Programme Syllabus:

International Master's Programme in Computer Engineering, 120 higher education credits

General data

Code	TDAAA
Cycle	Second cycle
Ref no	MIUN 2007/124
Credits	120
Answerable department	Department of Information and Communication Systems
Answerable faculty	Faculty of Science, Technology and Media
Established	2007-04-23
Date of change	2015-10-01
Version valid from	2014-07-01

Aim

The overall goal of the programme is to provide the student with cutting-edge knowledge in the area of information technology, appropriate for research and advanced development in high-technology companies, regionally, nationally, and internationally.

Programme objectives

OUTCOMES ACCORDING TO THE HIGHER EDUCATION ORDINANCE FOR A MASTER'S DEGREE (TWO YEARS)

Knowledge and understanding
For a Degree of Master students must
- demonstrate knowledge and understanding in their main field of study,

including both broad knowledge in the field and substantially deeper knowledge of certain parts of the field, together with deeper insight into current research and development work; and
- demonstrate deeper methodological knowledge in their main field of study.

Skills and abilities
For a Degree of Master students must
- demonstrate an ability to critically and systematically integrate knowledge and to analyse, assess and deal with complex phenomena, issues and situations, even when limited information is available;
- demonstrate an ability to critically, independently and creatively identify and formulate issues and to plan and, using appropriate methods, carry out advanced tasks within specified time limits, so as to contribute to the development of knowledge and to evaluate this work;
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in dialogue with different groups, orally and in writing, in national and international contexts; and - demonstrate the skill required to participate in research and development work or to work independently in other advanced contexts.

Judgement and approach
For a Degree of Master students must
- demonstrate an ability to make assessments in their main field of study, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work;
- demonstrate insight into the potential and limitations of science, its role in society and people’s responsibility for how it is used; and
- demonstrate an ability to identify their need of further knowledge and to take responsibility for developing their knowledge.

SPECIFIC OUTCOMES FOR THE INTERNATIONAL MASTER'S PROGRAMME IN COMPUTER ENGINEERING

After the completion of the programme the student should
• Show thorough understanding of current research and development within the computer engineering area.
• Show familiarity with service market, infrastructural costs development trends and current applications, and be able to use this notion in problem statements and innovations.
• Show high proficiency in mathematical modeling and stochastic simulation of algorithms, protocols, and systems within the area of IP-based computer networks, wireless communication and multimedia communication.
• Show basic proficiency in software implementation of algorithms and protocols.

• Show very high proficiency in development of IT systems and advanced e-services targeting the general public, foremost web services based on XML, SOAP, and WSDL over HTTP.
• Show high proficiency in analyzing the technical performance of distributed systems and advanced web services, e.g. regarding security, accessibility, scalability, response time, error proneness, reusability, and language efficiency.
• demonstrate advanced skills in simulation, modelling and analysis of algorithms and systems

Content

Computer Engineering BA (C):
TCP/IP Internetworking, 7.5 Credits

Computer Engineering MA:
Advanced Software Development, 7.5 Credits
Distributed Systems I, 7.5 Credits
Network Security and Management, 7.5 Credits
Data Mining, 7.5 Credits
Distributed Algorithms, 7.5 Credits
Networked Embedded Systems and Real-time Applications, 7.5 Credits
Machine-to-Machine Communication, 7.5 Credits
Final Project, 30 Credits

Business Management and Organization MA:
Scientific Method, 7.5 Credits

Computer Engineering MA:
Two elective specialization blocks of 15 Credits and 7.5 Credits. Examples of courses that will be offered:
Wireless Access Protocols and Queuing Theory, 7.5 Credits
Distributed Systems II, 7.5 Credits
3D Visualization, 7.5 Credits
Applied Computer Engineering, 7.5 Credits
Simulation of Communication Systems, 7.5 Credits
Multimedia Coding and Distribution, 7,5 Credits

Entry requirements

Degree of Bachelor (at least 180 Credits), Degree of Bachelor of Science in Computer or Electrical Engineering (at least 180 Credits), or equivalent, with at least 30 Credits in Mathematics/Applied Mathematics, including courses in probability theory and statistics and discrete mathematics, and 60 Credits in Computer Engineering including 15 Credits in an object oriented programming language, 7.5 Credits in computer networks and 7.5 Credits in data bases.

Proven language proficiency in English (English course B), for example shown from one of the following international English tests:
- TOEFL with a minimum score of 575 on a paper based test and not below 4.5 on the TWE
- TOEFL with a minimum score of 90 on internet based test and not below 20 on the TWE
- IELTS Academic Training with a minimum overall score of 6.5 and a minimum score on the specific parts of at least 5.5.

Description of programme

The programme is offered as full time studies, during two years. Lectures are held together with the programme Master of Science in Engineering - Computer Engineering.

Selection rules and procedures

The selectionprocess is in accordance with the Higher Education Ordinance and the local order of admission.

Programme with restricted admissions

Specific entry requirements for each course in the programme are stated in the course syllabus.
To be able to continue on to the next grade without restrictions the student must, at the beginning of year 2, have completed at least 45 credits of the year 1 courses. The student who does not meet this requirement has to contact the department for an individual study plan.

Teaching and examination

Teaching and examination procedures are stated in the syllabus of each course. The language used is English.

Title of qualification

Degree of Master of Arts/Science (120 credits)

Teknologie masterexamen med huvudområdet datateknik, translated into Degree of Master of Science (120 credits) with a major in Computer Engineering.

Other information

There is a possibility for changes concerning the time, name, content, level and distribution of the points within the courses during the time the programme is running.