IK2555 Wireless and Mobile Network Architectures 7.5 credits

Trådlösa och mobila nätverksarkitekturer

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

Establishment

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Information Technology, Information and Communication Technology

Specific prerequisites

120 university credits (hp) in engineering or natural sciences and documented proficiency in English corresponding to English A.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

This course will give both practical and general knowledge concerning wireless and mobile network architectures. After this course you should have some knowledge of these architectures and understand the basic priciples behind them.

Following this course a student should be able to:

- Understand the architecture of existing mobile and wireless networks at a sufficient level to recognize the common features of such networks in any mobile or wireless network.
- Based upon recognition of common features, the student should be able to compare and contrast one network architecture with another.
- Describe differences between different types of mobility (such as user mobile, terminal mobility, session mobility) and understand how each type of mobility can be supported.
- Understand the core network protocols and applications in third generation mobile networks.
- Demonstrate your knowledge of this area both orally and in writing.
- Write papers suitable for submission to conferences and journals in the area.
- Read the current literature at the level of conference papers in this area.

While you may not be able to understand all of the papers in journals, magazines, and conferences in this area - you should be able to read 90% or more of them and have good comprehension. In this area it is especially important that you develop a habit of reading the journals, trade papers, etc. In addition, you should also be aware of both standardization activities, new products/services, and public policy in the area.

Course contents

This course will focus on the network architectures that are used in wireless and mobile networks. In some cases we will dig deeper into the protocols used by such networks. The course should give both practical and more general knowledge concerning the these network architectures.

The course consists of 10 hours of lectures, and an assigned paper requiring roughly 50h of work by each student.

Course literature

Wireless and Mobile All-IP Netorks, Yi-Bing Lin and Ai-Chun Pang

Upplaga: Förlag: Wiley År: 2005

ISBN: 0-471-74922-2

Övrig litteratur

The course was previously mainly based on the book Wireless and Mobile Network Architectures by Yi-Bing Lin and Imrich Chlamtac, John Wiley & Sons; 2001 ISBN: 0-471-39492-0 (a version published in Singapore is ISBN 9971-51-366-8). This book is no longer in-print.

Additionally, the new book addresses the focus of current mobile and wireless networks on internetworking and the use of IP as the protocol family of choice.

Examination

- TEN1 - Examination, 7.5 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

An assigned paper requiring roughly 50h of work by each student along with an oral presentation.
Written report

- The length of the final report should be ~10 pages (roughly 5,000 words) for each student (the style should be that of a conference paper);
- Papers should not focus on physical and link layer issues as this is not a course in radio communication systems, but rather the papers should look at things which have an impact on the architecture or upon which the architecture has an effect.
- If there are multiple students in a project group, the report may be in the form of a collections of papers, with each paper suitable for submission to a conference or journal.
- Contribution by each member of the group - must be clear (in the case where the report is a collection of papers - the role of each member of the group can be explain in the overall introduction to the papers.
- The report should clearly describe: 1) what you have done; 2) who did what; if you have done some implementation and measurements you should describe the methods and tools used, along with the test or implementation results, and your analysis.
- Language: the report can be written in Swedish or English (NB: I can provide better feedback if the report is written in English.)
  Oral presentations: Each group should present their results for at most 20 minutes (note that this is the upper limit on time - not a lower limit, thus an individial doing a project might plan on 8-10 minutes), followed by some discussion.

Note: For graduate students the paper should be of the quality that it could be submitted to a conference - immediately following the course.

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.