make full effort to attend every scheduled class meeting, advisor session, and team meeting. If you do miss a class or meeting, you are responsible to take the initiative to find out what you missed, and to perform any make-up work as quickly as possible. If you know ahead of time that you will miss a class or meeting, notify the appropriate individuals beforehand.
- If you have a documented disability for which you are or may be requesting special accommodation, please contact Disabled Student Services as soon as possible, and discuss your specific situation with the instructor.
- All records related to this course are confidential and will not be shared with anyone, including parents, without a signed, written release. Before giving such authorization, you should understand the purpose of the release, to whom, and for how long the information is authorized for release.
- Chronic tardiness is unprofessional and unacceptable, and may result in you being asked to leave class. The same holds for disruptive or disrespectful behavior.
- Lying, cheating, plagiarism, or any other form of dishonesty will not be tolerated. Students who engage in such behavior will be subject to sanctions as outlined by University policy. Students should familiarize themselves with MSU Student Conduct Guidelines (see: http://www.montana.edu/policy/student_conduct/).