Reg No: DVAD22/20231

Faculty of Health, Science and Technology
Computer Science

Syllabus

Wireless Systems

Course Code:	DVAD22
Course Title:	Wireless Systems *Trådlösa system*
Credits:	5
Degree Level:	Master's level
Progressive Specialisation:	Second cycle, has only first-cycle course/s as entry requirements (A1N)

Major Field of Study:
DVA (Computer Science)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2022-09-07, and is valid from the Spring semester 2023 at Karlstad University.

Prerequisites
Computer Networking I, 7.5 ECTS credits, and upper secondary level English 6, or equivalent

Learning Outcomes
Upon completion of the course, students should be able to:
- explain the principles and limitations of wireless communication,
- explain important technical aspects of current wireless communication systems,
- compare and contrast different wireless communication systems based on an understanding of shared challenges (such as mobility management),
- explain the principles of medium access control and why they have been designed in a certain way,
- summarise key functions and principles behind different architectures for mobile and wireless communication systems,
- critically evaluate different properties of a mobile communication system, taking into

account design considerations, capacity, and limitations in relation to the technology in question, and
- demonstrate insight into the possibilities and limitations of technology, as well as its function in society.

Content
The course treats the principles of wireless systems and networks, including the function and operation of modern mobile and wireless communication systems and networks related to architecture, protocol, and algorithms. Current wireless systems, such as cellular systems and mobile Internet, including the WLAN standard IEEE 802.11, are used as examples to explain these principles.

The course includes components and exercises that treat these topics in-depth.

The course covers the following:
- Radio signals
- Coding, modulation, and multiplexing
- Medium access
- The basic principles of cellular systems and networks
- WLAN and WPAN

Reading List
See separate document.

Examination
Assessment is based on individual hand-in assignments and a written exam.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades 5 (Pass with Distinction), 4 (Pass with Some Distinction), 3 (Pass), or U (Fail) is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.