

Course Syllabus

Course Information

Course Number/Section	ENGY 6332.501
Course Title	Energy and Sustainability
Term	Fall 2024
Class Days and Times	Thursdays, 07:00 – 09:45 PM; JSOM 2.904

Professor Contact Information

Professor	Marcelo Medeiros de Campos, MBA, M.Sc.
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Online Office Hours	Tue and Thu, 05:00 PM – 07:00 PM or by appointment
Other Information	Please text my mobile with subject and I will call you back

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Acceptance and enrollment into a graduate program. A keen interest in Energy market, environmental studies, or related fields is beneficial but not mandatory.

Course Description

ENGY 6332 - Energy and Sustainability (3 semester credit hours): This course provides a comprehensive analysis of the global energy transition towards sustainability, emphasizing the pursuit of reducing carbon footprints and establishing "green" brands by both consumers and businesses. It focuses on significant shifts in the energy industry, the role of public perception in shaping energy policies, and the impact of these shifts on environmental and corporate sustainability initiatives. Students will critically assess the challenges and opportunities for enhancing sustainability initiatives worldwide and their implications for economic growth. The course covers technological, economic, and social dimensions of the energy transition, exploring the strategies for adopting renewable energy sources and achieving sustainable energy consumption. Topics include the role of policy and innovation, the transformation of energy systems, and the environmental and societal impacts of energy decisions. The curriculum integrates interactive lectures, case studies, and policy analyses to equip students with a thorough understanding of sustainable development, ensuring current needs are met without compromising future generations' ability to meet their own needs. To provide practical insights, the course includes field trips to energy

facilities and guest lectures from industry experts, offering students real-world perspectives on the dynamic field of renewable energy and sustainability.

Student Learning Objectives/Outcomes

1. Understand the drivers and barriers of the global energy transition:

Grasp the key factors influencing the shift towards sustainable energy consumption and the challenges encountered in this transition.

2. Analyze the impacts of energy policy and public perception on sustainability initiatives:

Examine how changes in energy policies and shifts in public perception affect international and domestic sustainability efforts.

3. Evaluate technologies and strategies for renewable energy implementation:

Assess various renewable energy technologies and strategies for their effectiveness in promoting sustainable energy practices.

4. Propose solutions to align economic growth with sustainable development goals:

Develop and recommend strategies that harmonize economic development with the principles of sustainable development, ensuring the needs of future generations are not compromised.

Required Textbooks and Materials

Category	Details
Suggested Textbook (Not required)	Randolph, John, PhD, and Gilbert M. Masters. <i>Energy for Sustainability: Foundations for Technology, Planning, and Policy</i> . 2nd ed., rev., Island Press, 2018. ISBN: 978-1-61091-820-6

Suggested Readings	<p>Yergin, Daniel. <i>The New Map: Energy, Climate, and the Clash of Nations</i>. Penguin Books, 2021.</p> <p>ISBN: 978-0143111153</p> <p>Webber, Michael E. <i>Power Trip: The Story of Energy</i>. Basic Books, 2019.</p> <p>ISBN: 978-1541644397</p> <p>Diesendorf, Mark. <i>Sustainable Energy Solutions for Climate Change</i>. 1st ed., Routledge, 2014.</p> <p>ISBN: 978-0415706094</p>
Supplementary Materials	<ul style="list-style-type: none"> - A selection of contemporary articles, research papers, and case studies accessible online. - Publications will be made available by the instructor periodically throughout the semester.
Additional Resources	<ul style="list-style-type: none"> - Access to databases, journals, and industry reports via the university library, including subscriptions to Bloomberg New Energy Finance (BNEF) and the International Renewable Energy Agency (IRENA).
Software and Tools	<ul style="list-style-type: none"> - Multiple free SaaS and/or websites for analyzing energy efficiency and renewable energy projects.

Textbooks and some other bookstore materials can be ordered online through Off-Campus Books <http://www.offcampusbooks.com> or through the University of Texas at Dallas Bookstore <http://www.bkstr.com/texasatdallasstore/home>. They are also available in stock at both bookstores.

Technical Requirements and Course Access

In addition to a confident computer and Internet literacy level, specific minimum technical requirements must be met to enable a successful learning experience.

Please review the important technical requirements at <http://www.utdallas.edu/elearning/students/getting-started.html#techreqs> on the Getting Started with eLearning webpage <http://www.utdallas.edu/elearning/students/getting-started.html>.

Detailed technical requirements and course navigation information can be found on the University's eLearning support page.

Assignments & Academic Calendar

Week	Dates	Topics	Activities/Assignments
1	Aug 19 - Aug 25	Introduction to Energy and Sustainability Course	<ul style="list-style-type: none"> ▪ Introductions from students ▪ Syllabus Review ▪ Reflection on personal energy consumption ▪ No assignments
2	Aug 26 - Sep 1	Fundamentals of Energy	<ul style="list-style-type: none"> ▪ Reading: Research Article #1 ▪ Class discussion: Research Article #1 ▪ Quiz on fundamentals of energy (Due 09/01 and open book)
3	Sep 2 - Sep 8	Renewable Energy Technologies I	<ul style="list-style-type: none"> ▪ Reading: Research Article #2 ▪ Class discussion: Solar Energy
4	Sep 9 - Sep 15	Renewable Energy Technologies II	<ul style="list-style-type: none"> ▪ Reading: Case Study #1 ▪ Case Study Discussion: Wind Power in Northern Europe
5	Sep 16 - Sep 22	Renewable Energy Technologies III	<ul style="list-style-type: none"> ▪ Quiz on Solar and Wind Energy (Due 09/22 and open book)
6	Sep 23 - Sep 29	Energy Policy and Sustainability I	<ul style="list-style-type: none"> ▪ Reading: Research Article #3 ▪ Class Discussion: The US national energy policy
7	Sep 30 - Oct 6	Energy Policy and Sustainability II	<ul style="list-style-type: none"> ▪ Reading: Research Article #4 ▪ Class Discussion: Research Article #4
8	Oct 7 - Oct 13	Economic Implications of Energy Transition I	<ul style="list-style-type: none"> ▪ Mid-Term RAR* #1 (Essay related to Economic Implications of Energy Transition) Due 10/13 ▪ Class Discussion: Energy Transition Impact on the environment
9	Oct 14 - Oct 20	Economic Implications of Energy Transition II	<ul style="list-style-type: none"> ▪ Reading: Research Article #5 ▪ Class Debate: Economic growth vs. sustainable development (2 groups will provide arguments – Group 1 will support Economic Growth over environmental impact and Group 2 will provide meaningful information to support environmental claims as necessary for sustainable economic growth)
10	Oct 21 - Oct 27	Social Dimensions of the Energy Transition I	<ul style="list-style-type: none"> ▪ Reading: Research Article #6 ▪ Class discussion: Social Impact of Renewable Energy
11	Oct 28 - Nov 3	Social Dimensions of the Energy Transition II	<ul style="list-style-type: none"> ▪ Reading: Case Study #2 ▪ Case Study Discussion: The social impact of renewable energy adoption
12	Nov 4 - Nov 10	Innovations in Energy Sustainability I	<ul style="list-style-type: none"> ▪ Reading: Research Article #6 ▪ Individual Presentations: Innovative technologies in energy sustainability (each

student will present a new energy transition technology to the class and pitch for investment in 15-minute sessions), PPT Template will be provided by the instructor

13	Nov 11 - Nov 17	Innovations in Energy Sustainability II	▪ Quiz on Innovations and New Technologies (Due 11/17 and open book)
14	Nov 18 - Nov 24	Review and Integration	▪ Final Essay Preparation: Outline and Research ▪ Class Discussion: Review of future technologies
-	Nov 25 - Dec 1	Thanksgiving Break - No Classes	▪ No assignments
15	Dec 2 - Dec 5	Course Wrap-up and Review	▪ Final RAR* #2 (Essay related to future energy technologies and their potential impact on the economic development of the US)
-	Dec 6 - Dec 13	Final Essay Week	▪ Peer Review and Instructor Feedback

***Research Article Report (RAR) will be required from all students and must be submitted according to the schedule listed above.**

The RAR format is listed below for your reference:

“Assignment: Journal Research Article Report”

Objective:

This assignment aims to develop your critical thinking and analytical skills by engaging with current research in the energy industry. You will write a comprehensive report based on a journal article provided by the instructor. This report will demonstrate your ability to synthesize complex information, assess the validity of research methods, and evaluate the implications of the study's findings in the context of the broader energy industry.

Assignment Details:

1. Article Selection:

- You will be assigned a journal article by the instructor. The article will cover a relevant topic within the energy industry, such as advancements in renewable energy, developments in power transmission and distribution, or innovations in nuclear energy.

- Read the article thoroughly, taking notes on key points, arguments, methodologies, and conclusions.

2. Report Structure:

Your report should be structured as follows:

- Title Page:

- Title of the Report
- Your Name
- Course Name
- Date of Submission

- Introduction (1-2 paragraphs):

- Briefly introduce the topic of the article.
- State the purpose of the report and what the article aims to address in the energy industry.

- Summary of the Article (2-3 paragraphs):

- Provide a concise summary of the article's content.
- Discuss the key points, research question(s), hypothesis (if applicable), and findings.
- Highlight the methodology used in the study.

- Critical Analysis (3-4 paragraphs):

- Evaluate the strengths and weaknesses of the article. Consider aspects such as:
 - The clarity of the research question or hypothesis.
 - The appropriateness of the research methodology.
 - The reliability and validity of the findings.

Discuss how well the article contributes to energy, particularly in the context of your studies and knowledge.

- Address any potential biases or limitations in the study.

- Application and Implications (2-3 paragraphs):

- Discuss the practical implications of the research findings.
- How can these findings be applied in the real world, particularly in the energy industry?
- Suggest areas for future research based on the article.

- Conclusion (1 paragraph):
 - Summarize the key points from your analysis.
 - Restate the significance of the research in the broader context of the energy industry.

- References:

- Include a reference section where you cite the journal article and any other sources you used in your analysis. Cite at least 5 sources with high impact factor.

3. Formatting Guidelines:

- Length: The report should be 4-6 pages long, not including the title page and references.
- Font: Times New Roman, 12-point font.
- Spacing: Double-spaced.
- Margins: 1-inch margins on all sides.
- Citation Style: APA format for in-text citations and references.

4. Submission:

- Submit your report via the course's eLearning platform by the assigned due date on the syllabus.
- Late submissions will not be accepted.

5. Evaluation Criteria:

Your report will be evaluated based on the following criteria:

- Comprehension: Demonstrates a thorough understanding of the article.
- Critical Thinking: Shows depth in analysis, including identification of strengths, weaknesses, and implications.
- Clarity: Clear and well-organized writing, with logical flow between sections.
- Application: Effectively connects the research findings to real-world applications in the energy industry.
- Adherence to Guidelines: Follows the prescribed structure, formatting, and citation style.

Tips for Success:

- Start by carefully reading the article and making detailed notes.
- Approach the analysis with a critical mindset—ask questions about the validity of the research and its significance.
- Ensure that your report is well organized, with smooth transitions between sections.
- Proofread your work for clarity, grammar, and adherence to the formatting guidelines.

By completing this assignment, you will enhance your ability to critically engage with academic literature and apply research findings to practical challenges in the energy industry.

Grading Policy

25% Attendance and Participation (as documented by the teacher)

50% Tests and Quizzes (in class and/or online)

25% Research Article Reports and other Take Home Assignments (out of class)

Grading Scale

UT Dallas uses the following grade scale for all undergraduate students:

Grades and Grade Point Average

Grade points are computed by multiplying the points for each grade by the number of semester credit hours; for example, 4.000 (A) x 3 (semester credit hours) = 12 grade points. A student's grade point average (GPA) is determined by dividing the total number of grade points earned by the number of semester credit hours for which a grade other than I or P is received. All GPAs, term and cumulative, are rounded from the fourth to the third digit, and three decimal places are displayed in this catalog, Galaxy, unofficial and official transcripts.

The following grade scale is used in graduate coursework at the University:

Grade	Description	Grade Points per Semester Hour
A		4.000
A-		3.670
B+		3.330
B		3.000
B-		2.670
C+		2.330
C		2.000
F	Failure	0.000
I		Incomplete *
P		Pass *

* The grades of I and P do not produce grade points.

Grade of I: Incomplete

An incomplete grade of I may be assigned, at the discretion of the instructor, for work unavoidably missed at the semester's end. The student must obtain a Grade of Incomplete/Documentation Form in the office of the student's degree program. The instructor assigning an incomplete grade must furnish a description of work required to complete the course. An incomplete must be completed eight (8) weeks from the first day of the subsequent long semester. The completed form must be signed by both the student and the instructor, and the appropriate Associate Dean, Graduate Advisor, or Department/Program Head, and must be retained with the student's academic record. If the required work to complete the course and to remove the grade of I is not submitted by the specified deadline, the grade of I is changed automatically to an F. Extension beyond the specified limit can be made only with the permission of the Dean of Graduate Education. A student may not re-enroll in a course in which an I has already been assigned.

The instructor alone will be responsible for determining whether the requirements for completion are met and for assigning the grade in the course. If the instructor who assigned the incomplete is no longer associated with the University when the work is completed, the head of the department or program may assign a committee of appropriate faculty to evaluate the material and/or obtain any other information that may be required to assign the grade in the course. Upon completion of the evaluation of the required work, the symbol I must be converted into a letter grade (A through F or P) by the instructor, head of the department or program, or Graduate Advisor as indicated above.

Grade Changes

Faculty Initiated

After a final grade has been recorded by the Office of the Registrar, faculty may change grades only to correct a clerical error, replace a grade of "incomplete", or replace a grade of "NR". A faculty-initiated change of a final grade requires the written approval of the instructor and the department, program head or Associate Dean of Graduate Studies, as determined by the school. Grade changes must be submitted by the end of the eighth week of the following semester after the grade was awarded. Any grade change initiated after the eighth week of the semester requires the written approval of the instructor, the department, program head, or Associate Dean, as determined by the school, and the Dean of Graduate Education.

Student Request

After a final grade has been recorded by the Office of the Registrar, a student has the right to request a review of that grade. If a student believes he or she has been assigned a grade on the basis of a clerical error or that the grade is arbitrary or capricious, the student should first seek to discuss the grade with the instructor. A student must petition the instructor for a grade review within sixty calendar days after the course grade was posted.

The only grounds for considering a grade to be incorrect are either clerical error or that the grade is arbitrary or capricious. Examples of clerical error include, but are not limited to, a mistake in adding component grades, a mistake in recording grades, or attributing a paper or examination to the wrong student. "Arbitrary or capricious" means that the grade cannot be considered reasonable given the material of the course, the overall performance of the class, and the individual performance of the student. The University assumes that coursework is best evaluated by the instructor in the immediate context of

the course activity. Requests for reconsideration must show with clear and convincing evidence why this assumption should be set aside.

If this process does not resolve the student's matter, the student may file a formal appeal following the procedures described for appeals under Subchapter B. Appeals of Academic Decisions. (See **Student Grievances Policy, UTDSP5005**).

Pass/Fail Grading

The pass/fail option is intended to encourage a student to take courses in topics outside his/her major area where the student would be competing with a significant number of students who are majoring in these outside areas. Subject to the constraints stated below, a student may elect to take certain courses either by letter grade (A, B, C, F) or pass/fail grade (P/F). The pass/fail option should be exercised at the time of registration. In any courses in which letter grades are given to one or more students, any student wishing to take the course on a pass/fail basis must obtain the approval of the instructor and his/her graduate advisor on the Pass/Fail form. This completed form must be submitted to the Office of the Registrar no later than Census Day. No change of grade designation from grade to pass/fail or pass/fail to grade can be made after the Census Day designated in the online **Comet Calendar** and the **Academic Calendar**.

A student may not elect to take the following types of courses on a pass/fail basis:

- major core courses and their prerequisites required for the student's degree
- elective courses in the student's major area
- more than 20 percent of the semester credit hours earned at UT Dallas for any master's degree (excluding casebook, internship, practicum, independent study, research, reading, thesis or dissertation requirements)

Only pass/fail grades are given for independent study, research, and reading courses, and for thesis and dissertation.

Course & Instructor Policies

Make-up Exams	Not required
Extra Credit	At the instructor's discretion
Late Work	Not accepted
Special Assignments	At the instructor's discretion
Class Attendance	Required
Classroom Citizenship	Required
Online Attendance	Under special conditions and with previous approval from instructor

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements violates the Student [Code of Conduct](#).

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty.

Class Participation

A portion of the grade for this course is directly tied to your participation in this class. The professor documents class participation. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements violates the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the AccessAbility Resource Center has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by Law.

Off-campus Instruction and Course Activities

During the course, the instructor may be able to invite students to attend a site visit to enhance the class's knowledge.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: "As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

Please note, this course schedule is subject to adjustments as necessary to best meet the educational objectives of the course and the needs of the participants.