

**An interdisciplinary approach to understanding environmental issues –**

**4 credits (a two-semester course)**

**Course Number:** 224.5010

**Lecturers:** Prof. Michael Lazar and Prof. Daniel Sher

**Lecturers' Contact Information:** Prof. Michael Lazar: tel. 054-4224644, email: mlazar@univ.haifa.ac.il; Prof. Daniel Sher: tel. 04-8249349, email: dsher@univ.haifa.ac.il

**Course Type:** Lecture/Field trip/Project

**Course Level:** MSc/ PhD

**Prerequisites:** No

**Course Description:**

Earth and its inhabitants are facing unprecedented change. Local processes such as shifts in land use, urbanization and increased pollution together with global climate change are impacting the lives of everyone. Dealing with these challenges (e.g. reducing, mitigating or adapting) requires both scientific knowledge and public engagement. However, The COVID-19 pandemic has exemplified the mistrust between certain factions in the public and the scientific community – a mistrust that has grown due to lack of understanding and accessibility of data. The goal of the course is to introduce a multi-disciplinary group of students to the basic science behind global environmental and climate change and to explore how to understand and communicate climate change through art.

**The course is divided into three parts:**

**Theoretical course – 1st semester (2 credit points) – includes:**

1. **In person (frontal) lectures:** students will be exposed to a wide range of topics dealing with environmental issues from beach erosion to water pollution and coral bleaching. Additionally, the students will discuss ways of understanding environmental and climate change through communication and art.
2. **One field trip:** a local trip to Haifa, to explore the interaction between the city and its environment.

The final grade will be based on a written assignment/project taking one of the subjects discussed in class and analyzing it from the angle of an art-work, educational or advertising campaign, etc.

**Applied course – 2nd semester (2 credit points):**

3. It will focus on **interdisciplinary “hands on” projects**. Students from various backgrounds will work together in order to produce a thoroughly (including

artistically) researched, scientifically sound work that conveys a message relevant to the topic of the course and the UN's SDGs. An inherent part of the hands-on project is a "residency", where students encounter different disciplines, e.g. by working in labs, taking part in artistic workshops, etc. The projects themselves will be displayed as an exhibition initially in the foyer of the Charney School of Marine Sciences and eventually in various art galleries. This part of the course will also include field trips.

An example of a project that can result from the dialog between artists and scientists can be found here: <https://youtu.be/bXEKT6xQZ5Y>

### Topics:

1. A general introduction to climate change: A geological view of Earth's climate. Evidence for climate changes and their causes. Limitations of scientific knowledge. The role of oceans in regulating Earth's climate
2. How do you predict climate? The Earth's heat budget and how to model it. The IPCC, its role and main findings.
3. The ocean as a resource: Fossil fuel sources – gas and oil. Deep sea mining. Renewable energy from the sea
4. Industrialists, fishermen and a mysterious disease – organic mercury pollution and the Minamata Disease.
5. The ocean as the world's trash can – and what happens close by? Different forms of pollution (microplastic, oil etc.). Anthropogenic changes in the Eastern Mediterranean
6. Acoustic ecology: What can we learn from sound about the environment and climate change?
7. Demagogy, Fake News and propaganda in the discussion on climate change. Should the discussion be balanced? Fundamentals of propaganda and Fake News. What are the roles of the scientist, artist and activist
8. Environmental art: examples of current artists active in this field
9. Climate change in popular culture: images, movies and computer games
10. Art as a tool for climate protest
11. Haifa field day + sound morphology: When art and science meet on the beaches of Haifa.

### Reading List:

1. Barclay L. (2019) Acoustic Ecology and Ecological Sound Art: Listening to Changing Ecosystems. In: Droumeva M., Jordan R. (eds) Sound, Media, Ecology. Palgrave Studies in Audio-Visual Culture. Palgrave Macmillan, Cham. [https://doi.org/10.1007/978-3-030-16569-7\\_8](https://doi.org/10.1007/978-3-030-16569-7_8).
2. Burke, A., Peros, M.C., Wren, C.D., Pausata, F.S.R., Riel-Salvatore, J., Moine, O., de Vernal, A., Kageyama, M., Boisard, S. (2021). The archaeology of climate change: The case for cultural diversity. *Proceedings of the National Academy of Sciences* 118 (30) e2108537118; DOI: 10.1073/pnas.2108537118.
3. Cole, M., Lindeque, P., Halsband, C., Galloway, T.S. (2011). Microplastics as contaminants in the marine environment: A review. *Marine Pollution Bulletin* 62: 2588-2597.
4. Eldred, S. (2016). Art–science collaborations: Change of perspective. *Nature* 537: 125–126. <https://doi.org/10.1038/nj7618-125a>
5. Golańska, D., Kronenberg, A. (2020). Creative practice for sustainability: A new materialist perspective on activist production of eco-sensitive knowledges. *International Journal of Education Through Art* 16: 303-318.

6. Nossel, S. (2016). Introduction: On “Artivism,” or Art’s Utility in Activism. *Social Research: An International Quarterly* 83: 103-105.
7. O’Neill, S.J., Smith, N. (2014). Climate change and visual imagery. *WIREs Climate Change* 5: 73–87. doi: 10.1002/wcc.249.
8. Pijanowski, B.C., Farina, A., Gage, S.H., Dumyahn, S.L., Krause, B. (2011). What Is Soundscape Ecology? An Introduction and Overview of an Emerging New Science. *Landscape Ecology* 26: 1213–1232.
9. Rohling, E., Haigh, I., Foster, G., Roberts, A.P., Grant, K.M. (2013). A geological perspective on potential future sea-level rise. *Scientific Reports* 3, 3461. <https://doi.org/10.1038/srep03461>
10. Rödder, S. (2017). The Climate of Science-Art and the Art-Science of the Climate: Meeting Points, Boundary Objects and Boundary Work. *Minerva* 55: 93–116.