ME495 COURSE PROFILE

DEGREE PROGRAM: Mechanical Engineering

<table>
<tr><td>COURSE NUMBER: ME495</td><td>COURSE TITLE: Laboratory II</td></tr>
<tr><td>REQUIRED COURSE OR ELECTIVE COURSE: Required</td><td>TERMS OFFERED: Fall, Winter</td></tr>
<tr><td>TEXTBOOK / REQUIRED MATERIAL:</td><td>PRE / CO-REQUISITES: MECHENG 360, MECHENG 395, preceded or accompanied by MECHENG 335 and MECHENG 350. May not elect MECHENG 450 concurrently. Not open to graduate students. I, II (4 credits)</td></tr>
<tr><td>COGNIZANT FACULTY: P. Reddy, E. Meyhofer</td><td rowspan="2">COURSE TOPICS:

1. Analysis of complex engineering systems.
2. Practical illustration of concepts taught in the core courses. Specific topics offered vary every semester. Some of the topics that may be discussed are: Frequency Response Analysis of Dynamical Systems, Thermodynamic Cycles, Heat Transfer, Analysis of Engine Performance, Manufacturing Technologies, and Nanoscale Metrology
3. 3. Proposal and execution of an experimental and analytical program.
4. 4. Professional presentation and scientific documentation of procedures and findings, including formal and informal reports, formal and impromptu oral presentations, and poster displays.
5. 5. Effective teamwork and teamwork management.</td></tr>
<tr><td>BULLETIN DESCRIPTION: Weekly lectures and extended experimental projects designed to demonstrate experimental and analytical methods as applied to complex mechanical systems. Topics will include controls, heat transfer, fluid mechanics, thermodynamics, mechanics, materials, and dynamical systems. Emphasis on laboratory report writing, oral presentations, and team-building skills, and the design of experiments.</td></tr>
<tr><td colspan="2">COURSE STRUCTURE/SCHEDULE: Lecture: 2 days per week at 1.5 hours, Laboratory: 1 day per week at 3.0 hours</td></tr>
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COURSE OBJECTIVES: for each course objective, links to the Program Outcomes are identified in brackets.	1. To teach students to analyze complex engineering systems [1, 4, 6, 7] 2. To provide students with practical illustration of concepts taught in the core classes [1] 3. To teach students how to propose and execute an experimental and analytical program [6] 4. To teach students to present results in different scientific and industrial written formats [3] 5. To teach students to present their results orally [3] 6. To teach students how to present results in a poster format [3] 7. To teach students to work in teams [5]
COURSE OUTCOMES: for each course outcome, links to the Course Objectives are identified in brackets.	1. Develop a mathematical model of a system and compare its predictions with the experimental performance of the system [1, 2]. Use the experimental data to validate/refine the model. 2. Create a proposal for an experimental program [3] 3. Plan and execute an experimental program [3] 4. Be able to use a variety of industrial and scientific formats to present the results and conclusions of an experimental project in a clear, readable, succinct, and informative written format [4] 5. Present a proposal for a project in an oral form [5] 6. Present the results of a project in a poster format [6]
ASSESSMENT TOOLS: for each assessment tool, links to the course outcomes are identified	1. Lab reports containing an abstract, results, discussion, conclusions, and figures for each laboratory 2. Oral reports 3. Full length report for the final lab project 4. Examination of lab books to verify correct recording and analysis of data 5. Self-evaluation by team members 6. Evaluation of oral presentation(s) by the faculty and GSI's

PREPARED BY: P. Reddy, ASO Staff
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