Welcome to MEEG 4453
Industrial Waste and Energy Management

Based on SPRING 2013

Dr. Darin W. Nutter, P.E.
Professor
Room 102C, Phone: 575-4503
e-mail: dnutter@uark.edu

Course Description: Applications of thermodynamics, heat transfer, fluid mechanics, and electric machinery to the analysis of waste streams and energy consumption for industrial facilities. Current techniques and technologies for waste minimization and energy conservation including energy consuming systems and processes, utility rate analysis, economic analysis and auditing are taught.


Required Co-Prerequisite: MEEG 4413 – Heat Transfer

Class Weather Policy: n/a

Office Hours: please email at dnutter@uark.edu or phone 479-575-4503.

Academic Honesty: I am committed to the principle of academic honesty and I expect each student in my class to maintain a high stand of academic integrity. I support the University of Arkansas policy concerning academic honesty that is described in the current Undergraduate Studies catalog. Consequently, any student involved in an academically dishonest act will be given an F in the class and the action will be reported to the All University Judiciary. Also, see the new UA Academic Integrity Policy: http://provost.uark.edu/245.php.

Grades: (final grading scale based on 90/80/70/60…)

Homework, Quizzes, and In-class problems 25%
Two hourly exams 50%
Final exam (optional, comprehensive) 25%

Homework, Quizzes, and In-class problems: ‘Homework’ assignments will consist of out-of-class and in-class assignments. Please treat all homework assignments the same – those I assigned as traditional homework and those I had the class do as ‘in-class’ assignments. Please email me the assignments in PDF format. You can complete them at your own pace.

Exams: The two regular exams are to be taken in cooperation with a proctor. The final exam is optional.

Cell Phone Policy: n/a

Dates of Interest: n/a
Course topic outline and targeted exam dates (subject to change with notification):

1. Course introduction and syllabus
2. Energy management programs
3. Conducting a technical energy assessment
4. Understanding energy bills (part 1)
5. Understanding energy bills (part 2)
6. Understanding energy bills (part 3)
7. Understanding energy bills (part 4)
8. Understanding energy bills (part 5)
9. Economics of energy efficiency (part 1)
10. Economics of energy efficiency (part 2)
11. Introduction to electrical EEMs (part 1)
12. Introduction to electrical EEMs (part 2)
13. Exam #1 review
14. Exam #1 (March 5th)
15. Motors and VSDs (part 1)
16. Motors and VSDs (part 2)
17. Motors and VSDs (part 3)
18. Lighting systems
19. Heating, ventilating, and air-conditioning (HVAC) systems
20. Furnaces, boilers, and steam systems (part 1)
21. Furnaces, boilers, and steam systems (part 2)
22. Furnaces, boilers, and steam systems (part 3)
23. Industrial refrigeration systems
24. Exam #2 review
25. Exam #2 (April 18th)
26. Energy modeling; high performance (green) buildings; greenhouse gas emissions management
27. Process controls, web-based controls, operation, and maintenance
28. Wind, solar, and combined-heat and power (CHP)
29. Final exam review (comprehensive)
30. Final Exam (May 7th)

Definition of energy management:
The efficient and effective use of energy to maximize profits (i.e., minimize costs) and enhance competitive advantage.