

**PRAIRIE VIEW A&M UNIVERSITY  
COLLEGE OF ENGINEERING**

**COURSE SYLLABUS  
CHEG 3113 – Introduction to Energy Systems  
Semester Fall 2019**

**TIME:** MWF 1:00 p.m.-1:50p.m.

**Credit Hour:** 3

**DESCRIPTION:** CHEG 3113 is an undergraduate class in the College of Engineering. (3-0) Credit 3 semester hours. This course introduces fundamental physical and engineering principles associated with various energy systems. Basic energy concepts will be introduced describing the magnitudes and patterns of human energy needs. Historical evolution and present status of the conventional fossil and nuclear-fuelled energy will be investigated along with others such as hydropower, biofuels, and the developing renewable energy systems.

**PREQUISITE:** Junior or senior standing in engineering major.

**INSTRUCTOR** Dr. Kazeem B. Olanrewaju  
Assistant Professor  
C. L. Wilson, Room 201 C  
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**OFFICE HOURS:** MWF 10.50 AM – 11.50 AM;  
cell:319-594-1861

**CLASS:** **New Electrical Engr Bldg 115**

**TEXTBOOK:** **REQUIRED: (1) Francis Vannek, louis Albright, Largus Angerient, "Energy Systems Engineering: Evaluation and Implementation," 3rd Edition, ISBN 978-1-25-958509-8, McGraw Hill (2016)**

**REFERENCE:** (1) J.W. Tester, E.M. Drake, M.J. Driscoll, M.W. Golay and W.A. Peters, "SUSTAINABLE ENERGY: Choosing Among Options," ISBN-13: 978-0262017473, The MIT Press (September 28, 2012), ISBN-10: 0262017474. Paper Cover edition is okay; and  
(2) Perry's Chemical Engineers' Handbook, Edition 8, by Don Green, Robert Perry, Robert H. Perry Introduction to Chemical Engineering Thermodynamics. ISBN13: 978-0-07-142294-9.

**COURSE OBJECTIVES:**

1. Students will demonstrate an understanding of the rationale for establishing sustainability in the context of energy generation
1. Students will show an appreciation of the complexity of the problem and the interactions between the various components of the global ecosystem
2. Students will be able to identify the tradeoffs between environmental impact, resource depletion and economic development
3. Students will grasp the technical basics of each of the major non-renewable and renewable sources of energy.
4. Students will be able to understand and compare the extent of the environmental impact and resource depletion of the major non-renewable and renewable sources of energy.
5. Students will apply this knowledge in gauging different options for specific scenarios.

The focus of this class is on concepts, facts, and exercises that can be solved with common upper class level knowledge of engineering, science and mathematics. Performance evaluation will include practice at converting units, analyses of multifaceted problems detailed analysis of important aspects of contemporary energy issues. Students are expected to be introduced to energy statistics for historical insight and future forecast of global energy needs.

**Approximate Schedule of Topics Covered:**

*Basis: 50 minute lecture period equivalents*

<b>Week</b>	<b>Lecture Topic</b>	<b>Suggested Homework</b>	<b>No. of</b>
1	Introduction		
2	Chapter 2& 3: System Tools for Energy Systems Economic Tools for Energy Systems	HWK 1	
3	Chapter 4: Climate Change and Climate modeling	CLASS PROJECT	
4	Chapter 5: Fossil Fuel Resources	HWK 2	
5	Chapter 6: Stationary Combustion Systems		
6	Chapter 7: Carbon Sequestration	HWK 3	
7	Chapter 8: Nuclear Energy Systems		
8	Chapter 9: The Solar Resource	<b>Midterm Exam</b>	
9	Chapter 10: Solar Photovoltaic Technologies	HWK 4	
10	Chapter 11 &12: Active and Passive Thermal Applications		
11	Chapter 13: Wind Energy Systems	HWK 5	
12	Chapter 14: Bioenergy Resources and Systems		
13	Chapter 15: Transportation Energy Technologies	HWK 6	
14	Chapter 12 (Tester) Hydropower		
15	Chapter 11 (Tester) : Geothermal Energy		
15	<b>Averages and Review for Final:</b>		
	<b><i>Final Exam: TERM PAPER</i></b>		Final Exam

**Program Outcomes****Measured by Course** Program outcomes (h), (i) and (j) assessed using course assignments.**Data Used to Show**

1. Samples of student work in a Binder

**Student Proficiency in Measured Program**

2. Spreadsheet showing student performance and class average

**Outcomes**

3. End of Semester Course Assessment report

**Method of Evaluation:**

This class will have HW's, Laboratory reports a mid-term and a final exams conducted according to university scheduled time.

**Typical Grade Composition**

Grade Element	Weight	Actual <sup>1</sup>
Class Participation, Attendance and Assignments (quizzes, Tests, Homeworks Exercises etc.)	30-35%	
Mid-Term Exam	15-20%	
Final Exam	25%	
Class Project	25%	
<b>Overall Grade</b>	<b>100%</b>	

Letter grades will be assigned based on the numeric value of your adjusted grade (above) using a scale similar to the one below:

A	90.00-100.00
B	80.00-89.99
C	70.00-79.99
D	60.00-69.99
F	0.00-59.99

**POLICIES****Student with Disabilities:**

Any student who has, or believes they may have a disability that requires accommodations is advised to contract the Office of Students with Disabilities.

**Attendance:**

Excused Absences: Students are required to attend *all* class meetings. Absences due to illness, attendance at university approved activities, and family or other emergencies constitute *excused absences* and must be supported by documentation presented to the instructor prior to or immediately upon the student's return to class (email notification is preferred). Students are responsible for all assignments whether absence is excused or unexcused.

Unexcused Absences: Accumulation of one week of unexcused absences (for the number of clock hours equivalent to the credit for the course) constitutes excessive absenteeism. The instructor is NOT required to accept assignments as part of the course requirement when the student's absence is unexcused. A student who believes that the penalty received following violation of this attendance policy is unjust may first confer with his/her academic advisor. If necessary, the matter may be appealed in writing to the course instructor, the instructor's department head, and finally, to the instructor's dean who must refer the matter to the Chair, Admissions and Academic Standards Committee if it cannot be resolved within the college offering the course.

Absences on Religious Holy Days: In accordance with Texas Education Code, Section 61.003, subdivision 7, a student may be absent from classes for the observance of a religious holy day and will be permitted to take missed examinations and complete missed assignments provided the student has notified the instructor of the planned absence in writing and receipt of the notice has been acknowledged by the instructor in writing. "A religious holy day means a holy day observed by a religion whose place of worship is exempt from property taxation under the Texas Tax Code, Section 11.20".

**Tardiness:**

Class Meetings: Students are expected to be in classroom and ready to begin with assignments turned in at the scheduled time for the class meeting. Students are also expected to remain in class throughout the entire meeting time. Tardiness and early departures of students from class meetings will increase the frequency of pop quizzes (see Attendance above for the policy on missed assignments).

Late Assignments: All assignments are due at the start of each class. Assignments turned in after the lecture has begun are considered late. The assignment is reduced by 10% each day thereafter..

**Scholastic Dishonesty:**

Please note that scholastic dishonesty will not be tolerated. Cheating or other such behaviors will result in a grade of zero (0) being assigned for everyone involved in that act.

**Prepared by:** Dr. Kazeem Olanrewaju

**Date:** August 21, 2019