



Faculty: Faculty of Engineering

Department: Department of Civil Engineering

Course Syllabus

Course Description

This is an elective course that provides an introduction to climate change science, climate change Impacts on the Environment, Adaptation and Mitigation. This short course doesn't claim to be comprehensive. The issue of climate change is vast and complex and its ethical implications are profound. Our purpose here is to lay a foundation upon which you will be able to build your own knowledge, and to help make your actions a service to humankind and a contribution to saving the foundation for life on this planet.

Course Information

Course Title	Introduction to Environmental and Climate Change
Course Number	704103
Prerequisites	No Prerequisite
Total Credits	2 (lectures)

Text Book(s)

Title	Global Warming: The Complete Briefing
Author(s)	John Houghton
Publisher	Cambridge Univ. Press.
Year	2009
Book Website	
Edition	4 th

References

Books	Houghton, D.D. (2002). Introduction to climate change: lecture notes for meteorologists.
Internet links	Intergovernmental Panel on Climate Change: https://www.ipcc.ch/

Instructors

Instructors	Dr.Zain M. Al-Houri
Office Location	
Office Phone	
E-mail	zain.houri@aabu.edu.jo

Teaching Assistant

NA

Class Schedule & Room

Section	Time	Days	Room	Instructor
1	9:30 - 10:30	Monday, Wed.	Dean Building Hall#35	Dr.Zain Al-Houri

Office Hours

Instructor	Days	Time
Dr.Zain Al-Houri	M,W	10:30-11:30 or by appointment
	S, T, Th	9:00-10:00 or by appointment

Evaluation

Assessment Tool	Expected Due Date	Weight
First Exam	M 09/03/2020	20%
Second Exam	M 13/04/2020	20%
Reports/ Assignment/Short Quizzes	TBD	10%
Final Exam	TBD	50%

Course Objectives

A.	To provide answers to basic questions about climate change including: is the climate changing, what is global warming, what is greenhouse effect, What adaptation and mitigation options are available and how to select the most adequate ones, Modeling the Climate.
B.	To establish the relevance of this course in civil engineering.

No.	Course Learning Outcomes (CLOs)	Assessment Methods
1	Explain the fundamentals of climate change science.	
2	Describe the expected consequences of climate change and the role of adaptation.	
3	Provide a rationale for climate change mitigation and propose actions in key sectors.	
4	Analyze principal challenges and opportunities for climate change action.	

Teaching & Learning Methods

- **Class lectures:** Class lectures will expose students to the knowledge required by this course
- **Class Discussions:** Relevant issues will be discussed in class. These discussions are supposed to improve the students' communication and problem solving skills by motivating them to express their opinions.
- **Activity:** Students will be expected to work on a group activity. The activity could be in class work sheets, or small software project. In addition to improving the students' technical and analytical skills, these worksheets aims at improving the students' team work, and self-management.
- **Self-study:** Students will be required to study one of the assigned chapters as self-study. A number of questions from the self-study chapter will be included in the exam. This learning method aims at improving the students' learning skills.

Class Schedule

Topics are indicated as a general guide. Coverage and schedule MAY CHANGE in accordance with the class progress

Topic	Chapters in Text	Related CLOs	Week No.
Course overview, Introduction to climate science Syllabus overview; Class Rules and Grading Policy; Key Concepts (weather, climate, extreme event, elements, relationships); Is climate changing; Evidence of global warming and climate change	-		1
Global Warming and Climate Change <ul style="list-style-type: none"> • What determines the temperature of the Earth • What is Global Warming • El Nini Events • Uncertainty and Response 			2
The Greenhouse Effect <ul style="list-style-type: none"> • How the earth keeps warm • The greenhouse effect • The greenhouse gasses • Carbon dioxide and the carbon cycle • Global warming potentials 			3-4
First Exam (09/03/2020)			
The Impacts of Climate Change <ul style="list-style-type: none"> • Impacts and consequences of climate change, examples of global warming consequences (Hurricane Katrina, Tornadoes, Alaska, Antarctica). 			5-6
Climate Change Adaptation <ul style="list-style-type: none"> • Sea level rising, global average surface temperature, impact on fresh water resources, impact on agriculture and food supply, impact on ecosystems, and health impacts, • Impact assessment, regional impacts, adaptation strategies, funding adaptation, sustainable development, adaptation integration into policy, 			7-8
Climate Change Mitigation <ul style="list-style-type: none"> • Carbon dioxide capture and storage (CCS) • Renewable energy (solar, wind, geothermal, bio-energy, hydro), land use change and management • Mitigation measures at the sector level, Effect of water management policies and measures on Green House Gases (GHG) emission and mitigation • Benefits and costs of climate mitigation. 			9-10
Second Exam (06/04/2020)			
International conventions on climate change <ul style="list-style-type: none"> • International agencies and bodies working on climate change worldwide and in Jordan • Intergovernmental Panel on Climate Change (IPCC)9 United Nations Environmental Program (UNEP) • World Meteorological Organization (WMO). 			11-12

<ul style="list-style-type: none"> • The 1998 Kyoto Protocol, Paris Climate Agreement, 			
Environmental Concepts, Systems & Management Overview <ul style="list-style-type: none"> • Concepts and Definitions • Environmental Science and Environmental Engineering • Key Elements of Modern Environ Engineering • Ecological & Environmental Systems • Global Environmental Problems • Environmental Regulations in Jordan 			13-14
Chemical View of Environmental Quality <ul style="list-style-type: none"> • Environmental Chemistry • Chemical Kinetics • Chemical Concentrations in Water, Air and Soil 			15
Revision and Final Exam (TBA)			

Other Policies and Notes	
Attendance	<p>Students are expected to attend class and to come to class on time. In accordance with university regulations, <u>students missing more than 20% of total classes are subject to failure.</u></p> <p>If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed. Attendance will be recorded at the beginning or end of each class.</p>
Participation	<p>You are expected to participate in class. Participation includes asking and answering questions, raising issues, and suggesting solutions to the discussed problems.</p>
Activity	<p>Students are expected to work on an activity within a group of 2-3 students. The activity could be .</p>
Exams	<p>Exam dates <u>are FIXED</u> so please make all of your plans accordingly.</p> <p>The course includes two mid-term exams and a <u>comprehensive</u> final exam that will test student mastery of the stated learning objectives. All Exams are CLOSE-BOOK and notes .</p> <p>Computers/tablets/cell phones are not allowed on any exam.</p> <p>The format for the exams is generally as follows: multiple-choice, and solving questions.</p>
Makeup Exams	<p>Make-up exams will be given only if written documentation of the extenuating circumstance regarding the absence is provided and authenticated by the students through valid channels in AABU. Makeup exams may be different from regular exams in content and format.</p>
Workload	<p>Average work-load student should expect to spend is 2 hours/week.</p>
University Policies Academic Dishonesty	<p><u>DO NOT CHEAT.</u> Quizzes and exams need to be done individually. Each student is responsible for securing his or her work from copying. Any student who copies material or knowingly allows it to occur will fail the assignment and perhaps fail the class Cheating or copying from neighbor on exam is an illegal and unethical activity and <u>standard AABU policy will be applied.</u></p>
Electronic Equipment Usage	<p>Please turn off cell phones prior to entering the class, Surfing the web/texting during classes is considered negative class participation.</p>