



**College of Applied Engineering, Sustainability and Technology
(CAEST)**



Course Syllabus

TECH 27210 – Introduction to Sustainability

Class Time: Tuesday and Thursday, 12:30 to 1:45 pm
Class Location: Room 207, Van Deusen Hall
Instructor: Dr. Yanhai Du
Phone: (330) 672-1910
Email: ydu5@kent.edu
Website: <http://www.kent.edu/profiles/~ydu5/>
Office: 209D Van Deusen Hall
Office Hours: TR 1:45 – 2:45 pm or by appointment

Course Description

Title: Introduction to Sustainability

Number: TECH 27210

Description: This course introduces the concepts of sustainability and its three pillars: economic growth, environmental protection and social equality. After completing this course, students will understand the language and concepts of sustainability and will acquire knowledge to further study sustainability, for example climate change and clean energy technologies.

Course Prerequisites No.

Course Objectives

The objectives of this introductory course are to introduce the students to the concepts and importance of the sustainability. The student will be given the opportunity to learn the facts and basic principles in aspects of economic growth, environmental protection and social equality. Students who successfully complete this course will understand the language and concepts of sustainability, some of the challenges the world faces, and proposed solutions to these challenges.

Learning Outcomes

After successfully completing this course, the students should be able to:

1. Show growth in their understanding of sustainability.
2. Develop the ability to apply the basic principles of sustainability to economic growth, environmental protection and social equality.
3. Demonstrate an understanding of the impact of human activities on the environment.
4. Compare and contrast sustainable energy systems and alternative energy sources with traditional fossil fuels in light of the three pillars of sustainability.
5. Evaluate (at an introductory level) sustainability related issues and present sustainable options in one of the following areas (water, food, climate, or energy).

Course References

Textbooks

Title: Sustainability: A Comprehensive Foundation

Author: Tom Theis and Jonathan Tomkin (editors)

Institution: University of Illinois

*Published Year:*2012

Source: Online, open source textbook and be viewed or downloaded at:
<http://www.earth.illinois.edu/documents/coll11325-1.38.pdf> or
<http://cnx.org/content/m41664/latest/?collection=coll11325/latest>

Other Required Materials

Lecture handouts or other lecture materials may be available online at www.Kent.edu website. Login to your FlashLine account and select the **Blackboard** Learn option. Once there select the course title to find the related materials under **Course Content**.

Course Content Outline

The course is mainly delivered in a lecture form. A field trip or energy lab visit may deem to be necessary depending on the schedule and availability.

TECH 27210 Introduction to Sustainability			Course Contents (Tentative*)	
Week	Lecture	Topic Descriptions		
1	1	Course introduction and overview (syllabus distributed), Defining sustainability	Environmental	
	2	Impact of human activities on the environment		
2	3	Effect of technologies on climate and global change, greenhouse gas emissions		
	4	Control of climate: the Solar and El Niño cycles, Guest Lecture (TBD)		
3	5	Energy flow & carbon cycles		
	6	Water and nitrogen cycles		
4	7	Human activities on species loss and ecosystem function		
	8	Natural (Physical) resources and water		
5	9	Natural (Physical) Resources: freshwater supply, use and pollution, case studies		
	10	e-Waste		
6	11	Governing Laws on clean water, clean air and hazardous wastes	Energy	
	12	Special topic assignment (choose one area from water, food, environmental, energy, technology, economy, or other approved area)		
7	13	Energy overview: energy sources and carrier		
	14	Mid-term Review		
8	15	Renewable Energy: Solar energy, wind energy and hydropower		
	16	Mid-term Exam		
9	17	Energy Storage and Batteries		
	18	Clean and Efficient fuel cell technologies and applications		
10	19	Technologies and Innovations		Social & Economic
	20	Special topic Essay and Presentation		
11	21	Perspective of Sustainable Economy		
	22	Sustainable Economy Development, Guest Lecture (TBD)		
12	23	Problem-solving: Metrics and tools		
	24	Life cycle assessment		
13	25	Life cycle design		
	26	Social equality, Guest Lecture (TBD)		
14	27	Sustainable infrastructure: building and construction, Guest Lecture (TBD)		
	28	US DoD (Army) "Net Zero" vision – a practice of sustainability		
15	29	Sustainability ethics and culture		
	30	Final Review		
16		Self study, no lecture		
		Final Exam		

Evaluation Criteria and Grading System

The percentage contribution to the final grade from each aspect of the course will be:

• Attendance and Class Participation	= 15%
• Homework	= 20%
• Midterm Test	= 20%
• Specific Project and Presentation	= 20%
• Final Exam	= 25%
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Total points	= 100%

Grading Scale

Final grades will be assigned according to the following table:

Total Number of Points	Final Letter Grade
≥93	A
90 – 92	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
66 – 69	D+
60 – 65	D
Less than 60	F

Course Requirements (including Attendance)

1. The course will consist of lecture, homework assignments, quizzes/reports or presentations on special topics, and exams. All course requirements must be satisfied for credit by every student.
2. Students will be required to attend all scheduled lectures. Attendance requirements will be in accordance with currently published University policies. Lateness to class and unexcused absences are not acceptable, and will affect final grades. Students with excused absences should visit with the course instructor at the next class session in order to have the excuse properly recorded and to complete missed assignments and class material. A sign-in sheet may be used to record the class attendance.
3. Homework assignments will be due one week after being given. Late assignments will NOT be accepted unless with a valid excuse. In any case, No homework assignments will be accepted a week passed due day.
4. All electronic devices must be turned off or remained silent during class sessions.

Withdrawal Deadline

Every class has its own schedule of deadlines and considerations. To view the add/drop schedule and other important dates for this class, go to the Students Tools and Courses tab in FlashLine and choose either View or Print Student Schedule. To see the deadlines for this course, click on the CRN or choose the Drop or Add a Course link and click on the green clock next to the course under Registration Deadlines.

Students with Disabilities

University policy 3342-3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Accessibility Services (contact 330-672-3391 or visit www.kent.edu/sas for more information on registration procedures).

Proper Enrollment

Students have responsibility to ensure they are properly enrolled in classes. You are advised to review your official class schedule (using Student Tools in FlashLine) during the first two weeks of the semester to ensure you are properly enrolled in this class and section. Should you find an error in your class schedule, you have (*date will be provided by the Undergraduate Office in advance*) to correct the error with your advising office. If registration errors are not corrected by this date and you continue to attend and participate in classes for which you are not officially enrolled, you are advised now that you will not receive a grade at the conclusion of the semester for any class in which you are not properly registered.

Academic Honesty

Cheating means to misrepresent the source, nature, or other conditions of your academic work (e.g., tests, papers, projects, assignments) so as to get undeserved credit. The use of the intellectual property of others without giving them appropriate credit is a serious academic offense. The University considers cheating and plagiarism very serious offenses and provides for sanctions up to and including dismissal from the University or revocation of a degree. The University's administrative policy and procedures regarding student cheating and plagiarism can be found in the [University Policy Register, Chapter 3 - 01.8](#). By submitting any material in this (or any other class) you are certifying that it is free of plagiarism. If you would like more information on plagiarism, what it is, and how to avoid it, please visit the following site: <http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>.

Copyright and Intellectual Property Rights

According to the Kent State University Policy (5-10.1), any intellectual property displayed or distributed to students or others during this course (including but not limited to powerpoint slides, notes, quizzes, examinations) by the professor remains the intellectual property of the professor. This information may not be distributed or published without the professor's written consent.