4-DAY COURSE

Space Sustainability

How to design more sustainable missions

TARGET AUDIENCE

Space stakeholders (engineers, scientists, non technical managers, policy practitioners, etc.) active in space agencies, aerospace industries or related fields and concerned about preserving the sustainability and safety of the space environment in the long-term

Participants should bring their own laptop (for hands-on experience).

ORGANIZATION

- EPFL Space Center (eSpace), EPFL (Swiss Federal Institute of Technology in Lausanne), Switzerland

In collaboration with :

- Karman Project
- European Space Agency (ESA)
- Massachusetts Institute of Technology (MIT)

OVERVIEW

In recent years, the exponential growth of spatial activities, driven in part by the expanding commercial use of space, has yielded promising business opportunities. However, this expansion has also left behind a significant challenge – an ever-increasing population of space debris, with over 29,000 objects currently observable in Earth's orbit. With the number of satellite launches continuing to increase, ensuring the enduring viability of this vital frontier for future generations is critical.

As active participants in space agencies and aerospace industries, how can we secure the long-term usability of space? And, how can we design and operate missions and space businesses with a keen focus on sustainability?

OBJECTIVES

- Understand what space sustainability means (history, geopolitical challenges, latest research updates) and how to measure it from economic, societal and environmental perspectives
- Acquire tools and methodologies to develop more sustainable missions (ESA's MASTER and DRAMA suite, Space Sustainability Rating, Life Cycle Assessment & Environmental Impact Assessment, etc.)
- Grasp how the space sector can benefit from the adoption of Environmental Social Governance (ESG) and Corporate Social Responsibility (CSR) approaches
- Engage with space sustainability researchers, industry experts, and fellow members of the space community

Mon. March 24, 2025
1 pm to 6.30 pm
Tue. March 25, 2025
9 am to 5 pm
Wed. March 26, 2025
9 am to 5.30 pm
Thurs. March 27, 2025
8 am to 12 pm

EPFL, Lausanne, Switzerland

Certificate of attendance

CHF 2400.–

10% special discount for contributing members of EPFL Alumni & EPFL partners

On-line registration

Registration deadline : December 13, 2024

Number of participants is limited

LEARN MORE

DAY 1 : INTRODUCTION TO SPACE SUSTAINABILITY

- Introduction to Space Sustainability, *Emmanuelle David, EPFL*
- Space Sustainability History & Geopolitics Challenges *Minoo Rathnasabapathy, MIT*
- Space Law and regulations, *UK Space Agency*
- Practitioner's testimony : How to think of sustainability? From the example of climate neutral aviation to the big picture *Sascha Nick, EPFL*

DAY 2 : TECHNOLOGIES AND TOOLS INCORPORATED IN SPACE SUSTAINABILITY

- Technical Challenges of Space Sustainability: Space Logistics, SSA *Prof. Jean-Paul Kneib, EPFL & Dr. Stephan Hellmich, EPFL*
- The metrics of space sustainability and how to measure sustainability in the economic, societal, and environmental perspective *Emmanuelle David, EPFL*
- Space Sustainability Rating (SSR) : How it works and how SSR can contribute to the development of more sustainable missions, *Emmanuelle David, EPFL*
- Servicing the Hubble Telescope, *Prof. Claude Nicollier, EPFL*

DAY 3 : THE METRICS OF SUSTAINABILITY

- Life Cycle Assessment (LCA) & Environmental Impact Assessment (EIA) from an eco-design perspective during mission development *Mathieu Udriot, EPFL*
- ESA's tools to develop more sustainable missions : MASTER (Meteoroid and Space Debris Terrestrial Environment Reference) & DRAMA suite (Debris Risk Assessment and Mitigation Analysis) *Vitali Braun, IMS Space Consultancy*
- Group work : Practical experimentation of tools and methods
- Practitioners presentation, *Romain Buchs, Clearspace*

DAY 4 : ESG/CSR AND ECONOMICS OF SPACE SUSTAINABILITY

- ESG/CSR and economics of space sustainability *Sabrina Alam, BDO Luxembourg*
- Earth-Space Sustainability: A broadened policy agenda for satellite infrastructure systems, *Dr. Xiao-Shan Yap, EPFL*
- Conclusion, *Emmanuelle David, EPFL*

STEERING COMMITTEE

- **Emmanuelle David,** *Executive Director, EPFL Space Center (eSpace)*
- **Prof. Jean-Paul Kneib,** *Academic Director, EPFL Space Center (eSpace) ; Director of the Laboratory of Astrophysics (LASTRO), School of Basic Sciences (SB), EPFL*

INSTRUCTORS

- **Sabrina Alam,** *Director, Sustainability Services, BDO Luxembourg*
- **Vitali Braun,** *Space Debris Engineer, IMS Space Consultancy*
- **Dr. Minoo Rathnasabapathy,** *Research Engineer, MIT Media Lab & Fellow, Future of Space, World Economic Forum*
- **Mathieu Udriot,** *Engineer, EPFL Space Center (eSpace)*
- **Dr. Xiao-Shan Yap,** *Senior Policy Advisor, EPFL Space Center (eSpace)*

GUEST LECTURERS

- **Romain Buchs,** Space Policy & Strategy, Clearspace
- **Dr. Stephan Hellmich,** Scientist, EPFL
- **Sascha Nick,** Scientist, *Laboratory of Environment and Urban Economics, EPFL*
- **Prof. Claude Nicollier,** *Swiss Astronaut*

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