

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

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

**III. Course (catalog) description:**

Development of the final design, hardware implementation of the final design (if the project warrants), documentation of all stages of design, project coordination, documentation of the testing and evaluating of the design, cost estimating, scheduling, and written, oral and poster presentation of the final design.

**IV. Prerequisite(s)**

ME 495a

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

Saluki Engineering Company Policy and Procedures Manual Version 6.2,  
K. Purcell, I. Margon, M. Blankenship, A. Weston, F. Harackiewicz, available on  
Desire2Learn, August 2010

Clive L. Dym and Patrick Little, *Engineering Design: A Project Based Introduction*, Wiley  
2008. (Required in ME492a)

**VI. Course objectives**

This course is part B of a two semester sequence. In the first semester students are introduced 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. In the second semester, designs are finalized and the end results are deliverables in the form of Design Reports, Oral Design Presentations and Poster Presentations.

**VII. Topics covered**

1. **Welcome Back** – Reminder of management tools to use, notebooks & memos
2. **Design Reviews** – Description of design review requirements & scheduling
3. **Progress Reports** – Requirements for mid-semester written and oral progress reports
4. **Progress Orals** – In-Class Oral Progress Report presentations
5. **Poster Presentation** – Requirements, Layout and software use for Poster Presentations
6. **Design Reports** – Format, content and all requirements related to submission of Final Design Reports and Design Report Oral Presentations
7. **Finishing Up** – End of semester schedule, requirements for Student Course Evaluations, Team Evaluation and End of Project Memos.
8. **Dean's Address** – The Dean addresses the class on matters of life after graduation, what to expect from first and second jobs, etc.
9. **Oral Design Report Presentations** –In-Class Oral Design Report Presentations.

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

Two 75 minute sessions per week.

**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 in appendices of Design Report.

**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. All designs relate to engineering problem solving and thus require the basic sciences that are at the core of all levels of the curriculum.

## **XI. Relationship of course to program outcomes**

<b>Outcome Code</b>	<b>Outcome Description</b>	<b>Course</b>
ME-SO1	The ability to apply knowledge of mathematics, science and engineering to problem solving	ME261, ME302, ME309, ME435, ME440
ME-SO2	The ability to design and conduct experiments, as well as to analyze and interpret data	ME401, ME402, ME407, ME440
ME-SO3	The ability to design a system, component, or process to meet desired needs within realistic constraints	ME406, ME440, ME411, ME475, ME495a
ME-SO4	The ability to function on multi-disciplinary teams	ME440, ME495a
ME-SO5	The ability to identify, formulate and solve engineering problems	ME309, ME406, ME440
ME-SO6	An understanding of professional and ethical responsibility	ME101, ME495a
ME-SO7	The ability to communicate effectively	ME440, ME495a
ME-SO8	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	ENGR303I, ME101
ME-SO9	A recognition of the need for and an ability to engage in life-long learning	ME101, ME495a
ME-SO10	Knowledge of contemporary issues	ENGR303I, ME101
ME-SO11	The ability to use the techniques, skills and modern engineering tools necessary for engineering practice	ME440, ME495a

## **XII. Person(s) who prepared this description and date of preparation:**

Alan Weston, September 2014