



Course program and reading list

Semester 1 Year 2024

School: School of Sustainability Founded by Israel Corp. ICL

Environmental change and emerging technologies

Lecturer:

Dr. Asaf Tzachor atzachor@runi.ac.il

Teaching Assistant:

Ms. Maya Sela maya.sela01@post.runi.ac.il

Course No.:	Course Type :	Weekly Hours :	Credit:
4935	Lecture	3	3

Course Requirements :	Group Code :	Language:
Final Paper	241493500	English



Course Description

This course is one of three core modules of the Aviram Sustainability and Climate Program.

The objective of this course is to develop a critical understanding of the drivers of global environmental breakdown - and breach of the Planetary Boundaries - from the technological perspective, considering past, present and prospective technologies as both sources of- and solutions to- sustainability challenges.

Additionally, the course provides participants with an overview of emerging environmental technologies, including clean-tech, climate-tech, energy-tech, water-tech, agri-tech and food-tech.

Moreover, participants will acquire knowledge and skills to assess the feasibility

assessment of emerging technologies in the sustainability and climate domain.

The course is taught primarily in Hebrew, due to the bilingual nature of the Aviram Program, and as stated in advance



Course Goals

Participants will critically review the nature of technological progress traps, technological lock-ins, and the nature of technology more broadly - in relation to the global environmental crisis.

Participants will explore and employ frameworks and mental models for ideation and innovation.

Participants will learn of- and use- technology market research for environmental and climate technologies.

Participants will learn of- and engage with life cycle assessments in this domain.

Participants will collaborate in teams to research climate-technologies in man-made systems and supply chains responsible for the global environmental crisis.



Grading

Self-selected teams will submit a written assignment at the end of the term, the grade of which will constitute 100% of their final mark in the course.



Reading List

Bozeman, B. (2000). Technology transfer and public policy: a review of research and theory. *Research policy*, 29(4-5), 627-655.

Cohen-Shacham, E., Walters, G., Janzen, C., & Maginnis, S. (2016). Nature-based solutions to address global societal challenges. IUCN: Gland, Switzerland, 97.

Gandini, A. (2019). Labour process theory and the gig economy. *Human Relations*, 72(6), 1039-1056.

Goldenberg, J. (2002). *Creativity-Product-Innovation*. Cambridge University Press.

Goldenberg, J.; Levav A.; Mazursky D.; Solomon S. (March 2003). Finding your Innovation Sweet Spot. *Harvard Business Review*.

Goldenberg, J.; Mazursky D.; Solomon S. (1999). Toward identifying the inventive templates of new products: A channeled ideation approach. *Journal of Marketing Research*. 36 (2): 200.

Hackett, E. J., Amsterdamska, O., Lynch, M., & Wajcman, J. (2008). *The handbook of science and technology studies*. MIT Press.

Horowitz, R. *Creative Problem Solving in Engineering Design*.

Innovation Israel (2021). *Israel's State of Climate Tech 2021*.

Keeley, L., Walters, H., Pikkal, R., & Quinn, B. (2013). *Ten types of innovation: The discipline of building breakthroughs*. John Wiley & Sons.

Matkin, G. W. (1990). *Technology transfer and the university*. Macmillan Publishing Company, 866 Third Ave., New York, NY 10022.

Mazzucato, M. (2011). The entrepreneurial state. *Soundings*, 49(49), 131-142.

Nalebuff, B., & Ayres, I. (2006). *Why not?: How to use everyday ingenuity to solve problems big and small*. Harvard Business Press.

Nesshöver, C., Assmuth, T., Irvine, K. N., Rusch, G. M., Waylen, K. A., Delbaere, B., ... & Wittmer, H. (2017). The science, policy and practice of nature-based solutions: An interdisciplinary perspective. *Science of the total environment*, 579, 1215-1227.

Sismondo, S. (2010). *An introduction to science and technology studies* (Vol. 1, pp. 1-11). Chichester: Wiley-Blackwell.

Vallas, S., & Schor, J. B. (2020). What do platforms do? Understanding the gig economy. *Annual Review of Sociology*, 46, 273-294.