IL2233 Embedded Intelligence 7.5 credits

Inbyggd intelligens

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from the autumn semester 2025 as decided by the Faculty Board: HS-2025-0013. Date of decision: 2025-05-13.

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

- Completed course in the equivalent SF1625 of one variable calculus/SF1685
- Completed course in the equivalent SF1626 of multivariable analysis/SF1686/SF1674
- Completed course in linear algebra equivalent SF1624/SF1684
- Completed course in mathematical statistics including the equivalent SF1912
- Completed course in digital design equivalent to IE1204/IE1205.
- Completed course in computer engineering equivalent to IS1200/IS1500.

- Completed course in embedded electronics equivalent EI1202/IE1206
- Completed course in programming equivalent to ID1018.

Students satisfying the specific entry requirements to the Master's programme (two-year) in Embedded Systems are considered to meet the above requirements.

Active participation in a course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course.

Registering for a course is counted as active participation.

The term 'final examination' encompasses both the regular examination and the first re-examination.

Intended learning outcomes

After passing the course, the student shall be able to

- identify the need of applying intelligent methods to realize smart embedded systems
- explain and apply selected intelligent methods to address real-life problems in embedded systems
- design and implement exemplary intelligent methods for practical problems in the edge-cloud computing paradigm
- conduct systematic evaluations (functional versus non-functional, quantitative versus qualitative) of deploying intelligent functions in cyber-physical systems

in order to gain basic knowledge, skills, understanding and insights which are needed to build smart electronics and embedded systems.

Course contents

- Selected intelligent methods for realizing relevant functionalities (e.g. anomaly detection, forecasting, feature exaction and clustering, etc.) desired in embedded systems.
- Application and evaluation of the selected intelligent methods in the emerging cloud-computing paradigm.
- Challenges such as dependability, sustainability, security etc. and opportunities of deploying intelligent functions in cyber-physical systems.

Examination

- LAB1 - Lab assignments, 2.5 credits, grading scale: P, F
- SEM1 - Seminars, 1.5 credits, grading scale: P, F
- PRO1 - Project assignments, 3.5 credits, grading scale: P, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.