Course program and reading list

Semester 1 Year 2024

School: School of Sustainability Founded by Israel Corp. ICL

The planetary boundaries

Lecturer:

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Course No.:	Course Type :	Weekly Hours :	Credit:
4934	Lecture	3	3

Course Requirements :	Group Code :	Language:
Final Paper	241493400	English

Course Description

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

The course provides participants with a comprehensive overview of the nine Planetary Boundaries identified by scientists as critical to maintaining a habitable planet: climate change, biodiversity loss, land use change, freshwater use, ocean acidification, stratospheric ozone depletion, atmospheric aerosol loading, chemical pollution, and nitrogen and phosphorus cycles.

We will explore the science behind each boundary, the interdependences between boundaries, and the human activities and systems that are driving their transgression.

As part of the course, participants will work in self-selected teams, choose a planetary

boundary, and a system and supply chain driving its breach – for which they will analyze and develop innovative interventions in the following core courses and the Sustainability Workshop.

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

Course Goals

Participants will critically review and discuss the man-made systems and supply chains (e.g., the energy-electricity system, the agri-food system) that drive the transgression of the nine Planetary Boundaries identified by scientists as critical to maintaining a habitable planet.

Participants will explore novel interventions in these abovementioned man-made systems and supply chains.

Participants will collaborate in teams to analyze and develop innovative interventions in man-made systems and supply chains responsible for the global environmental crisis.

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

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

Rockström, J., W. Steffen, K. Noone, Å. Persson, F.S. Chapin III., E.F. Lambin, T.M. Lenton, M. Scheffer, et al. 2009. A safe operating space for humanity. Nature 461: 472–475.

Scheffer, M. 2009. Critical Transitions in Nature and Society. Princeton: Princeton University Press.

Steffen, W., A. Sanderson, P.D. Tyson, J. Jäger, P. Matson, B. Moore III., F. Oldfield, K. Richardson, et al. 2004. Global Change and the Earth System: A Planet Under Pressure. Berlin: Springer.

Steffen, W., P.J. Crutzen, and J.R. McNeill. 2007. The Anthropocene: Are humans now overwhelming the great forces of nature. Ambio 36: 614–621.

Steffen, W., Å. Persson, L. Deutsch, J. Zalasiewicz, M. Williams, K. Richardson, C. Crumley, P. Crutzen, et al. 2011b. The Anthropocene: From global change to planetary stewardship.

Ambio 40: 739–761.

Steffen, W., K. Richardson, J. Rockström, S.E. Cornell, I. Fetzer, E.M. Bennett, R. Biggs, S.R. Carpenter, et al. 2015a. Planetary boundaries: Guiding human development on a changing planet. Science 347: 12598551–12598610.

Steffen, W., W. Broadgate, L. Deutsch, O. Gaffney, and C. Ludwig. 2015b. The trajectory of the Anthropocene: The great acceleration. The Anthropocene Review 2: 81–98.

Steffen, W., J. Rockström, K. Richardson, T.M. Lenton, C. Folke, D. Liverman, C.P. Summerhayes, A.D. Barnosky, et al. 2018. Trajectories of the earth system in the Anthropocene. Proceedings of the National Academy of Sciences 115: 8252–8259.