

<p>Title</p>	<p>Module description</p> <p>Massive Open Online Course: Climate Change, Risks and Challenges (ClimateMOOC)</p>
<p>Instructor</p>	<p><i>Name of lecturer + Institution</i></p>
<p>Key speakers</p>	<ul style="list-style-type: none"> • Prof. Dr Mojib Latif, GEOMAR Helmholtz Centre for Ocean Research Kiel • Prof. Dr Jochem Marotzke, Max Planck Institute for Meteorology, Hamburg • Prof. Dr Michael Schulz, MARUM Centre for Marine Environmental Sciences, University of Bremen • Prof. Dr Hermann Lotze-Campen, Potsdam Institute for Climate Impact Research (PIK), Potsdam • Prof. Dr Anita Engels, Cluster of Excellence Integrated Climate System Analysis and Prediction (CliSAP), University Hamburg • Prof. Dr Gernot Klepper, Institute for the World Economy (IfW), Kiel
<p>Topics</p>	<p>Climate, climate system, climate change, models and scenarios, sustainability, impacts of climate change, climate change as a societal challenge; economic prerequisites for a low carbon society</p>
<p>Language</p>	<p>English</p>
<p>Scope and overarching learning objectives</p>	<ul style="list-style-type: none"> • This course explains the scientific basis of climate change, the impacts on nature and society, and identifies potential solutions • The participants will be encouraged to: <ul style="list-style-type: none"> ○ learn more about the core principles of the climate system and the increasing human impact on the climate system ○ understand the scientific method of working and arguing ○ become aware of the causes and consequences of anthropogenic climate change, and to identify action strategies on both levels, the individual level and the societal level ○ distinguish between interest-oriented information and science-based knowledge
<p>Learning objectives and content</p>	<p>Chapter 1: “Climate system and climate change” (Key speaker: Prof. Dr Mojib Latif, GEOMAR Kiel)</p> <ul style="list-style-type: none"> • define weather, climate, the climate system • differ natural and anthropogenic influences on the climate system • name sources of anthropogenic greenhouse gas emissions (esp. fossil fuels), factors that influence emission trends and underlying causes (lifestyle, growth) • identify needs and constraints of the value chain <p>Other speakers: Dr Paul Becker, German Weather Service Dr Sonja Peterson, Institute for the World Economy (IfW) Dr Ruth Delzeit, Institute for the World Economy (IfW)</p> <p>Chapter 2: “Models and scenarios” (Key speaker: Prof. Dr Jochem Marotzke, Max Planck Institute for Meteorology, Hamburg)</p> <ul style="list-style-type: none"> • describe why we need climate models and how they work • differentiate the main climate scenarios for the 21st century and the climate change in various scenarios

- identify the 2° target as a political target and ways to reach this target
- explain the carbon budget and the relation to climate
- describe the role and function of the IPCC

Other speakers:

Dr Marco Giorgetta, Max Planck Institute for Meteorology

Dr Tatiana Ilyina, Max Planck Institute for Meteorology

Dr Christiane Textor, IPCC Coordination Office

Interview partners:

Prof. Dr Hans-Otto Pörtner, Alfred Wegener Institute, Bremerhaven

Chapter 3: “Climate history” (Key speaker: Prof. Dr Michael Schulz, MARUM, Bremen)

- explain the importance of reconstructing the climate of the past (Pleistocene and Holocene) and the role of drill cores
- identify the anthropogenic impact in younger climate history and the role of CO₂ increase
- indicate the cause of glacial and interglacial periods
- recognise the correlation between CO₂ concentration and global temperature
- describe the relation between climate change and cultural history

Other speakers:

Dr Ute Merkel, MARUM Centre for Marine Environmental Sciences, University of Bremen

Prof. Dr Gerald Haug, Max Planck Institute for Chemistry

Chapter 4: “Impacts of climate change” (Key speaker: Prof. Dr Hermann Lotze-Campen, PIK, Potsdam)

- describe the impacts of climate change on nature and society, on our personal environment, particularly the specific challenges in urban areas, and the impacts of climate change on oceans
- describe the concept and implication of the IPCC risk definition
- list the risks of sudden and irreversible changes and describe the urgency to act
- explain the increase of extreme events
- describe the special role of urban climate in both adapting to climate change and mitigating greenhouse gas emissions

Other speakers:

Prof. Dr Ulf Riebesell, GEOMAR Helmholtz Centre for Ocean Research Kiel

Dr Tobias Geiger, Potsdam Institute for Climate Impact Research (PIK), Potsdam

Dr Diego Rybski, Potsdam Institute for Climate Impact Research (PIK), Potsdam

Interview partners:

Prof. Dr Christoph Schneider, Humboldt University of Berlin

Prof. Dr Srinivasan, Indian Institute Of Science, Bangalore

	<p>Chapter 5: “Climate change as a social challenge” (Key speaker: Prof. Dr Anita Engels, CliSAP, Hamburg)</p> <ul style="list-style-type: none"> • explain the significance of humans' influence on climate for our society and the challenges for society and list approaches for more climate protection • describe the adaptation to climate impacts and its limitations • explain the relation between resource conflicts, migration and climate change <p>Other speakers: Prof. Dr Beate M. W. Ratter, Cluster of Excellence Integrated Climate System Analysis and Prediction (CliSAP), University Hamburg Prof. Dr Jürgen Scheffran, Cluster of Excellence Integrated Climate System Analysis and Prediction (CliSAP), University Hamburg Prof. Dr Michael Brzoska, Cluster of Excellence Integrated Climate System Analysis and Prediction (CliSAP), University Hamburg</p> <p>Chapter 6: “Climate change in politics and economics” (Key speaker: Prof. Dr Gernot Klepper, IfW, Kiel)</p> <ul style="list-style-type: none"> • describe the issues of international climate politics and economy • tell the main achievements of international climate politics • list the history of climate negotiations (COPs) • explain the reasons why we must limit global warming well below 2°C and possible strategies towards a zero emission economy (e.g. Energy transition) <p>Other speakers: Prof. Dr Hermann Held, Cluster of Excellence Integrated Climate System Analysis and Prediction (CliSAP), University Hamburg</p> <p>Interview partners: Prof. Dr Beate M. W. Ratter, Cluster of Excellence Integrated Climate System Analysis and Prediction (CliSAP), University Hamburg Prof. Dr Ottmar Edenhofer, Technical University of Berlin Matthias Kopp, WWF Germany Lisa Weinhold, netzwerk n Germany</p>
Learning and teaching methods	Free and open online course with videos lectures, interactive questions, additional materials, background information texts, competency-based badges, Interdisciplinary and collaborative learning, discussion in an online forum, connection on social media
Time frame	Enrolment from September 1 st 2017, starting date October 1 st 2017
Workload	Flexible: depending on additional materials and homework activities, from five hours up to 90 hours online; no classroom attendance required Cooperating universities can set up additional classroom sessions
Exam	Online exam (single/multiple-choice questions) possible – details to be announced.