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# Call for applications: ERASME summer school on complexity science for sustainability

## Summer school description

The study of current sustainability challenges and possible solutions benefit from approaches originating in complexity science. Different environmental and social crises are intrinsically interlinked, and show characteristics of complex systems such as delays, tipping points, causal feedback and path dependencies. ERASME Jean Monnet Excellence Centre on Sustainability is organising a pilot [summer workshop on the use of complexity science for sustainability research](#). The workshop will bring together a group of advanced graduate students and a small faculty for an intensive two-week study of sustainability challenges and quantitative complexity tools. From Sunday the 1st of August to Friday the 13th of August 2021, ERASME will immerse the students in the world of complexity science for sustainability.

The primary goal of the summer workshop is to assist graduate students and early career researchers pursuing research agendas which include a computational modelling component towards analysing and addressing complex sustainability challenges. The focus of the workshop lies on advancing the students' personal research projects. At the same time, the students will learn about the general characteristics of sustainability challenges from a complexity viewpoint, and how complexity sciences and various computational modelling approaches can be applied to address them.

Advanced graduate students are encouraged to apply with a research proposal. The proposal should describe an ongoing project or research idea in which quantitative approaches from complexity science are used to analyse sustainability challenges. During the workshop a team of mentors from different backgrounds is available to support the graduate students in moving their projects forward. The workshop program also includes lectures and seminars by experts in the field of complexity science applying methods to face sustainability challenges.

**Tuition:** 1200 Euros.

**Application deadline:** 25th April, 2021

Successful applicants will be notified within two weeks from the application deadline. If the Corona situation does not allow international travel and physical gatherings, we will cancel the summer school this year. If this is the case, it will be communicated within two weeks from the application deadline.



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Tuition for the program covers participation, course materials, accommodations and meals, but not travel. Students are encouraged to seek financial support for tuition from their home institutions, funding organisations, departments, or other sources. ERASME is happy to provide supporting information about the summer school to accompany such requests or applications (e.g. supporting invitations letter). ERASME provides a limited amount of tuition assistance based on an individual's need and merit and subject to the applicant showing they have been unsuccessful in securing external funding. In that case, please contact us. Women and Minorities are especially encouraged to apply.

**To Apply:** Send your application materials (one page research proposal, CV, motivation letter and one recommendation letter) to [complexity@erasmecentre.eu](mailto:complexity@erasmecentre.eu). For more information about the program contact [complexity@erasmecentre.eu](mailto:complexity@erasmecentre.eu).

Application deadline: 25th of April 2021.

#### **Expert lecturers:**

[Prof. Dr. Brian Dermody](#): Brian holds an interdisciplinary Assistant Professor position at the Copernicus Institute of Sustainable Development, Utrecht University. His research interests cover a broad range of sustainability challenges. His primary research focus is focused on creating a better understanding of how we may achieve a just and sustainable transition of our food systems. The observation that complexity or 'systems thinking' is key to addressing many of the challenges facing society is a read thread in Brian's research. Concepts like emergence, path dependency, feedback and understanding system structure are key to understanding how the world functions.

[Prof. Dr. Jean Denis Mathias](#): Jean Denis is a research fellow at IRSTEA (National Research Institute of Science and Technology for Environment and Agriculture). There he is research director of the Laboratory of Engineering for Complex Systems (the [LISC](#) lab). His research interests deal with the modelling of complex environmental systems. He received a PhD degree from the Blaise Pascal University, Clermont II (France) in 2005. Some of his recent research included the use of viability theory for managing the resilience of coupled infrastructure systems, forest management, ecological regime shifts and mathematical modeling of biofilm dynamics and the impact of biodiversity (of bacteria species) and structure.

[Prof. Dr. Maja Schlüter](#) (tentatively confirmed): Maja is professor at the Stockholm Resilience Institute, where she co-leads the complex adaptive systems and resilience thinking stream. Her research focuses on the conceptual foundations of SES as intertwined, complex adaptive systems and on developing explanations and middle-range theory of social-ecological phenomena such as regime shifts, sustainable management or traps. She aims to develop methodologies that allow capturing the complex, dynamic and intertwined nature of SES, e.g. through collaborative interdisciplinary processes that combine dynamic modelling with case study research.



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### **Organising committee:**

Dr. Marie Schellens: Marie holds a PhD in applying systems and complexity tools to better understand the role of natural resources in conflict risk over natural resources. Marie currently works for UNEP as an Environmental Security Analyst;  
<https://www.unep.org/people/marie-schellens>

Dr. Therese Bennich: Therese has a background in economics, physical geography and system dynamics modelling. The focus of her PhD research was on integrated analysis of transition pathways to a bio-based economy. Currently, she works in the EU funded research project BuildERS. The project aims to enhance the resilience of EU communities and citizens in the face of natural and man-made hazards.

Dr. Nathalie Spittler: Nathalie has an inter- and transdisciplinary background in sustainable development, with a focus on sustainable energy and ecological economics. She holds a PhD in Environmental and Natural Resources from the University of Iceland and a PhD in Economics from the University of Clermont Auvergne, France. Her work in ERASME focuses on modelling the SDGs on a national level and applying systems thinking to urban contexts.

Dr. Claudiu Eduard Nedelciu: Eduard has a background in geography and environmental sciences and policy. His PhD research dealt with assessing sustainability dimensions along the global phosphorus supply chain, with a focus on socio-environmental impact and food security. He is currently working at the ERASME Centre, where he uses systems thinking and system dynamics modelling to evaluate the contribution of agroecology to broader socio-economic development in Burkina Faso.

Dr. Manuel E. Morales: Manuel is Researcher at ERA Chair team, IN4ACT in the Kaunas University of Technology and member of the Executive board at the ERASME Excellent Centre for Sustainability in France. He holds a Ph.D. in economics from the Université Clermont Auvergne and a Postdoc at the Industrial Bioeconomy Chair in NEOMA Business School. His profile combines industrial economy, ecosystem theory, complex and systems analysis to study innovation and economic behavior in a variety of industrial and public settings. He applies multi-layer modelling, network analysis and system dynamics as a methodology to simulate future desirable scenarios.

Maartje Oostdijk: Maartje is finalising her PhD in fisheries modeling and is using tools such as network analysis and ecological modeling to understand marine social-ecological systems. She is currently working at the ERASME Centre, where she uses systems thinking to evaluate Green deal implementation in Europe for third countries;  
<https://www.researchgate.net/profile/Maartje-Oostdijk-2>