

### **Space Sustainability Course- how to design more sustainable missions?**

The goal of the course is to give the students a sense of what space sustainability means and how they can design, operate missions and how to manage space business with a sustainability perspective. The experts will tackle the history of space sustainability and geopolitical challenges. They will be introduced to Space law and regulations. Different tools and methods will be presented and then used in group works. On the last day, the concept of Environmental Social Governance (ESG) and Corporate Social Responsibility (CSR) will be presented. Throughout the 4-days the concepts covered are 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 is composed of professionals with a few years of working experience with an interdisciplinary background, should it be engineers, managers or policy practitioners. The group work will also allow a learning-by the peer's dimension to the students and identify the challenges from other disciplines.

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

## Day 1 - Introduction history and geopolitics

13:00-14:00	Introduction	Emmanuelle David
14:00-15:15	<b>Introduction on Space Sustainability : History / Geopolitics - Theory</b>	Minoo Rathnasabapathy, MIT
15:15- 15:45	Coffee Break	
15:45-16:30	<b>Group Work</b>	
16:30-17:30	Space Law and regulations	UKSA
17:30-18:30	Practitioner's testimony : <b>How to think of sustainability? From the example of climate neutral aviation to the big picture</b>	Prof Sascha Nick, Laboratory of environmental and urban economics, EPFL

## Day 2 - technical side- Overview- technologies and tools incorporated and ESA/EPFL tools

09:00-10:30	<b>Technical Challenges of Space sustainability:</b> <ul style="list-style-type: none"> <li>- Space Logistics</li> <li>- SSA</li> <li>- ...</li> </ul>	Prof Kneib, EPFL Space center Dr Hellmich, LASTRO
10:30-10:45	Break	
10:45-11:45	<b>What are the metrics of space sustainability?</b> <i>The course will describe which are today the metrics to measure sustainability in the economic, societal and environmental perspective</i>	Emmanuelle David
12:00-13:00	Lunch	
13:00-14:30	<b>Introduction to the Space Sustainability Rating</b> <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>	Emmanuelle David, Space Sustainability Rating Association
14:30-15:30	Group work	
15:30-16:00	Break	

16:00-17:00	Servicing the Hubble Telescope	Prof Claude Nicollier
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## Day 3 - The metrics of sustainability

09:00-10:00	<b>Introduction to Life Cycle Assessment in an eco-design perspective</b> <i>The course will present LCA approach, tools developed at EPFL and how they can be applied in an eco-design perspective during mission development</i>	Mathieu Udriot, EPFL
10:30-11:00	Break coffee	
11:00-12:00	Group work	
12:00-13:30	Lunch	
13:30-15:00	<b>ESA's Tools - MASTER + DRAMA suite</b> <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
15:00-16:00	Group work	Vitali Braun, IMS Consulting
16:00-16:30	<b>Coffee Break</b>	
16:30- 17:30	<b>Practitioners' presentation-</b> ClearSpace	Romains Buchs, Clearspace

## Day 4 - ESG/CSR and economics of Space Sustainability

08:00-09:30	<b>ESG/CSR and economics of space sustainability</b>	Sabrina Alam, BDO Luxembourg
09:30-09:45	Break	
09:45-11:00	<b>Earth-Space Sustainability: A broadened policy agenda for satellite infrastructure systems</b> <i>In this lecture, we will think and learn about broader policy considerations when addressing sustainability challenges stemming from satellite activities. This includes preventing negative feedback loops from space activities back to Earth (and vice versa) and problem-shifting between environmental, economic, and social dimensions.</i>	Dr. Xiao-Shan Yap, EPFL
11:00-12:00	Conclusion and goodbye	Emmanuelle David