NAU NORTHERN ARIZONA UNIVERSITY

Course Title: ENV 115 Climate Change
Term: Summer 2023
Instructor: TBA
Course Credit: 3
Mode of Instruction: Online

Course Description:

This course introduces the evolution of the Earth's climate and the causes of climate change, including global warming. This course aims to address the whole complexity of climate change as an issue, by bringing together the science, impacts, economics, abatement technologies, and policy solutions into one course. Students are expected to explain the relevance of these concepts for our present understanding of human-caused climate change and for the viability of different proposed solutions.

Course Prerequisites:

N/A

Learning Outcomes:

By the end of the course, the student should be able to:

A. Apply quantitative analysis of concepts relevant for climate change, drawn from chemistry, physics, and economics, through homework problems;

B. Evaluate the successes and failures of past national and international efforts to address climate change, and evaluate prospects for future management of climate change;

C. Assess the communication of science and policy for climate change, as a successful or unsuccessful example of how science and policy can and should inform one another;

NAU NORTHERN ARIZONA UNIVERSITY

Course Material:

John Houghton, ***Global Warming: The Complete Briefing***, 5th, Cambridge Univ. Press, 2015.

Evaluation:

- Homework [20%]
- Essays [20%]
- Mid-term Exam [25%]
- Final Exam [35%]

Description of the Evaluation tasks:

Assignment/ Essay/ ... : During the term, students will be required to finish several evaluation tasks within due date. All the tasks are linked with specific course topics/outcomes and will adequately assess students' competence and learning outcomes. Students are encouraged to meet with instructor about these tasks at any point.

Mid-term/ Final Exams/ Quiz/... : There may be periodic quizzes given at the beginning of lecture sessions; the feedback from these quizzes will monitor the progress of the learners and help to set learning priorities. There will be mid-term exam/ final exam for the course. They are the basic criteria for the evaluation of students' learning outcomes and final grade.

Grading Policy:

Students are supposed to finish each online lecture. Prior to each class, students should finish the required readings. During the class time, students are encouraged to make use of all relevant online course resources and communicate with the instructor. Students' grades are accumulated based on the cumulative evaluations.

Students' letter grade will be assigned according to the following scale:

A+ 90-100	A 85-89	A- 80-84
B+ 77-79	B 73-76	B- 70-72
C+ 67-69	C 63-66	C- 60-62
D+ 57-59	D 53-56	D- 50-52
F < 50		

Academic Integrity:

Students must strictly adhere to the university's academic integrity rule; and all essays, exams and any other form of academic assignments must adhere to these rules. Any form of plagiarism, cheating, or misappropriation of materials will be considered a violation of academic integrity and will be punishable by the university.

Withdrawal from the Course(s):

Students will be able to apply for a transfer or withdrawal within 3 days of the starting date of the course. If a withdrawal is applied for within 3 working days, the tuition fee will be fully refunded. After 3 days, the tuition fee will not be refunded. If a withdrawal is applied for in the first two weeks, it will be recorded as W (Withdraw) on the course transcript. After this initial two-week period, the class will be recorded as F (Fail).

Tentative Schedule:

1	Global warming and climate change
2	The effect of volcanic eruptions on temperature extremes
3	Adaptation and mitigation
4	The greenhouse effect

5	Mars and Venus **Homework#1**
6	The greenhouse gases
7	Carbon dioxide and the carbon cycle
8	Future emissions of carbon dioxide
9	Estimates of radiative forcing **Homework#2**
10	Estimates of radiative forcing （Cont.)
11	Climates of the past
12	Modelling the climate
13	**Mid-term Exam**
14	Seasonal forecasting
15	Feedbacks in the climate system **Essay#1**
16	Climate change in the twenty-fi rst century and beyond
17	Emission scenarios
18	Changes in the ocean thermohaline circulation
19	The impacts of climate change
20	Impact on agriculture and food supply **Essay#2**
21	Weighing the uncertainty
22	The scientifi c uncertainty
23	A strategy for action to slow and stabilise climate change
24	Energy and transport for the future
25	**Final Exam**