Robust Control Workshop
Theory and Practice

Date:	25-26 August 2022
Location:	OST, Eastern Switzerland University of Applied Sciences, Campus Rapperswil
Language:	English
Meals:	Not included (there is a possibility to eat in the canteen of the Eastern University)
Traget group:	Engineers with a sound knowledge of linear control theory.
Course objective:	Providing a solid foundation for robustness analysis and controller synthesis methods
Course instructor:	Joost Veenman, Novantec AG, www.novantec.eu
Price:	Fr. 500.00 (SGA-Members, Students), Fr. 700.00 (Non-Members)
Contact:	SGA secretariat sekretariat@sga-asspa.ch or online sga-asspa.ch

Registration: https://www.sga-asspa.ch/learning/rocowo22

Course Description

Over the course of the past few decades, the framework of robust control has emerged as a powerful technology to resolve complex control design tasks. The discipline has exhibited deep theoretical aspects of interest to mathematicians, while, at the same time, it has remained in close connection with a multitude of real tangible engineering applications.

The aim of this workshop is to provide an overview of robustness analysis and control design techniques together with demonstrations on how to apply the corresponding tools in practice.

First, we cover some of the theoretical highlights of linear robust control theory together with some illustrative examples. This will be concluded with an exercise session where you learn how to tune your own H_∞-controller using MATLAB's robust control toolbox.

On the second day, the workshops proceeds with an introduction to the framework of integral quadratic constraints (IQCs). This is another powerful approach for the analysis of complex uncertain control interconnections.

The workshop concludes with an overview of several industrial space applications covering the control design and analysis for missions such as Proba-3, Space Rider, and LISA.

About the Instructor

Joost Veenman received the MSc and PhD degree in mechanical engineering in 2008 and 2015 respectively, from the Delft University of Technology, Delft, The Netherlands, and the University of Stuttgart, Stuttgart, Germany. During his PhD, he specialized in the field of robust control and made several contributions on controller synthesis algorithms based on integral quadratic constraints. Also he developed the toolbox.

After that he accepted a position as robust control expert with the Spanish space company SENER Aeroespacial until 2021. During this period, he was involved in Space missions such as Proba-3 and Space Rider for which he developed the control algorithms. In addition, he has led several technology research development activities related to the verification of attitude and orbital control systems (AOCS) as well as the prototyping of the drag-free attitude control system for the LISA mission.

In 2021, he moved back to the Netherlands and founded his own company Novantec. Here he continues providing his services as a robust control expert for the Space industry, including SENER Aeroespacial.