

COURSE NUMBER: ME 2011, 4 credits	COURSE TITLE: Introduction to Engineering
TERMS OFFERED: Fall	PREREQUISITES: IT Lower Division
TEXTBOOKS/REQUIRED MATERIAL: Rapid Viz! A New Method for the Rapid Visualization of Ideas, Kurt Hanks & Larry Belliston, Crisp Publications Pro/ENGINEER Wildfire 2.0 Tutorial, Roger Toogood, Schroff Development Corp.	PREPARED BY: Professor Durfee DATE OF PREPARATION: June 11, 2007
COURSE LEADER(S): Professor Durfee	CLASS/LABORATORY SCHEDULE: One 120 minute lecture, one 120 minute section/lab CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100 % Engineering Topics
CATALOG DESCRIPTION: Develop skills critical for practicing engineers. Core disciplinary areas of mechanical engineering and engineering design. Extensive exposure to visual, written and oral communication forms, and to computer-based design tools. Substantial design projects, including prototype construction.	COURSE TOPICS: Basic sketching and 2-point perspective Basic engineering graphics CAD (Pro/Engineer) Intro to experimentation, presenting data and Excel Electronics and BASIC stamp programming Basics of mechanisms, sensors and actuators Design process and project management Reverse engineering

COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. Introduce engineering design and design process through a series of successful, hands-on creative design experiences. 2. Show students how to communicate information effectively, including visual, oral and written communication. 3. Help students develop an appreciation for engineering design through the disassembly and examination of existing products. 4. Introduce key components of the mechanical engineering discipline including energy, forces, materials, manufacturing and machine components. 5. Provide a set of basic engineering skills for use in the Upper Division Mechanical Engineering program as well as in a professional engineering career. Skills range from use of hand tools to finding information in the library to using basic software applications. 6. Provide a taste of the fun and excitement of mechanical engineering by having students experience engineering design.
	(Letters shown in brackets are linked to program outcomes a-k)

COURSE OUTCOMES	<ol style="list-style-type: none"> 1. Student becomes proficient at visual thinking through hand sketching [g] 2. Students become proficient at documenting a design [g] 3. Student knows basics of engineering graphics [g] 4. Student masters the basics of Pro/Engineer [g, k] 5. Student creates a professional portfolio [i] 6. Student learns basics of practical electronics, computer interfacing and microcontroller programming [i, k] 7. Student designs, constructs and displays a computer-controlled robot [c, e] 8. Student becomes familiar with designed products through reverse engineering [c] 9. Student delivers an oral presentation [g] 10. Student learns to work on solo projects and in teams [d] 11. Student learns basics of project management [k] 12. Student learns how to successfully complete unstructured design projects with hard deadlines [c] 13. Student uses basic physics and engineering analysis in their designs [a] 14. Student learns basics of technical writing through a series of writing assignments [g] 15. Student learns how to keep an engineering notebook [g]
ASSESSMENT TOOLS:	<ol style="list-style-type: none"> 1. Graded deliverables including sketches, Pro/E work, presentations and reverse engineering documentation 2. Major design project assessed by a professional jury 3. Short, in-class activities graded on yes/no basis 4. Graded portfolio

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Nature of Changes:

Textbooks: Removed “Introduction to Graphics Communications for Engineers, G. Bertoline, McGraw Hill.” because equivalent material on basic engineering graphics can be found in on-line tutorials at no cost to students.

Added graded portfolio to list of assessment tools.

Added Course Outcomes 12-14 as a result of the 2007 course assessment process.

Fixed several typos and grammatical errors.

