



MAS601 Design, Modelling and Simulation of Mechatronic Systems

PhD Course in Mechatronics: 1-3 February and 16-18 February, 2016



Figure 1: *Campus Grimstad, Jon Lilletun veg 9*

1 Practical Information

- Location: Campus Grimstad, Norway
- Day 1-3: 1-3 February, 08:15 - 16:00
- Day 4-6: 16-18 February, 08:15 - 16:00
- Registration by email to: geir.hovland@uia.no
- No course fee
- Required background: Master degree
- The course will be given in English.

MAS601 is a 5 ECTS PhD level course at UiA. Participants who plan to take the final exam need to be enrolled as a PhD student at UiA or another university. Other participants must have a completed master degree in a related area of study and some previous modelling and simulation experience. Participants who plan to take the final oral exam, must hand in a compulsory assignment by the beginning of day 4 of the course. Due to the limited number of experimental stations in the lab, the number of students is limited to 16.

The course will be run in an interactive mode. To maximise the learning effect, a 1-2 hour theoretical presentation is normally followed directly by practical experimentation and hands-on testing in up-to-date facilities at Campus Grimstad.

The closest airport is in Kristiansand (airport code KRS) and guests are recommended to take the [Airport Express Bus](#) (45 minutes). Recommended hotels in Grimstad are [Scandic Grimstad](#) and [Grimstad Vertshus](#).

2 Lecturers

- Professor Michael Rygaard Hansen, UiA, Day 1-3
- Professor Geir Hovland, UiA, Day 4-6

3 Course Contents

1. Multi-disciplinary modelling, simulation and design optimisation, including mechanical, electrical and hydraulic systems, as well as control systems using [SimulationX](#).
2. Modelling, simulation and analysis of mechanical systems with closed kinematic chains.
3. Introduction to systems, modelling, simulation and analysis using the Bond Graph and the software [20-Sim](#)
4. Analysis of causality and handling of algebraic loops to improve HIL simulation performance.
5. Conversion of Bond Graph models to Siemens SCL language for real-time simulation on a PLC.

