Faculty of Economic Sciences, Communication and IT
Computer Science

Syllabus

Course Approval
The syllabus was approved by the Faculty Board of Economic Sciences, Communication and IT on 23 November 2010 , and is valid from the Spring semester of 2011 at Karlstad University.

Course Code: DVAD04
Mobile and Wireless Systems, 7.5 ECTS Credits
(Mobile and Wireless Systems, 7.5 Swedish credit points)
Degree Level: Master
Progressive Specialisation: A1N (Second cycle, has only first-cycle course/s as entry requirements)

Language of Instruction
English

Prerequisites
Upper Secondary English course B or equivalent. The course DVGB02 Computer Networking I, 7.5 hp, or equivalent.

Major Field of Study
DVA (Computer Science)

Learning Outcomes

Having successfully completed this course, a student will be able to
   explain the principles behind wireless transmission, and the limitations imposed by wireless systems,
   explain key technical issues of current wireless communications systems,
   compare and contrast one wireless communication system with another based on understanding of the commonalities (such as mobility management, etc.),
   explain the principles behind medium access control schemes and explain why they have been designed that way,
   summarize key features and principles behind different architectures of mobile and wireless communication systems,
   describe differences between different types of mobility and understand how each type of mobility can be supported by different wireless networks, and
   critically evaluate different characteristics of a mobile communications system, taking into account the design trade-offs, capacity and limitations of the technology adopted.
   read the current literature at the level of conference papers in this area, and
   demonstrate knowledge of this area both orally and in writing.

Content and Form of Instruction

The course presents the principles behind wireless systems and networking. Function and operation of modern mobile/wireless communication systems and networks concerning architecture, protocols, and algorithms are covered. Current technologies, such as GSM/UMTS and the mobile Internet including the WLAN standard IEEE 802.11, are used as examples to explain these principles. Novel developments such as ad hoc or sensor

networks are briefly introduced.
The course consists of a set of lectures together with regular exercises.

Topics include:
   Radio Signals, Coding, Modulation, and Multiplexing
   Medium access
   Cellular Systems
   WLANs and WPANs
   Mobility Protocols of Mobile Networks
   Mobile Transport Layer
   Multihop Networks

Reading List

See separate document.

Examination

Examination is in the form of laboratory assignments, hand-in assignments and a written exam.

Grades

One of the grades Great Distinction (5), Distinction (4), Pass (3) or Fail (U) 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 assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

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