

ME 495A Syllabus

Instructor: Alan Weston

Office: EGRB110

I. Department, number, and title of course: ME 495a Mechanical Engineering Design

II. Designation as a 'Required' or 'Elective' course: Required Course

III. Course (catalog) description:

Project development skills, feasibility and cost-benefit analysis, ethical issues, professionalism, preliminary design, identification of tasks, assignment of tasks to project team members, coordination of interdisciplinary team effort, development of final proposal, oral presentation of final proposal.

IV. Prerequisite(s)

Prerequisite or concurrent enrollment in ENGR 351, ENGR 361 or ME 361; one of ME 301 or 400; two ME design electives; and senior standing in Mechanical Engineering (second to last semester).

V. Textbook(s) and/or other required material

Saluki Engineering Company Policy and Procedures Manual Version 6.2, KM Purcell, I Margon, ME Blankenship, AJ Weston, F Harackiewicz, available on Blackboard, August 2010

Engineering Design – A Project-Based Introduction by Clive L. Dym and Patrick Little, Wiley & Sons 2009, 3rd edition

VI. Course objectives

The objective of this course is to introduce students to engineering design practice through the use of group projects involving a system, component or process to meet the desired needs of a customer. Focus is on development of creativity, communication skills, production of working drawings taking into consideration production processes and constraints such as economic factors, safety, reliability and social impact.

VII. Topics covered

1. **Course Introduction** – Purpose, Goals, Methodology, Soft Skills, Resumes
2. **Teamwork** – Norms & Expectations, Cultural Influences, Conflict Management
3. **Project Management Tools** – Risk Management, Action Item Lists, RASI Charts, Alternate Plans, Agendas, Iterative Development, Timelines, Design Reviews
4. **Memos and Design Notebooks** – Memo Organization, Composition of Design Notebooks
5. **Scheduling** – Activities & Milestones, Prioritization, Project & Implementation Schedules, As Bid, As Worked & As Finished Timelines

6. **Proposals** – RFPs, Proposal Sections, Composition, End of Proposal Memo, Oral Presentation
7. **Ethics& Intellectual Property** – Patents, Copyrights, Trademarks, Trade Secrets; case studies
8. **What Young Engineers Need To Know** – Fear of Failure, Meetings, Ethics, Professional Societies, International Considerations,
9. **Writing Style Guide** – Writing, Tables, Figures, Engineering Drawings, etc.

Additional Topics from quest lecturers:

1. Career Services
2. Internships, Externships and Coops
3. Library Services
4. Intellectual Property & Ethics

VIII. Class/laboratory schedule, i.e., number of sessions each week and duration of each session

Two 100 minute sessions per week are reserved, but usually two 50 minute sessions are used.

IX. Contribution of Homework, Quizzes, Tests, Laboratory Reports, or Research Papers

Course content does not have quizzes nor tests. Laboratory experiments are conducted for many build projects and are reported in standard Laboratory Report format in notebooks and further along in appendices of Design Report from part b of the course.

X. Contribution of course to meeting the professional component. Describe how the course devotes adequate attention and time to the professional component, which includes mathematics and basic sciences, engineering topics, and general education.

This is an applied design course, which addresses real-world design challenges. The course is taught in the format of staff meetings as all students are members of the Saluki Engineering Company. In part A, students prepare proposals for work to be conducted in part B. All designs relate to engineering problem solving and thus require the basic sciences that at the core of all levels of the curriculum.

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It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.