COURSE SYLLABUS

Intelligent Mobile Systems, 7.5 credits

Intelligenta mobila system, 7,5 högskolepoäng

Course Code:	TIGK10	**Education Cycle:**	First-cycle level
Confirmed by:	Dean Dec 1, 2019	**Disciplinary domain:**	Technology
Revised by:	Director of Education Apr 9, 2021	**Subject group:**	DT1
Valid From:	Jan 1, 2022	**Specialised in:**	G1F
Version:	2	**Main field of study:**	Computer Engineering

Intended Learning Outcomes (ILO)

Atfter a successful course, the student shall

Knowledge and understanding
- show familiarity with basic principles for data transmission (e.g. bandwidth, modulation and choosing antennas).
- display knowledge of interfaces, protocols, and standards for wireless and wired communication between nodes within a distributed system.
- show familiarity with different positioning methods- and services which have different suitable application areas

Skills and abilities
- demonstrate the ability to, as a participant in a project group, be able to contribute to the development process from idea to a realized product including stable and maintainable code.
- demonstrate the ability to implement a complete system that is incorporating sensors, communication, back-end and a user interface.

Judgement and approach
- demonstrate the ability to evaluate how different sensors and data processing algorithms can be used to contribute to autonomy and intelligence in mobile systems.
- demonstrate the ability to outline an appropriate architecture and interface for a distributed system that interacts with users and the environment.
- demonstrate the ability to evaluate the pros and cons of different development environments and other IT artifacts to select appropriate tools in a specific project.

Contents

The course conveys the knowledge in data communication, localization, sensors, and cloud services needed to build a mobile system where some intelligence is present in the front- or back-end. Students are also given the opportunity to apply the knowledge they gained earlier in the program, both technical and development methodologies, to develop a qualified product or service

The course includes the following elements:
- Antennas, modulation, bandwidth
- Bluetooth, Wi-Fi, LoRa, Zigbee,
- CAN, Ethernet
- Localization services (GNSS, etc.)
- Sensors for intelligent systems (vision, ToF, etc.)
- Cloud services for mobile systems
- User interface for intelligent products
- Project methodology

Type of instruction

Lectures and project work.

The teaching is conducted in English.

Prerequisites

General entry requirements and completed courses in Software Engineering Project Methods, 7,5 credits, Object-oriented Software Development with Design Patterns 7,5 credits and Android Development 7,5 credits (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

Registration of examination:

Name of the Test	Value	Grading
Examination	3 credits	U/G
Project[I]	4.5 credits	5/4/3/U

[I] Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Literature

The literature list for the course will be provided 8 weeks before the course starts.