

Understanding climate change – 2 credits

Course Number: 224.4093

Lecturer: Prof. Nicolas Waldmann

Office Hours: Monday, 12:00-14:00, Multipurpose Building – Room 130, tel. 04-8280736, email: nwaldmann@univ.haifa.ac.il

Course Type: Lecture

Course Level: MSc/ PhD

Prerequisites: No

Course Description:

Since the industrial revolution, our planet has experienced global warming at a very rapid rate that is only equal to the one that occurred during the Cretaceous period (about 65 million years ago). The rate of increase in temperature in the atmosphere and increase in the amount of carbon dioxide in the last hundred years shows a direct effect and impacts almost every aspect of Earth: the rise of the sea level, coastal plain flooding, changes in the duration of the seasons over time, an increase in the amount and intensity of extreme events (such as landslides or typhoons), outbreaks of pandemics, and even a connection to an increase in the number of earthquakes in certain regions of Earth. All these processes have a direct impact on humanity and our continued existence on Earth. In fact, there is a direct connection between an increase in temperatures and the amount of carbon dioxide in the atmosphere and our security, which is one of the main issues on the table of many governments in the world.

In this course, we will learn about climate change, and understand the various factors that affect the climate, those that have occurred in the past, its current effects on the nature around us and humanity, and the predictions and models for the future. We will study these topics while taking examples from current cases, which will serve as tools for understanding what may happen in the future.

Topics:

1. What is climate? The Fundamentals of Climate Change Science.
2. Climate dynamics and present Earth.
3. Paleoclimate.
4. Redefining mankind security in light of a warming world.
5. Adaptation constellation and conflicts in light of climate change.
6. Mitigation, strategies and future Earth.

Learning Outcomes:

At the end of the course students will be able to:

1. Understand about the climate system on Earth, the dynamic of climate change and its impact on every aspects of our Earth system.
2. Learn about adaptability and evolution of Earth biological system in light of global warming.
3. Understand the technologies and strategies for mitigation and adaptation to a climate change crisis.

Grading: Report.

Reading List: To be distributed.