



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Drönares teknologi och samhällstillämpningar

The Technology and Applications of Drone Systems

FLYF20, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED FLY

Date of Decision: 2023-02-06

General Information

Main field: Aeronautical Sciences.

Elective for: L5-gj, RH4, MKAT1, R4

Language of instruction: The course will be given in English

Aim

This internationally oriented elective course aims to develop the knowledge, skills and judgement of students in the technology and applications of drone system technology; so called unmanned aerial systems (UAS).

Learning outcomes

Knowledge and understanding

For a passing grade the student must

Demonstrate an understanding for the regulatory constraints of using unmanned aerial systems (UAS) in various kinds of airspace

Understand the safety risks linked with unmanned aerial systems (UAS) operation in close proximity to uninvolved people or with a heavier unmanned aircraft

Have a basic knowledge of how to plan a flight and define contingency procedures

Understand how weather conditions may affect the performance of the UAS.

Demonstrate a general understanding for the potential and limitations of the most common UAS technologies.

Competences and skills

For a passing grade the student must

Demonstrate the competence to plan and conduct UAS missions.

Demonstrate the ability to assess the ground risk related to the environment where the operation takes place, as well as to flying in close proximity to uninvolved people;

Demonstrate the ability to conduct risk assessments of a variety of UAS missions

Demonstrate the ability to post-process data

Judgement and approach

For a passing grade the student must

Demonstrate the ability to critically reflect on the ethics of various types of UAS missions; including issues of privacy, social effects, and equality aspects

Demonstrate the ability to make decisions on whether/how to go ahead with drone missions based on risk assessments

Contents

The course consists of lectures, field exercises and self study.

The course is divided into two modules. Module one introduces UAS technology and the regulatory frameworks. Module two introduces the planning, risk analysis and conducting of UAS missions.

The knowledge and skills obtained in the course gives the student a solid foundation to later obtain an A2 certificate of competency according to EU regulation 2019/947. Examination for A2 certificate is not a part of the course but can be done at Transportstyrelsen.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)

Assessment: Students will be examined based on the completion of the practical exercises and a written examination.

The examiner, in consultation with Disability Support Services, may deviate from the

regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0121. **Name:** UAS Technology, Design(s) and Regulatory Frameworks.

Credits: 3. **Grading scale:** UG. **Assessment:** Written examination **Contents:** - Using UAS in today's society - UAS Regulations - Transportstyrelsen and EASA guidance - Practical application of regulations; permits based on risk classification - Airspace and air traffic management - Safety culture and incident reporting - Operational procedures - UAS technology - Principles of Flight for rotary wings and fixed wing aircraft - Aviation in general - Motor technologies - Mass and balance - Performance, planning and logging - Automated and autonomous flight

Code: 0221. **Name:** Planning and Conducting UAS Missions .

Credits: 4,5. **Grading scale:** UG. **Assessment:** Passed exercises **Contents:** - Exercises in which students plan and execute the use of UAS - Manual and automated flight - Navigation - Human performance and limitations - Meteorology and meteorological limitations - Ground control stations (GCP) for georeference - Human performance and limitations - Communication - Risk analysis for UAS operations

Admission

The number of participants is limited to: No

Contact and other information

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Course homepage: <http://www.lusa.lu.se>