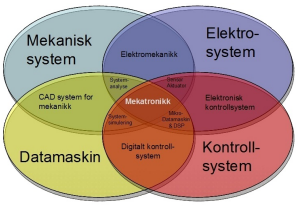

UNIVERSITETET I AGDER

MAS601 Design, Modelling and Simulation of Mechatronic Systems

PhD Course in Mechatronics: 23-25.11.2011 and 1-2.12.2011

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

1 Practical Information

- Location: Campus Grimstad, Norway, Lab D2 024
- Day 1-3: 23-25 November, 08:00 - 16:00
- Day 4-5: 1-2 December, 08:00 - 16:00
- Registration by email to: geir.hovland@uia.no
- No course fee for PhD students
- Fee for external participants (including guest PhD students): 7500 NOK
- 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, or as a guest PhD student at UiA (http://uia.no/tekreal/phd/mechatronics/guestphd). 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 followed directly by practical experimentation and hands-on testing in brand new lab 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 are Rica Grimstad and Grimstad Vertshus (lower price).

2 Lecturers

Professor Geir Hovland, UiA, Day 1-3

Ir. Paul Weustink, Controllab, Netherlands, Day 1-3

Ir. Marcel Groothuis, Controllab, Day 1-3

Professor Michael Rygaard Hansen, UiA, Day 4-5

3 Course Contents

1. Introduction to systems, modelling and simulation using the Bond Graph and the software 20-Sim
2. Multi-disciplinary modelling, including mechanical, electrical and hydraulic systems, as well as control systems
3. Analysis of causality and handling of algebraic loops to improve simulation performance
4. Experimentation with hard real-time simulation and hardware-in-the-loop testing using real-time Linux, Siemens PLC's, 20-Sim 4C and TCP/IP communication
5. Multi-disciplinary modelling, simulation and design optimisation using SimulationX, including mechanical systems with closed kinematic chains.

Controllab
your partner in mechatronic design

NODE Norwegian Offshore & Drilling Engineering