

COURSE OUTLINE

Course: ME 497 Energy Conversion and Sustainability 3 Credits
Prerequisites: ME220 Thermodynamics I

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Office Hours: See my office door, or by prior arrangement.

Textbooks: Thermodynamics - An Engineering Approach, by Cengel and Boles,
Seventh Edition, McGraw Hill, 2011
(You should have access to Fluid Mechanics and Heat Transfer textbooks.)

Course Goal:

Students will be able to apply physics and engineering principles to analyze, design and integrate energy components into viable engineering systems. The overall goal is for students to be able to critically analyze energy issues topics that are discussed in public, and to defend or criticize positions taken. Students will work independently or in teams to solve energy problems, and effectively communicate engineering designs.

Course Objectives:

The students will be able to:

1. Analyze energy conversion components/overall systems using various techniques
2. Evaluate, discuss, criticize, defend and recommend modifications for various energy conversion systems, in particular:
 - a. Traditional stationary and transportation conversion systems
 - b. Renewable stationary and transportation energy and fuel systems
3. Evaluate, discuss, criticize, defend and recommend modifications as it relates to energy sustainability concepts, in particular:
 - a. Energy efficiency
 - b. Climate change
4. Solve Energy Conversion problems found on Fundamentals of Engineering exam.

Course Grading:

Power Generation Report (~week 4)	30%	Grading:	90 – 100	A
Transportation Report (~week 7)	30%		80 – 89	B
Sustainability Report (~week 10)	20%		70 – 79	C
Comprehensive Final Exam	<u>20%</u>		60 – 69	D
TOTAL	100%		below 60	F

Ground Rules:

1. Attendance, attitude, class participation and effort can and will be used to change borderline grades up or down.
2. *Homework* will be assigned throughout the course and will then be incorporated into the three reports.
3. The *three reports* will be compilations of the following topics: traditional power generation, transportation power generation and sustainability impacts of energy conversion. These will be individual reports. Much of the material in these reports will be common for everyone, and will build on what we do in class and for homework, but portions of the report may be unique to different students. Late reports may be accepted, only **with prior notification** at reduced value, depending on the lateness.
4. The *final exam* will cover renewable energy generation topics and may have in-class and/or take-home components. Components of the tests may be individual or done in groups.
5. In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a Faculty Notification Letter (FNL) from The Student Accessibility Resource Center.
6. You are expected to refrain from any form of academic dishonesty or deception such as cheating, stealing, plagiarism or lying on take-home assignments, homework, computer assignments, quizzes, tests or exams. Furthermore, you understand and accept the potential consequences of punishable behavior, as stated in the WKU Catalog under Academic Dishonesty. For individual assignments you are encouraged to consult with your peers and the instructor; consulting is allowed, but not copying.