



Sustainability for Aerospace Applications (4 hp)

PhD Course (2021), 4 HEC (4 higher education credits)
Industrial participants in the aerospace industry (diploma course)



Duration

April 20–May 31, 2021. Subscription no later than April 16, 2021 at

<https://kunskapsformedlingen.se/en/courses/sustainability-for-aerospace-applications/>

Content

The course gives an overview of United Nations Development Program's (UNDP's) Sustainable Development Goals (SDGs), and tools to assess and develop towards increased sustainability for aerospace applications research and development and innovation (R&D, R&I) projects. It consists of:

- Lectures (online) on sustainability and eco-design, by academic researchers and representatives from aerospace companies to cover current progress (state-of-art and state-of-practice).
- Individual assignment, based on the UNDP SDG assessment tool: <https://sdgimpactassessmenttool.org/>
- Workshops (online, with break-out sessions) to discuss the individual assessment, and innovative and creative workshop to investigate further improvements.

Target group

PhD candidates and postdocs conducting research in the Swedish Aerospace Research Center (SARC) and the Graduate School of Space Technology, and aerospace engineers, active in research & development and research & innovation (R&D/R&I) projects.

Course objectives

The objective of this course is to increase awareness about sustainability issues in the participant's own and other participants' ongoing R&D/R&I projects, and to improve the participant's ability to address these issues in their own work.

By raising sustainability issues in the participant's current project, and by reflecting upon them in groups with other course participants, teachers and guest lecturers, the course objective is that the participant achieves deeper insights about sustainability aspects, in order to improve management of and communication about sustainability issues in the current project, the research work, and, especially for industrial participants, in their organizations.

On completion of the course, the participant should be able to demonstrate (in a short text and in a presentation of the PhD research project) the ability to make relevant sustainability statements about the own research (R&D/R&I) project and be able to discuss the project in relation to UNDP's 2030 sustainability goals.





Course fee

7500 SEK/participant (*free of charge* and prioritized for SARC and Graduate School of Space Technology).

Organisation/Sessions

SESSION 1: April 20, 12.30-16.30: Sustainability seminar with Swedish Aerospace Industry

- **12.30-12.50 Course introduction**, overview of UNDP's SDGs. – From Graduate School of Space Technology: professors **Marta-Lena Antti**, **René Laufer**, **Anna Öhrwall Rönnbäck**, LTU, from SARC: assistant professor **Ingo Staack**, Linköping University (and researcher **Ardeshir Hanifi** (PhD), KTH).
- **12.50-13.50 Workshop:** presentation of course participants 60 min, break 10 min
- **14.00-15.45 Sustainability from the Swedish space industries perspective** – Introduced by **Johanna Bergström Roos**, LTU Business, Space Campus Kiruna, project manager RIT2021 (Rymd för Innovation & Tillväxt)
 - **14.05 SSC** – **Stefan Gustafsson**, Senior Vice President, Strategy & Sustainable Business
 - **14.35 GKN Aerospace** – **Johanna Nylander** (PhD), Method Development Product Cost & Sustainability, R&T Center, GKN Aerospace Engine System
 - **15.05 BREAK** appr. 10 min
 - **15.15 Saab** – **Patrik Johansson**, Climate Strategist
- **15.45-16.25 On the UNDP SDG goals from a global space perspective** – Prof. Dr. **Peter Martinez**, Executive Director, Secure World Foundation, Colorado, USA
- **16.25-30 Wrap-up**

SESSION 2: April 27, 8.30-10: Perspectives on sustainability in Aerospace and the SDGs

- Using European Research Programs (Clean Sky and more) to accelerate the sustainable transformation in aerospace – professor **Ola Isaksson**, Chalmers
- SDGs: a long term perspective – professor **Dag Avango**, LTU

SESSION 3: May 3, 12.30-14.30: Creative and innovative sustainability workshops

- “Sustainable Aerospace 2050” (based on the SDG assessment): participants work with their own project challenges, share their work and inspire each other – with professors **René Laufer**, **Anna Öhrwall Rönnbäck**, assistant professor **Lisa Larsson**, LTU

SESSION 4: May 10, 12.30-14: Seminar on Sustainability in Engineering Design

- Sustainability in Engineering Design and Measurement Approaches – professor **Sophie Hallstedt**, BTH

SESSION 5: May 31, 12.30-15 (prel longer): Final seminar – participants' presentations

- Report results from self-assessment (PhD projects) and discussion around the table on UN's Sustainability Development Goals (SDGs).
- Report results from individual reflections and discussion in plenum.

Examiners, course responsible and contact information

Professor Marta-Lena Antti, chair Engineering Materials, Luleå University of Technology.

Phone: +46 920 49 20 93, E-mail: marta-lena.antti@ltu.se

Professor René Laufer, chair Onboard Space Systems, Luleå University of Technology. Phone:

+46 980 67582, E-mail: rene.laufer@ltu.se

Professor Anna Öhrwall Rönnbäck, chair Product Innovation, Luleå University of

Technology. Phone: +46 920 49 32 62, E-mail: anna.ohrwall.ronnback@ltu.se



Examination

Individual exercises to hand in:

1. Presentation file (e.g. powerpoint) about PhD project with SDGs marked and motivation for selected SDGs. Required for diploma for industry participants.
2. Reflection on sustainability in your R&D/R&I project(s). Text appr. 4 pages. Required for 4 HEC.

Course literature and resources

Course literature will be provided at course start.

Link to a tool for assessment of one (or several) of your projects (requires 30–40 min):

<https://sdgimpactassessmenttool.org/>

You need to register a user, but it is free of charge. Instructions on how to do a SDG Impact Assessment is described on the page. It results in a pdf with your own input data in a nice format. Send in the attached files (in Swedish or English versions).

Link to logotypes (to use in presentations):

https://www.un.org/sustainabledevelopment/news/communications-material/?fbclid=IwAR1G-pvOWk8rfrsmxRmZfy5JMEahMJl2jesWIjikK16C_W4w3MwjQbiNv7A