

Space Sustainability Course- How to design more sustainable missions?

The goal of this course is to give students a sense of what space sustainability means and how they can design and operate missions, and manage space business with a sustainability perspective. The experts will tackle the history of space sustainability and geopolitical challenges. Different tools and methods will be presented and then used in group work. On the last day, the concept of Environmental Social Governance (ESG) and Corporate Social Responsibility (CSR) will be presented. Throughout the three days, the concepts covered will be accompanied by group work, in which the students will develop a concept for a space mission, evaluating the technical, economical, governance and geopolitical aspects of sustainability in space.

The target audience of this course is professionals with a few years of working experience and an interdisciplinary background, should they be engineers, managers or policy practitioners. The group work will also allow the students to learn from one another and identify the challenges from other disciplines.

After completing the course, the participants will have a better understanding of the challenges of space sustainability, and a concrete set of tools and methods on how to better measure, analyse, and act towards more sustainable space missions. The three-day course also allows having in-depth exchanges with experts.

The target audience is space experts that want to be managers, engineers, and decision-makers.

Day 1- Introduction history and geopolitics

09:00-10:00	Introduction	E. David, EPFL
10:00-10:30	Break coffee & cakes	
10:30-12:30	Introduction on Space Sustainability : history	Minoo Rathnaspabathy , MIT
12:30-13:30	Lunch	
13:30-14:30	Geopolitics	Minoo Rathnaspabathy , MIT
14:30-15:30	What are the metrics of space sustainability? <i>The course will describe which are today the metrics to measure sustainability in the economic, societal and environmental perspective</i>	Emmanuelle David , EPFL
15:30-16:30	Introduction to Life Cycle Assessment & Environmental Impact Assessment in an eco-design perspective <i>The course will present LCA approach, tools developed at EPFL and how they can be applied in an eco-design perspective during mission developement</i>	Mathieu Udriot, EPFL
17:30- 18:30	Practitioners presentation- SWF for example or expert from Quantis	

Day Two- technical side- Overview- technologies incorporated and ESA/EPFL tools -

09:00-10:00	ESA's Tools - MASTER + DRAMA suite <i>During the session, the expert will introduce activities at ESA and the tools MASTER and Drama that are used for developing more sustainable missions</i>	Vitali Braun, IMS consulting
10:00-11:00	Exercise	
11:00-12:00	Group work	
12:00-13:30	Lunch	
13:30-15:30	Introduction to the Space Sustainability Rating <i>The expert will introduce the Space Sustainability rating and go in depth in the input required and how it can support the development of more sustainable missions?</i>	Adrien Saada, SSR technical officer
15:30-16:30	Group work	
16:30-17:30	Practitioners testimony : for example Clearspace	
17:30-18:30	What are the latest updates in Space sustainability research?	Prof Kneib, EPFL Space center

Day three- ESG/CSR and economics of space sustainability

09:30-11:30	ESG/CSR and economics of space sustainability	Nicolas Peter, ISU
11:30-12:30	Group work	
12:30-13:30	Lunch	
13:30-15:30	Practitioner's testimony : for example SES ESG representative	
15:30-16:30	Earth-Space Sustainability: A broadened policy agenda for satellite infrastructure systems	Dr. Xiao-Shan Yap, EPFL
16:30-17:30	Presentation of group work- conclusion and goodbye	All