COURSE SYLLABUS

Intelligent Mobile Systems, 7.5 credits

Intelligenta mobila system, 7.5 högskolepoäng

TIGN13	Education Cycle:	First-cycle level
Feb 01, 2025	Disciplinary domain:	Technology
Jan 19, 2026	Subject group:	Computer Technology
	Specialised in:	G2F First cycle, has at least 60 credits in first-cycle course/s as entry requirements
	Main field of study:	Computer Engineering
	TIGN13 Feb 01, 2025 Jan 19, 2026	TIGN13Education Cycle:Feb 01, 2025Disciplinary domain:Jan 19, 2026Subject group:Specialised in:Main field of study:

Intended Learning Outcomes (ILO)

On completion of the 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.

Judgment 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.

Content

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.

Language of instruction is in English.

Entry requirements

General entry requirements and completed courses 60 credits in first cycle, including Object-oriented Software Development 6 credits alternatively Object-oriented Software Development with Design Patterns 6 credits and Android Development 7,5 credits and Software Engineering Project Methods 7,5 credits (or the equivalent).

Examination and grades

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

Registration of examination:

Name of the Test	Value	Grading
Project ¹	6 credits	5/4/3/U
Examination	1.5 credits	G/U

¹Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

No specific course material in advance but provided during the course.