

# Planetary Boundaries

## Course Syllabus

### Module 1: Introduction and the Big Picture

The Big Picture

*Lecture 1: Welcome to the Anthropocene*, Johan Rockström

*Lecture 2: The quadruple squeeze*, Johan Rockström

*Lecture 3: The Great Acceleration*, Johan Rockström

### Module 2: Welcome to the Anthropocene

Anthropocene and Holocene

*Lecture 1: Humanity's period of grace: the Holocene*, Johan Rockström

*Lecture 2: Entering the Anthropocene*, Johan Rockström

Visions of the Anthropocene

*Lecture 3: Non-linear thinking in the Anthropocene*, Garry Peterson

*Lecture 4: Imagining the Anthropocene*, Garry Peterson

*Lecture 5: Making the case for the Anthropocene*, Johan Rockström

### Module 3: Social-Ecological Systems and Resilience Thinking

Social-ecological resilience

*Lecture 1: Social-ecological system*, Carl Folke

*Lecture 2: Feedbacks, interactions and regime shift*, Garry Peterson

*Lecture 3: Ecological surprises*, Garry Peterson

Understanding complexity in a turbulent world

*Lecture 4: Teleconnections and inconvenient feedbacks, Johan Rockström*

*Lecture 5: Earth resilience and cross-scale interactions, Johan Rockström*

*Lecture 6: Tipping Points, Johan Rockström*

#### **Module 4: Planetary Boundaries Framework – Part 1**

A new framework for human development

*Lecture 1: Introducing the Planetary Boundaries framework, Johan Rockström*

*Lecture 2: Justification for Planetary Boundary selection, Johan Rockström*

*Lecture 3: Quantification of the nine Planetary Boundaries, Johan Rockström*

The big three boundaries - processes with global scale tipping points

*Lecture 4: Climate change, Johan Rockström*

*Lecture 5: Ocean acidification, Johan Rockström*

*Lecture 6: Stratospheric ozone depletion, Johan Rockström*

#### **Module 5: Planetary Boundaries Framework - Part 2**

The four "slow" boundaries

*Lecture 1: Biodiversity loss, Johan Rockström*

*Lecture 2: Land and water use change, Johan Rockström*

*Lecture 3: Interference with global N and P cycles, Sarah Cornell*

Human-made planetary boundaries processes

*Lecture 4: Aerosol loading, Sarah Cornell*

*Lecture 5: Novel Entities, Sarah Cornell*

*Lecture 6: Synthesis and progress on Planetary Boundaries, Johan Rockström*

#### **Module 6: Planetary Boundaries and Global Equity**

Resources and interactions

*Lecture 1: Interactions between Planetary Boundaries, Sarah Cornell*

*Lecture 2: Issues of access and distribution: Peak everything, Johan Rockström*

A safe and just operating space for humanity

*Lecture 3: Social foundations for Planetary Boundaries, Sarah Cornell*

*Lecture 4: Reconnecting human development to the Biosphere, Carl Folke*

### **Module 7: Moving towards Global Sustainability within Biophysical and Social Boundaries**

Global governance

*Lecture 1: Existing structures of global governance, Victor Galez*

*Lecture 2: New and emerging perspectives on global governance, Victor Galez*

*Lecture 3: A shifting development paradigm, Johan Rockström*

Promising pathways to success

*Lecture 4: Energy - a promising pathway, Johan Rockström*

*Lecture 5: The role and risks of technology in the Anthropocene, Victor Galez*

*Lecture 6: Cities: challenges and opportunities, Thomas Elmquist*

*Lecture 7: Feeding humanity in an urban world, Lisa Deutsch*

### **Module 8: Conclusions**

Science, Policy and Individual Action in the Anthropocene

*Lecture 1: Development of the Sustainable Development Goals, Johan Rockström*

*Lecture 2: Science in the Anthropocene, Johan Rockström*

*Lecture 3: Interviews. Reflections on taking action in the Anthropocene, All lecturers*

Conclusions

*Lecture 4: Key messages and final remarks, Johan Rockström*