

Title: The Limits to Growth – Sustainability and the Circular Economy

Language: English

Credits: 5CP (DigiTec) / 6CP (TUC)

SWS: (3V+1Ü) – 4 (56h / 124h)

Length: 1 semester

When: once a year (SS)

Education Level: B.Sc (M.Sc and others are welcome as well)

Learning outcome(s):

- The students understand the concept of a circular economy, sustainability, and related concepts (biocapacity, etc.).
- Moreover, the students gain a basic understanding of causes, dimensions, and the characterization of climate change, environmental pollution, and climate change enabling them to make higher-level, transdisciplinary assessments of decisions and measures in a social, economic, and political context.
- The ability to critically assess upcoming technological solutions enabling/facilitating sustainability and the circular economy.

Requirements: No requirements – the course is open for everyone with no prior knowledge required.

Content:

- Basics of climate change, environmental pollution, and dwindling non-renewable resources
- Introduction to the circular economy, sustainability, and related concepts (biocapacity, etc.)
- Sustainability goals
- Feedback loops and tipping points
- Implications of closed systems with a finite supply of resources
- Technology-focused and technology-critical approaches towards sustainability
- Circular Societies

Media: Slides, Whiteboard, Videos, Literature, Script, Web content

Literature:

- Donella H. Meadows, Jorgen Randers, and Dennis L. Meadows. The Limits to Growth (1972).

- Baccini et al. Metabolism of the Anthroposphere: Analysis, Evaluation, Design (2012).
- Walter R. Stahel. The Circular Economy: A User's Guide (2019).
- W. Brian Arthur. The Nature of Technology: What It Is and How it Evolves (2011).
- David Wallace-Wells. The Uninhabitable Earth, Annotated Edition (2017).
- (German) Stefan Rahmstorf, Hans Joachim Schellnhuber. Der Klimawandel (2019).
- David Archer, Stefan Rahmstorf. The Climate Crisis (2010).

Studien-/Prüfungsleistung: Lecture (graded)

Prüfungsform: Project work OR written/oral examination – The examination type will be determined at the beginning of each semester.

Prüfungsvorleistung: None