

COURSE NUMBER: ME 4431W, 4 credits	COURSE TITLE: Energy Conversion Systems Laboratory
TERMS OFFERED: Fall, Spring	PREREQUISITES: ME upper div, 3331, 3332, 4031W; SP-Upper div ME or grad student, C grade or better in 3331, 3332, 4031W or with instructor consent.
TEXTBOOKS/REQUIRED MATERIAL: None	PREPARED BY: David Kittelson DATE OF PREPARATION: June 2007
COURSE LEADER(S): D.B. Kittelson	CLASS/LABORATORY SCHEDULE: Two 50-minute lectures per week One 4-hour lab per week CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100% Engineering topics
CATALOG DESCRIPTION: Senior lab in which material from courses is applied to analyze the operation and control of engines, power plants, pumps and compressors. Emphasis on principles underlying performance characteristics of devices, measurement techniques, interpretation of experimental data, and presentation of results.	COURSE TOPICS: <ol style="list-style-type: none"> 1. Laboratory practice and reporting 2. Pump and compressor performance 3. Spark ignition engine performance and emissions 4. Diesel engine performance and emissions 5. Cogeneration 6. Gas turbine engine performance

COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To teach how to make measurements appropriate to the characterization of energy conversion systems 2. To teach how to write reports describing the performance of energy conversion systems 3. To teach how to give effective oral presentations on experimental characterization of energy conversion systems 4. To teach how to apply basic conservation laws to understand the performance of energy conversion systems
COURSE OUTCOMES	<p style="text-align: center;">(Letters shown in brackets are linked to program outcomes a-k.)</p> <ol style="list-style-type: none"> 1. An understanding of good laboratory practice [a, b] 2. Ability to prepare effective written reports on the performance of energy conversion systems [a, b, g] 3. Ability to prepare and present effective oral reports on the performance of energy conversion systems [a, b, g] 4. An understanding of the basic performance of pumps and compressors [a] 5. An understanding of the performance and emissions of Diesel and spark ignition engines [a] 6. An understanding of basic cogeneration principles [a, h, j]
ASSESSMENT TOOLS:	<ol style="list-style-type: none"> 1. Oral reports 2. Draft written reports 3. Final written reports 4. Poster presentation

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Nature of changes:

The additional assessment tool of a final Poster Presentation has been added to the course. No further changes were made.