

MEMORANDUM FOR STUDENTS ENROLLED IN CHEN 3340
SUBJECT: CHEN 3370 Administrative Instructions

Lecture times:

Tu/Th 9:30 am – 10:50 am

Instructor:

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1. Welcome to CHEN 3370 - Energy and the Environment. This is a junior level technical elective designed for Chemical Engineering majors. In this course, we cover broad topics from multidisciplinary areas of engineering to understand the various sources of energy we use in the modern world. We also cover the environmental and economic aspects of energy production and use. Specific topics covered in this course are:

- Global energy use and supply
- Thermodynamics of Energy consumption
- Introduction to fossil, biomass, and synthetic fuels
- Generation transmission and storage of electrical energy
- Power plants – fossil and nuclear
- Renewable energy sources
- Automotive transportation
- Economics and environmental issues of energy generation and use.

2. The course has following prerequisite courses which must be completed successfully prior to taking this course:

- CHEN 3301 (Chemical Engineering Thermodynamics I)
- MATH 3305 (Differential Equations)

3. You are encouraged to seek additional instruction (AI) during my office hours, before/after class, or by appointment. Take advantage of this opportunity, it's FREE and really will help! To take the advantage of AI, following avenues are available:

- Scheduled office hours: TBA
- Email/call to setup an appointment if you have a scheduling conflict during the office hours.
- I have an open-door policy. You are always welcome to stop by at my office if you have any questions.

*For online classes the first two points are still applicable.

4. Classroom Procedures:

a) Please bring textbooks, calculators, and other learning devices to every class. If you have an ebook or e-copy of a book, you are welcome to bring your laptops/tablets. Please read the relevant assigned reading materials in the book. Attendance is highly encouraged, and it will help you to get high final grade. You will not be able to share calculators during exams or quizzes. If your calculator fails, I am not responsible to furnish a substitute. Class preparation is your individual responsibility.

b) Textbooks:

Energy and The Environment, Scientific and Technological Principles, 2nd Edition James A. Fay and Daniel S. Golomb

In addition to the textbook, I will post the powerpoint slide with new materials before every class.

c) Recitations

Certain lectures will be used for recitation sessions. The instructor will compile a selection of problems to practice problem-solving skills based on the topics covered in the earlier lectures. This session will be helpful in solving the homework problems, preparing for the quizzes, and examinations. Please bring book (or ebook) to class for this session.

5. Evaluations

a) Academic Dishonesty:

All work must be your own, plagiarism of assignments (homework, projects etc.) will not be tolerated. You can get help from others; however, all help from others must be documented. Please refer to the University of Texas at Tyler current Undergraduate Catalog for academic policies and Manual of Policies and Procedures for Student Affairs (MOPPS, Chapter 8) regarding academic integrity, cheating and plagiarism

b) Homework:

Homework problems will be assigned on a weekly basis which will cover the topics covered in previous two classes. Homework will help you understand the course materials better and are mandatory. Students may *discuss* their homework solutions with one another, but each student must submit their own, **independent** solutions (i.e. you may not just copy someone else's homework). If you receive assistance from a fellow student on a particular problem, you must cite that assistance within your solution. The problems assigned in a homework should not only be correct but should also be neat, organized, and complete (showing all the intermediate steps). No guess work should be required to see what you did. Solutions to the homework problems will be posted online after the due date.

A. Late submissions: All assignments are due at the beginning of the first class of the week. Late homework will receive the following penalties:

- 0-24 hrs late – a 25% deduction of the earned grade
- 24-48- hrs late – a 50% deduction of the earned grade
- More than 48 hrs late – No credit

B. All homework in this course must be properly documented. As you are having your work reviewed it is likely that you might receive help from your classmates, just simply document it. Information from the course textbooks (equations and outlines of procedures), class notes, or me is considered immediately available to all students and need not be acknowledged or documented. **YOU ARE REQUIRED TO ACKNOWLEDGE AND DOCUMENT ALL OTHER ASSISTANCE AND REFERENCES USED.** Documentation will be accomplished in accordance with any manual for writing, footnote or endnote, for papers, but for written homework, just place the documentation right at the point you received help using Who and what assistance.

c) Quizzes and Exams:

There will be no mid-term exams and one final exam. There will be seven quizzes on the scheduled dates during the semester. Quizzes will be based on previous three lectures. The dates for quizzes are included in the course schedule. Official reasons for missing a quiz are outlined in “Student handbook”. You are required to take a make-up quiz, regardless of your reason for missing the scheduled quiz. Report any conflict to me as soon as possible prior to the exam. Exams and the final are closed book and notes. You may only use a NCEES approved (or FE equivalent) calculator (eg. Casio – FX 115 ES, TI 30XA etc.). Solutions to the exams will not be posted, however the exam will be solved in class after the graded exams are returned.

d) Extra credit:

There will be several opportunities to earn bonus points for additional work on problem sets, quizzes, or for completion of other optional assignments. Such opportunities (optional assignments) will be clearly identified. The optional assignment may help you increase your overall grade.

- e) Project Presentation: You will be required to write a report on a topic based on your independent research related to any of the topic you found interesting and present it in front of the class.

6. Grading

Submitted assignments should be correct, neat, and complete. The points in the course are assigned as follows:

Course Points	
Homework (5 at 5 points each)	25 (24%)
Quizzes (7 at 5 points each)	35 (20 %)
Presentation (1 at 10 point)	10 (10%)
Final Examination (1 at 30 point)	30 (30 %)

A \geq 90%; B \geq 80%; C \geq 70%; D \geq 60%; F < 60%;

If you are not satisfied with the score you receive in any of the graded work, you should let me know why the grade should be higher (due to miscounting or incorrect grading) in writing within two weeks of receiving back the graded work.

7. Collection of Student Work:

Throughout the semester I will collect student work (best, average, and worst) for the ABET course and outcomes notebooks. This will require me to make a copy of your work, keep your original and return a copy of the graded work to you. I will not draw attention as to what level of work you accomplished.

8. Assigned Readings:

You are required to do the assigned reading prior to class as it will help you to understand the material presented during the instruction and will give you an opportunity to ask questions on topics you found difficult.

9. UT Tyler Honor Code:

Every member of the UT Tyler community joins together to embrace:
Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

10. Students Rights and Responsibilities:

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

11. Campus Carry:

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

12. UT Tyler a Tobacco-Free University:

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

13. Grade Replacement/Forgiveness and Census Date Policies:

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

- a. Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- b. Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- c. Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- d. Being reinstated or re-enrolled in classes after being dropped for non-payment
- e. Completing the process for tuition exemptions or waivers through Financial Aid

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:

14. State-Mandated Course Drop Policy:

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

15. Disability Services:

In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Services counselor. If you have a disability, including a learning disability, for which you request an accommodation, please contact the Disability Services office in UC 3150, or call (903) 566-7079.

16. Student Absence due to Religious Observance:

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

17. Student Absence for University-Sponsored Events and Activities:

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

16. Social Security and FERPA Statement:

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

17. Emergency Exits and Evacuation:

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

18. Additional UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

19. CHEN3370 Chemical Engineering Materials Course Objectives

- Discuss the role of energy in the society and how it is produced.
- Analyze the various sources for production of energy.
- Discuss the laws of thermodynamics and various types of engine cycle.
- Discuss the environmental impacts of various energy sources.

20. ABET Outcomes

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. (1)
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. (2)
- an ability to communicate effectively with a range of audiences. (3)
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (4)
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (5)
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies. (7)

21. Course Outline

1. Global energy use and supply
2. Thermodynamic principals of energy conversion.
3. Fossil fuels, biomass nuclear, and synthetic fuels.
4. Renewable energy sources.
5. Environmental and economic impact of energy usage.

22. Tentative Class Schedule:

	Date		Topics	Chapter	HW	HW Due	
Jan	12	T	Syllabus, Introduction to Energy and Environment	1			
	14	R	Global Energy Outlook	2			
	19	T	Thermodynamic principals of Energy Conversion	3.1-3.3			
	21	R	Quiz 1 Two laws of thermodynamics, heat transfer/heat exchange	3.4 -3.8	1		
	26	T	Engine cycles	3.9			
	28	R	Refrigeration and heat pumps	3.10-3.13			
Feb	2	T	Thermodynamics of fossil and biomass fuels	4.1-4.4			
	4	R	Quiz 2 Fuel Synthesis	4.5-4.6	2	HW 1 Due	
	9	T	Electrochemical reactions, fuel cells	4.7-4.9			
	11	R	Electrical energy generation, AC/DC conversion	5.1-5.3			
	16	T	Energy Storage	5.4			
	18		Quiz 3 Fossil fueled power plant components	6-6.2	3	HW 2 Due	
	23	T	Fossil fueled power plant components (contd)	6.2			
	25	R	Coal gasification cycles and Fuel Cell	6.3-6.4			
Mar	2	T	Nuclear energy fundamentals	7.1-7.3			
	4	R	Quiz 4 Nuclear reactors, fusion	7.4-7.8		HW 3 Due	
	8	Spring Break					
	13						
	16	T	Introduction to renewable energy (hydropower, biofuels etc.)	8.1-8.4			
	18	R	Solar, wind, tidal energy and other renewable energy sources.	8.5-8.11	4		
	23	T	Automotive transportations, energy efficacy	9.1-9.5			
25	R	Quiz 5 , Electric vehicles, fuel cell vehicles	9.6				
30	T	Vehicle emissions	9.7				
	1	R	Environmental effect of energy use, air pollution	10.1-10.2	5	HW 4 Due	
	6	T	water pollution and land pollution	10.3-10.5			
	8	R	Quiz 6 Greenhouse gas and effects of climate change	11.1-11.3			
	13	T	Effects of climate change (contd.), green house gases	11.3-11.5			

Apr	15	R	Mitigating global warming, methane control	12.1-12.4		HW 5 Due
	20	T	Reducing carbon dioxide	12.5-12.6		
	22	R	Quiz 7 Carbon capture and sequestration	12.7		
	27	T	Final Exams			
	29	R				