



Faculty of Science and Engineering

STUDY GUIDE 2015-2016

MASTER'S PROGRAMMES IN

❖ COMPUTER SCIENCE

❖ SOFTWARE ENGINEERING

❖ EMBEDDED COMPUTING

(including Double Master's degree programme
in Embedded Systems)

Pages 16, 17 and 18 updated 31.8.2015

This guide has been compiled for students that study at Åbo Akademi University in one of the Master's Programmes: **Computer Science (CS)**, **Embedded Computing (EC)** and **Software Engineering (SE)**.

Its purpose is to give information about the Faculty and certain procedures, the study programme and the structure of the studies.

1 The Faculty of Science and Engineering

The education on undergraduate and graduate levels are organized into five Study Programmes in which several subjects work together. For each study programme, the Dean has appointed a [Head of Education](#) who is responsible for planning of the syllabus, preparation of the student admission (e.g. entrance examination) and the pedagogical development in the study programme.

The Study programmes at the Faculty of Science and Engineering are

Biosciences
Chemical Engineering
Information Technology
Natural Sciences
Pharmacy

The subjects in Information Technologies are located in the ICT-building, Joukahainengatan 3-5, 20520 Åbo.

As from 1.1.2016 the IT subjects at ÅAU will be found in the building Agora, in the campus area at University Hill 20014 Åbo. Building T6 on the campus map: <http://www.abo.fi/public/en/media/2141/campuskartaengelska.pdf>

1.1 The Faculty and decision making

The governing body of the faculty is the [Faculty Council](#). The [Dean](#), professor Tapio Salmi, chairs the council which has 12 members representing the professors, other employees and students of the faculty in equal numbers.

In organizational terms, subjects are located beneath the faculty and led by a [Head of Subject](#). The Heads of Subjects are appointed by the Dean and have both scientific and administrative responsibilities. At the Faculty of Science and Engineering there are 23 subjects.

1.2 The Faculty office

The Faculty office (*fakultetskansliet*) is located in the Axelia-building, Biskopsgatan 8, 20500 Åbo. The office is open Monday-Thursday at 10.00-15.00, Friday closed.

Academic Affairs coordinator Ulla Bäckström can be met at the Academic office during office hours or by mutual agreement.

Telephone (02) 215 4516, e-mail: fnt-utbildningskoordinator@abo.fi

The Study Advisors can be met at the Faculty office by mutual agreement:

Heidi Karlsson, Telephone (02) 215 3540, e-mail: it-studieradgivare@abo.fi

Jessica Lindroos, Telephone (02) 215 4517, e-mail: jessica.lindroos@abo.fi

The rest of the Faculty Office personnel is found here:

http://www.abo.fi/fakultet/en/fnt_administration

It is recommended that you book an appointment with the Academic Affairs coordinator or the Study Advisor in advance by e-mail or telephone.

1.3 The academic neighbourhood

Åbo Akademi University is located in Åbo (Turku in Finnish), the oldest city in Finland, close to the medieval Cathedral.

Finland has two official languages; Finnish and Swedish. At Åbo Akademi University Swedish is the official language.

The IT subjects operate in the ICT-building, on the street Joukahainengatan, which is a bit further away from the other University buildings, near the Kupittaa train station. You can find a map over the campus at the following address:

<http://www.abo.fi/public/en/media/2141/campuskartaengelska.pdf>

2 Studies

2.1 Academic year

The academic year is divided into four periods, two during the autumn and two during the spring. These are the dates for the periods for the academic year 2015-2016:

Period I	weeks 36-43	31.8.2015-23.10.2015
Period II	weeks 44-51	26.10.2015-18.12.2015
Period III	weeks 1-10	7.1.2016-11.3.2016
Period IV	weeks 11-20	14.3.2016-20.5.2016

2.2 Registration for the academic year

New students register for their first academic year according to these instructions (*please read the instructions carefully!*) www.abo.fi > Studies > Information for new students: <http://www.abo.fi/student/en/infofornyastud#document3>

In order to be registered as present and have the right to study, receive credits and have your study results registered, you must pay the Student Union fee. The Student

Union fee for the academic year **2015-2016 is 116 €**. After registration you should order your student card at www.myfrank.fi/en

2.3 MinPlan

MinPlan is used to make individual study plans and for registering for courses and exams. MinPlan also contains information about all courses. MinPlan is found at <http://www.abo.fi/minplan>.

2.4 Course registration

Course registration at Åbo Akademi University

Registration is required for most courses. In these cases registration is done in MinPlan: <http://www.abo.fi/minplan>. Instructions for course registration are found at the following address: <https://www.abo.fi/student/en/minplanmanualer>. The best policy, in any case, is to always attend to the first lecture or course meeting.

2.5 Examinations

Examinations at Åbo Akademi University

Each course usually has 1-2 course exams (*kurstentamen*). The first course exam is arranged at the end of the course and the second course exam is usually arranged in about a month after the course has finished. In addition to the course exams there are usually 3 general exams arranged for each course every academic year. The general exams can be taken in the same academic year as the course is completed, but also in the following academic year.

The general exams (*allmän tentamen*) are arranged on Fridays during the whole academic year. The exams are held in auditorium Alpha, ICT-building (Autumn term 2015), ground floor, from 12.30 to 16.30 pm. In the spring term, the examinations are held in the Agora building.

Students should register for exams at least eight (8) days before the day of the exam. The registration is done in MinPlan: <http://www.abo.fi/minplan>. Instructions for registration for examinations are found at the following address: <https://www.abo.fi/student/en/minplanmanualer>.

The person responsible for examinations in the IT subjects at Åbo Akademi University is the Department Secretary Christel Engblom (christel.engblom@abo.fi).

Registration in MinPlan is required for course exams as well as general exams in Computer Science and Computer Engineering.

The dates for the course and general exams in Software Engineering, Computer Science and Embedded Computing are found here (page in Swedish): <https://www.abo.fi/student/undervisningsprogram>

There are only three opportunities to take an exam in the same course, after that the course lecturer should be contacted and the matter discussed. Registering for an exam counts as one of these three times even if the student does not show up at the actual exam occasion.

Students are usually not allowed to bring the course material with them to the exams, so always check with the course lecturer what material is allowed in each exam. Coats, bags, mobile phones etc. should be left outside the exam room or at the back of the room. If requested by the exam supervisor, students should be prepared to show proof of identification, e.g. a student card.

The results of the exams are posted on the notice board at the 3rd floor of the ICT-building or the teacher informs the students e.g. via email or Moodle. The results of the courses are registered in Åbo Akademi's study register (STURE). If several weeks have passed since the course finished but the result is still not in the register, please contact the lecturer of the course or the Faculty office.

Please acquaint yourself with the rules and regulations for examination at Åbo Akademi University. The Åbo Akademi University Examination and Assessment Instructions are found here: <http://www.abo.fi/student/en/regler>

2.6 Flexible study right: studies at the University of Turku

Åbo Akademi University has an agreement of flexible study right with the University of Turku. According to this agreement students from Åbo Akademi University can take courses that are offered by the University of Turku. Available courses are e.g. courses offered within TUCS: <http://www.tucs.fi> (Education → Courses).

The selection of courses should always be approved by the responsible professor or coordinator of the programme. When the selection of courses is approved by the professor, the student should send in an electronic application for flexible study right which has to be approved of by Åbo Akademi University as well as by the University of Turku. The application is found at <http://www.joopas.fi> (→ Joopas Application System).

Without this application the student does not have the right to study at the University and will not get the credits registered.

Course registration at the University of Turku

Registration to courses on the Department of Information Technology is done through "nettiopsu": <https://nettiopsu.utu.fi/index>

You will need your university provided user account and the e-mail password.

The course registration procedures can be different between the Faculties/Study programmes so always check the procedure from the Faculty/Study programme in question.

Examinations at the University of Turku

The exams are held in the ICT-building, in auditoria Alpha and Beta. However, you should always check the location! Small, course specific exam sessions during the last

week of a period are also arranged in other lecture rooms at the ICT-building. The registration to exams held by the IT-department is done through "nettiopsu": <https://nettiopsu.utu.fi/>. Information about exam registration can be found at: <http://www.utu.fi/en/units/sci/units/it/studying/Exams/Pages/home.aspx>

The person responsible for examinations in the Department of Information Technologies at the University of Turku is Maria Prusila (maria.prusila@utu.fi).

Credits (study points) from the University of Turku are not transferred automatically to Åbo Akademi University. The student must get a study transcript from the University of Turku and bring it to the Study Advisor, who will see to it that the study achievements are transferred into the study record at Åbo Akademi University.

2.7 Certificates and study transcripts

Certificates and copies regarding study achievements and other study related issues can be obtained from the Student office of Åbo Akademi University in the Gripen-building, ground floor (Tavastgatan 13) or from the Faculty office in the Axelia-building, 3rd floor (Biskopsgatan 8). An unofficial transcript can be requested on the Internet at the following address: <http://www.abo.fi/stodenhet/sv/minsture>

2.8 The thesis, graduation and diploma

In order to graduate, all study credits including the thesis have to be noted in the study register.

The students are advised to find a topic and start working on their master theses at least 6 months before the planned submission date. The following steps are recommended:

- Identify a topic by contacting a teacher (lecturer or professor).
- Work on the thesis and have regular meetings with your supervisor to check progress,
- When the thesis is ready:
 - o Decide on a deadline to submit the thesis for grading based on the Language Check deadlines at <http://www.abo.fi/stodenhet/en/csklanguagecheck#document2> (see [Information Technology](#))
 - o Agree with your supervisor how long before the language check the thesis should be submitted for grading (usually more than 2 weeks).
 - o Schedule a Proficiency test with your supervisor.
 - o Submit the thesis for grading (via the Urkund system for plagiarism detection, indicating the supervising teacher). All theses should go through a check for plagiarism. More information can be found here: https://www.abo.fi/student/en/etik_plagiat
 - o The supervisor will submit your thesis, proficiency test and thesis evaluation to language check

In order to shorten the time needed for writing the thesis and potentially securing a higher grade, it is highly recommended that students take advantage of the courses and advice on academic writing provided by the Centre for Language and Communication:

- Course on Academic Skills in English for Masters Students I (903840.0), 3 ECTS
- Text consultation in English (free of charge)

<http://www.abo.fi/stodenhet/en/ckstextconsultation>

When all your courses are completed and your thesis is sent to the Centre for Language and Communication for language check you can apply for your Master's degree certificate. Fill in the application for certificate form found here http://www.abo.fi/fakultet/en/fnt_slutskedet and bring/send it to the Study Advisor at the Faculty office in Axelia, 3rd floor.

When the language check for the thesis and the Proficiency test is approved the student brings **two hard backed copies** of the thesis to the Faculty Office in Axelia. The thesis will then be officially approved by the Dean. After this approval, the thesis will be registered in the study register.

Certificates are issued approximately once a month during the period September-June. More information about graduating and getting the diploma is found here: http://www.abo.fi/fakultet/en/fnt_slutskedet

3 Services

3.1 Computers, printers and copying machines

The computers in the computer classes in the ICT-building, B-building, 3rd floor, rooms B3031 and B3032, as well as the computer classes located in other University buildings, are available for all the students studying at the Department. A username, password and a license to use the computers are needed. These can be obtained from the Help Desk at the Computing Centre (*Datacentralen*) in the ASA-building, B-building, Fänriksgatan 3B, 20500 Åbo. With the password it is possible to log on to all of the public computers located in any of the University's computer classes. The following page lists all available computer classes:

<http://www.abo.fi/stodenhet/en/klasser>

Always remember to log off after use, so that no one else can use your computer domain.

Students can print about 180 pages for free in a three-month period. If this amount is exceeded the student will pay for the pages printed (3.3 cents per page). An invoice is then sent to the student via e-mail.

Copying machines are available e.g. in the libraries. Copying cards can be bought e.g. at the Student office of Åbo Akademi University.

3.2 Libraries

To be able to borrow from libraries, students need to have a student card (*studiekort*). The loan time for books is usually 2–4 weeks. More information about the libraries and opening hours is found at <http://www.abo.fi/bibliotek/>.

The main library of Åbo Akademi is located in Domkyrkogatan 2-4, 20500 Åbo, telephone (02) 215 4180, e-mail: biblioteket@abo.fi. The main library offers reading facilities and a reference library. Certain books can also be borrowed, but have to be reserved in advance.

The student library in the ASA-building, Fänriksgatan 3A, 20500 Åbo, telephone (02) 215 4192, offers course books, which can be borrowed on site, and reading facilities.

3.3 Career Services

The Career Services at Åbo Akademi University (*Arbetsforum*) are located in the Hanken-building, Henriksgatan 7, 20500 Åbo. They provide information for both graduates and students. Their main task is to help students enter the labour market and to give advice in issues dealing with job-hunting. The Career Services offer employers direct access to highly skilled students and graduates. They work in close co-operation with the Career Services at the University of Turku, the Turku School of Economics and the Turku Employment office. More information can be found at <http://www.abo.fi/stodenhhet/en/arbetsforum>

3.4 Student tutor, teacher tutor and programme coordinator

All first-year students are assigned student tutor and a teacher tutor. The student tutor is an older student who helps the new students adapt to student life in Åbo, whereas the teacher tutor gives advice in study-related matters.

Student tutors 2015-16 are:

Computer Science: Olujuwon Ayoseyi Alabi (olujuwon.alabi@abo.fi) and Md Foyzur Rahman (foyzur.rahman@abo.fi)

Software Engineering: Tanwir Ahmad (tanwir.ahmad@abo.fi) and Junaid Iqbal (juniad.iqbal@abo.fi)

Embedded Computing: Saman Payvar (saman.payvar@abo.fi) and Mohamed Amini-Alaoui (mohamed.amini-alaoui@abo.fi)

Teacher tutors and programme coordinators:

Computer Science: Luigia Petre (coordinator), Vladimir Rogojin (teacher tutor)

Software Engineering: Dragos Truscan

Embedded Computing: Sébastien Lafond

3.5 Student activities

The Student Union at Åbo Akademi University

All students at Åbo Akademi University are required to be members of the Student Union (*Åbo Akademis Studentkår*), <https://www.abo.fi/karen>, which takes care of its members' interests in several ways. The annual membership fee of the Student Union is 116 € for the academic year 2015-2016.

By being a member you receive a student card with which you obtain student discounts for trains, buses, hostels, students' restaurants, theatres etc. As a member, you are also entitled to use the services of the Student Health Care Centre (*Studenthälsan*) http://www.yths.fi/en/contact_details/units/turku at Kyrkovägen 13, 20540 Åbo.

4 Master's Programme in Computer Science

4.1 Structure of the studies

The Master's Programme in Computer Science has a duration of two academic years and accounts for 120 cr. This means that the student should complete 60 cr each academic year. The structure of the programme as well as the courses are available in MinPlan, <http://www.abo.fi/minplan>. The student is required to make his or her own study plan using MinPlan. Furthermore, the registration for courses offered by Åbo Akademi University and the registration for exams at Åbo Akademi University are done in MinPlan.

The Master of Science degree in the Master's Degree Programme in Computer Science has the following structure:

Free optional studies (30 cr)	Master's thesis in Computer Science (30 sp)
Advanced studies in Computer Science, (60 cr)	

4.2 Main subject

The main subject studies consist of:

4.2.1 Advanced studies

Mandatory (45 cr)

451000.0 Project course, 10 cr.

456509.0 Logic for computer science, 5 cr.

456794.0 Master's thesis in Computer Science, 30 cr

Selectable (45 cr are chosen)

Other studies, 45 cr. to be selected from the following courses and be combined into an individual study plan:

452502.0 Software testing, 5 cr

456309.0 Specification methods, 5 cr

455304.0 Code optimization, 5 cr

456511.0 Introduction to computational and systems biology, 5 cr

456502.0 Software Architectures, 5 cr

452501.0 Development of Web Applications and Web Services, 5 cr

456508.0 Computability and Computational Complexity, 5 cr

456402.0 Computational modeling techniques, 5 cr

456513.0 Advanced computational modelling, 5 cr

456506.0 Cryptography and Network Security, 5 cr

455301.0 Introduction to computer graphics, 5 cr

- 456504.0 Network software, 5 cr
- 424511.0 Evolutionary Algorithms, 5 cr
- 424501.0 Neural Networks, 5 cr
- 455302.0 Advanced computer graphics and graphic hardware, 5 cr
- 456400.8 Special Course in CS:Local Networks, 5 cr
- 456401.0 Advanced text algorithms, 5 cr
- 456512.0 Databases 2, 5 cr
- 455303.0 Parallel programming, 5 cr
- 456400.5 Distributed systems and algorithms, 5 cr
- 456314.0 Approximation and randomized algorithms, 5 cr
- 456400.9 Reliable distributed systems, 5 cr
- 457512.0 Business Intelligence, 5 cr
- 457513.0 Data Mining and Text Mining, 5 cr
- 457307.0 Data Warehousing, 5 cr

4.2.2 Master's thesis in Computer Science

The Master's Thesis accounts for 30 cr and should be written in the last year of study, i.e. during the second academic year. Contact the coordinator of the program or any of the lecturers of the program to discuss a possible topic for the thesis.

- | | | |
|----------|-------------------------------------|-------|
| 456794.0 | Master's Thesis in Computer Science | 30 cr |
| | includes Master's Thesis seminar | |

Please see Section 2.8 regarding the thesis writing and graduation process.

4.2.3 Free optional studies

The student has the opportunity to complete free optional courses to an extent of 30 cr. These courses can be any courses offered by any subject at Åbo Akademi University. A language course in Swedish is available and recommended for Computer Science master students: 909970.0 Swedish as a foreign language, level 1, 5 cr. The course offers a basic understanding of the Swedish language and of cultural aspects related to Swedish-speaking Finns.

Language courses are offered by the Centre for Language and Communication (*språkcentret*), <http://www.abo.fi/csk>

Please note that language courses always require registration through MinPlan.

4.3 Course information: lecture dates and times

At the end of this guide you will find the course schedules for courses offered by Åbo Akademi University.

Please note that some courses are lectured every second year.

The following courses will be lectured during the academic year 2016-2017:

- Advanced computational modeling
- Computational modeling techniques
- Network software
- Parallel programming
- Program derivation
- Software Architectures
- Special course in CS: Advanced Text Algorithms
- Cryptography and Network Security
- Databases 2
- Introduction to computer graphics
- Software Safety
- Software Quality

Courses offered by the University of Turku:

The lecture dates and times for courses lectured in the autumn (period I and II) will be confirmed in August and lecture dates and times for courses lectured in the spring (period III and IV) will be confirmed in December. Please check the following web page for the updated information: <http://mars.cs.utu.fi/julkkari/opetus/>

4.4 General information about studies

Detailed information about the Master's Programme in Computer Science can be found here: www.abo.fi/computerscience

General information about the studies at Åbo Akademi University can be also be found in this Study guidebook, the Teaching Programme (*Undervisningsprogram*) and in MinPlan.

The Teaching Programme

The Teaching Programme (*Undervisningsprogram*) gives information about all the courses offered at Åbo Akademi University, i.e. lecture dates and times, as well as information about exam dates for the courses.

The Teaching Programme for the Faculty of Science and Engineering can be found at the address (Swedish pages): <http://www.abo.fi/student/undervisningsprogram>

5 Master's Programme in Computer Engineering / Software Engineering

5.1 Structure of the studies

The Master's Programme in Computer Engineering/ Software Engineering has a duration of two academic years and accounts for 120 cr. This means that the student should complete 60 cr each academic year. The structure of the programme as well as the courses are available in MinPlan, <http://www.abo.fi/minplan>. The student is required to make his or her own study plan using MinPlan. Furthermore, the registration for courses offered by Åbo Akademi University and the registration for exams at Åbo Akademi University are done in MinPlan.

The Master of Science (Technology) degree in Computer Engineering/ Software Engineering has the following structure:

Advanced studies in Software Engineering (60 cr)	
Master's Thesis in Software Engineering (30 cr)	Free optional studies (30 cr)

5.1.1 Advanced studies in Software Engineering

The courses in the advanced module (60 cr) consist of 4 mandatory courses (25 cr) and a number of selectable courses of which 35 cr should be chosen.

<i>Mandatory</i>		25 cr
452501.0	Development of Web Applications and Web Services	5 cr
456502.0	Software Architectures	5 cr
456516.0	Experimentation on Software Engineering	5 cr
451000.0	Project course	10 cr
<i>Selectable (35 cr are chosen)</i>		
456309.0	Specification Methods	5 cr
452502.0	Software Testing	5 cr
456512.0	Databases 2	5 cr
455304.0	Code Optimization	5 cr
455302.0	Advanced Computer Graphics and Graphics Hardware	5 cr
456401.0	Advanced Text Algorithms	5 cr
452400.	Special course(s) in Software Engineering	5 cr
456400.	Special course(s) in Computer Science	5 cr
424501.0	Neural Networks	5 cr
456402.0	Evolutionary Algorithms	5 cr
453600.0	Introduction to Manycore programming	5 cr
453505.0	Multimedia Algorithm Implementation	5 cr
453306.0	Real Time Systems	5 cr

Not given 2015-2016

456501.0	Software Safety	5 cr
456503.0	Software Quality	5 cr
456504.0	Network Software	5 cr
456506.0	Cryptography and Network Security	5 cr
455301.0	Introduction to Computer Graphics	5 cr
456505.0	Program Derivation	5 cr
456513.0	Advanced computational modelling	5 cr

5.1.2 Master's thesis in Software Engineering

The Master's Thesis accounts for 30 cr and should be written in the last year of study, i.e. during the second academic year. Contact Professor Ivan Porres or Docent Dragos Truscan to discuss a possible topic for the thesis.

452795.0	Master's Thesis in Software Engineering	30 cr
	Note: includes mandatory Master's Thesis seminar	

Please see Section 2.8 regarding the thesis writing and graduation process.

5.1.3 Free optional studies

The student has the opportunity to complete free optional courses to an extent of 30 cr. These courses can be any courses offered by any subject at Åbo Akademi University. A language course in Swedish is available and recommended for Computer Science master students: 909970.0 Swedish as a foreign language, level 1, 5 cr. The course offers a basic understanding of the Swedish language and of cultural aspects related to Swedish-speaking Finns.

Language courses are offered by the Centre for Language and Communication (*språkcentret*), <http://www.abo.fi/csk>

Please note that language courses always require registration through MinPlan.

5.2 Course information: lecture dates and times

At the end of this guide you will find the course schedules for courses offered by Åbo Akademi University.

Please note that some courses are lectured every second year.

The following courses will be lectured during the academic year 2016-2017:

456501.0	Software Safety	5 cr
456503.0	Software Quality	5 cr
456504.0	Network Software	5 cr
456506.0	Cryptography and Network Security	5 cr
455301.0	Introduction to Computer Graphics	5 cr
456505.0	Program Derivation	5 cr
456513.0	Advanced computational modelling	5 cr

5.3 General information about studies

General information about the studies at Åbo Akademi University can be found in this Study guidebook, the Teaching Programme (*Undervisningsprogram*), MinPlan and the Computer Engineering/ Software Engineering web pages.

The Teaching Programme

The Teaching Programme (*Undervisningsprogram*) gives information about all the courses offered at Åbo Akademi University, i.e. lecture dates and times, as well as information about exam dates for the courses. The Teaching Programme for the Faculty of Science and Engineering can be found at the address: (Swedish pages): <http://www.abo.fi/student/undervisningsprogram>

Computer Engineering/ Software Engineering web pages The Computer Engineering/ Software Engineering web pages give general information about the Master Studies in Computer Engineering/ Software Engineering and also contain study information and guides. Please visit the pages at <https://www.abo.fi/se>

Computer Engineering/ Software Engineering emailing list

The mailing list for students in the Computer Engineering/ Software Engineering Masters Programme is SEMaster-AA@abo.fi. Subscription address: <https://mailman.abo.fi/mailman/listinfo/semaster-aa>

6 Master's Degree Programme in Embedded Computing

6.1 Structure of the studies

The Master's Degree Programme in Embedded Computing has a duration of two academic years and accounts for 120 cr. This means that the student should complete 60 cr each academic year. The structure of the programme as well as the courses are available in MinPlan, <http://www.abo.fi/minplan>. The student is required to make his or her own study plan using MinPlan. Furthermore, the registration for courses offered by Åbo Akademi University and the registration for exams at Åbo Akademi University are done in MinPlan.

The Master of Science (Technology) degree in the Master's Degree Programme in Embedded Computing has the following structure:

Advanced module I in Embedded Systems (20 cr)	Advanced module II in Embedded Systems (30 cr)
Master's thesis in Embedded Systems (30 sp)	
Minor subject: Innovation and Business Creation (25 cr)	Free optional studies (15 cr)

6.1.1 Advanced module I in Embedded Systems

The courses in the advanced module I (20 cr) consist of mandatory courses offered by Åbo Akademi University (ÅAU) and the University of Turku (UTU).

<i>Mandatory</i>			20 cr
453306.0	Real-Time Systems	ÅAU	5 cr
453502.0	Programming Embedded Systems	ÅAU	5 cr
453600.0	Introduction to Many-Core Programming	ÅAU	5 cr
ETT_2006	HDL Based Design	UTU	5 cr

6.1.2 Advanced module II in Embedded Systems

The courses in the advanced module II (30 cr) consist of mandatory as well as selectable courses offered by Åbo Akademi University (ÅAU) and the University of Turku (UTU).

<i>Mandatory</i>			20 cr
453503.0	Modeling of Embedded Systems	ÅAU	5 cr

453506.0	Design Methods for Energy Efficient Embedded Systems ÅAU	5 cr
451000.0	Project course ÅAU	10 cr
<i>Selectable (10 cr are chosen)</i>		10 cr
454506.1	Applied Signal Processing, theory	ÅAU 5 cr
455304.0	Code Optimization	ÅAU 5 cr
453505.0	Multimedia Algorithm Implementation	ÅAU 5 cr
ETT_2062	Multiprocessor Architectures	UTU 5 cr
ETT_2061	System Verification	UTU 5 cr
DTEK8053	Seminar on Energy Efficient Computing	UTU 5 cr
DTEK0036	Modelling Parallel Systems	UTU 5 cr
ETT_2014	SoC Design	UTU 5 cr
ETT_3053	Reconfigurable Computing	UTU 5 cr
DTEK8048	FPGA Prototyping	UTU 5 cr

6.1.3 Master's thesis in Embedded Systems

The Master's Thesis accounts for 30 cr and should be written in the last year of study, i.e. during the second academic year. Contact professor Johan Lilius to discuss a possible topic for the thesis.

453795.0	Master's Thesis in Embedded Systems includes Master's Thesis seminar	30 cr
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Please see chapter 2.8 Graduation and Diploma for more information about the Thesis and the graduation process.

6.1.4 Minor subject: Innovation and Business Creation

The minor subject Innovation and Business Creation (25 cr) is mandatory. The courses are offered by Business and Innovation Development unit at University of Turku.

Innovation and Business Creation Study Module (25 cr):

Mandatory (18-21 cr)

BIDI0002	Introduction to Innovation and Business (5 cr)
BIDI0003	Business Development Laboratory (7 cr)
BIDI1005	Intermediate course on Business Management of Start-ups (3 cr)
BIDI0004	Special Topic Studies (6 cr)

Selectable (4-7 cr)

BIDI1005	Start-up Journey (10 cr)
BIDI0005	Advanced Special Topic Studies (4-9 cr)
KVS54	Special Themes in Innovation Management (2 or 4 cr)
TJS17	Enterprise Architecture (6 cr)
TJS6	Software Business (6 cr)

For this minor a flexible study right agreement is required via www.joopas.fi (see section 2.6 above). More information about this module and its courses is found at www.bid.utu.fi and <https://nettiopsu.utu.fi/opas>

6.1.5 Free optional studies

The student has the opportunity to complete free optional courses to an extent of **15** cr. These courses can be any courses offered by any subject at Åbo Akademi University. A language course in Swedish is available and recommended for Computer Science master students: 909970.0 Swedish as a foreign language, level 1, 5 cr. The course offers a basic understanding of the Swedish language and of cultural aspects related to Swedish-speaking Finns.

Language courses are offered by the Centre for Language and Communication (*språkcentret*), <http://www.abo.fi/csk>

Please note that language courses always require registration through MinPlan.

6.2 Course information: lecture dates and times

An online calendar for the 2015-2016 courses is available from the programme web page at http://www.abo.fi/fakultet/it_embc_studyinformation

At the end of this guide you will also find the course schedules for courses offered by Åbo Akademi University.

Please note that some courses are lectured every second year.

Courses offered by the University of Turku:

The lecture dates and times for courses lectured in the autumn (period I and II) will be confirmed in August and lecture dates and times for courses lectured in the spring (period III and IV) will be confirmed in December. Please check the following web page for the updated information: <https://nettiopsu.utu.fi/opas>

6.3 General information about studies

General information about the studies at Åbo Akademi University can be found in this Study guidebook, the Teaching Programme (*Undervisningsprogram*), MinPlan and the Embedded Computing web pages.

The Teaching Programme

The Teaching Programme (*Undervisningsprogram*) gives information about all the courses offered by Åbo Akademi University, i.e. lecture dates and times, as well as information about exam dates for the courses.

The Teaching Programme for the Faculty of Science and Engineering can be found at the address: (Swedish pages): <http://www.abo.fi/student/undervisningsprogram>

Embedded Computing web pages

The Embedded Computing web pages give general information about the Master's Degree Programme in Embedded Computing and also contain study information and guides. Please visit the pages at <https://www.abo.fi/ec>



6.4 Double degree in Embedded Systems

Åbo Akademi University offers a double degree programme in Embedded Systems with ESIGELEC in Rouen, France. Students do half of their studies at their home university and half at Åbo Akademi University/Esigelec. Students that complete the whole programme get a Master of Science degree in Technology (Diplomingenjör, 120 ECTS) from Åbo Akademi and a Master of Science degree (Diplôme d'Ingénieur, 300 ECTS) from ESIGELEC. The duration of the programme is 5-6 terms and the languages of instruction are English, Swedish and French. More information can be found on www.abo.fi/ddes or from ddes@abo.fi

6.4.1 Students from ESIGELEC going to Åbo Akademi University

Åbo Akademi and ESIGELEC requirements:

Module	Required ECTS		Total
	From ÅA	From Esigelec	
1. Advanced module	15	5	20
2. Compulsory advanced module		20	20
3. Project course	10	-	10
4. Compulsory intermediate studies	10	15	25
5. Compulsory language courses	3	-	3
6. Free optional courses	6	6	12
7. Master's thesis		30	
TOTAL	120		

Structure of the modules:

- **Advanced module in Embedded Systems 20 ECTS**

- From Esigelec: a minimum of 5 ECTS selectable from:
 - o (SE2C1-F) Microprocessor Architecture (Y2,S1): 3 ECTS
 - o (ISE202-A) Real-time Operating Systems (Y2, S2): 2 ECTS
 - o (ISE203-A) Tools and methods for software (Y2,S2): 2 ECTS

- From Åbo Akademi: a minimum of 15 ECTS selectable from:

- o 453501.0 Digital Television Techniques: 5 ECTS
- o 453503.0 Modeling of Embedded Systems: 5 ECTS
- o 453506.0 Design methods for energy efficient embedded systems: 5 ECTS
- o 454506.0 Applied signal processing: 5+4 ECTS
- o 455304.0 Code Optimization: 5 ECTS
- o 453600.0 Introduction to Manycore Programming: 5 ECTS
- o 453505.0 Multimedia Algorithm Implementation: 5 ECTS
- o Special work in Embedded Systems: 2-5 ECTS

• **Compulsory advanced module: 20 ECTS**

- From Esigelec: 20 ECTS
 - o Applied discrete mathematics: 6 ECTS
 - (MA1C1-F) Math for Engineering (Y1, S1): 2 ECTS
 - (MA1C2-F) Probability Theory (Y1, S2): 2 ECTS
 - (PH1C2-F) Electromagnetism (FR)(Y1, S1): 2 ECTS
 - o Design of experiments: 5 ECTS selectable from
 - (GE1C2-F) (GE1C3-F) Industrial Control Systems (1st Y 1st S): 3 ECTS
 - (SE201-F) Instrumentation and system (Y1, S1): 5 ECTS
 - (GE2C1-F)(GE2C2-F) Automation Engineering I (Y2, S1): 2 ECTS
 - o Basic Signal Processing: 5 ECTS selectable from:
 - (TS2C1-F) Signal processing (Y2, S1): 2 ECTS
 - (EL2C1-F) Analog filters (Y2, S1): 2 ECTS
 - (EL2C3-F) Analog to digital conversion (Y2, S1): 2 ECTS
 - (EL2C5-F) Modulation (Y2, S1): 2 ECTS
 - o Logic control: 5 ECTS
 - (GE1C1-F) Combinatory and sequential logic (Y1, S2): 2 ECTS
 - (ISE201-A) Binary Logic and VHDL (2nd Y 2nd S): 3 ECTS

• **Compulsory project course: 10 ECTS**

- From Åbo Akademi: 10 ECTS
 - o 451000.0 Project course: 10 ECTS

• **Compulsory Intermediate Studies: 20 ECTS**

- From Esigelec (Electrical Engineering): a minimum of 15 ECTS selectable from:
 - o (IN1C2-F) UML for analysis (Y1, S2) : 2 ECTS
 - o (IN2C1-F) Network interconnections (Y2, S1) : 2 ECTS
 - o (PI2C1-F) Engineering project (Y2, S2) : 4 ECTS
 - o (GE1C4-F) (GE1C5-F) Electrical Engineering (Y1, S2): 3 ECTS
 - o (GE1C6-F)(GE1C7-F) Power electronics (Y1,S2): 3 ECTS

- o (EL1C5-F) Electrical Engineering & Electronics project (Y1,S2): 4 ECTS
- o (ISE204-A) Communication buses (Y2,S2): 2 ECTS
- From Åbo Akademi: a minimum of 10 ECTS selectable from:
 - o *In English:*
 - o 452502.0 Software Testing: 5 ECTS
 - o 455303.0 Parallel Programming: 5 ECTS
 - o 456512.0 Databases II: 5 ECTS
 - o 456504.0 Network Software: 5 ECTS
 - o 456514.0 Experimentation in engineering: 5 ECTS
 - o *In Swedish:*
 - o 452303.0 Practicum in Software Engineering: 5 ECTS
 - o 452306.0 Programming paradigms: 5 ECTS
 - o 452307.0 System design II: 5 ECTS
 - o 456306.0 Compiler technology: 5 ECTS
- **Compulsory language courses: 3 ECTS**
- From Åbo Akademi: 3 ECTS
 - o 903840.0 Academic skills for Masters Students: 3 ECTS
- **Free optional courses 12 ECTS**
- From Åbo Akademi: 6 ECTS
 - o Any courses offered by Åbo Akademi University.
- From ESIGELEC: 6 ECTS
 - o Any courses offered by Esigelec
- **Master's thesis 30 ECTS**
- Has to be graded and approved by Åbo Akademi and by ESIGELEC

The above structure of modules is based on 2014-2015 syllabus of ESIGELEC and 2014-2015 syllabus of Åbo Akademi. It is subject to possible annual updates and modifications.

6.4.2 Students from Åbo Akademi University going to ESIGELEC

Åbo Akademi requirements:

Module	Required ECTS		Total
	From ÅA	From Esigelec	
1. Advanced module	8	12	20
2. Compulsory advanced module	15	5	20
3. Project course	10	-	10
4. Compulsory intermediate studies	5	15	20
5. Compulsory language courses	-	8	8
6. Free optional courses	6	6	12

7. Master's thesis	30
TOTAL	120

Structure of the modules:

• Advanced module in Embedded Systems 20 ECTS

- From Esigelec: 12 ECTS selectable from
 - o (ISE201-A) Binary Logic and VHDL (in English) (Y2,S2): 3 ECTS
 - o (ISE202-A) Embedded Linux and Real-time (in English) (Y2, S2): 2 ECTS
 - o (SE2C1-F) Microprocessor architecture (Y2,S1): 3 ECTS
 - o (ISE302-A) Reconfigurable Systems (in English) (Y3,S1): 2 ECTS
 - o (ISE301-A) Embedded Systems (in English) (Y3,S1): 2 ECTS
 - o (ISE303-F) Linux and Embedded Systems (Y3,S1): 1 ECTS
 - o (ES21-A) Methodology using case studies (in English) (Y3,S1): 1 ECTS
 - o (ES22-F) EMC for Embedded Systems (Y3,S1): 1 ECTS
 - o (ES23-F) DSP (Y3,S1): 1 ECTS
 - o (ES24-A) Embedded applications for Android (in English) (Y3,S1): 1 ECTS
 - o (ES25-A) Advanced LabView development (Y3,S1): 1 ECTS

- From Åbo Akademi: a minimum of 8 ECTS selectable from:
 - o 453501.0 Digital Television Techniques: 5 ECTS
 - o 453503.0 Modeling of Embedded Systems: 5 ECTS
 - o 453506.0 Design methods for energy efficient embedded systems: 5 ECTS
 - o 454506.0 Applied signal processing: 5+4 ECTS
 - o 453600.0 Introduction to Manycore Programming: 5 ECTS
 - o 453505.0 Multimedia Algorithm Implementation: 5 ECTS
 - o Special work in Embedded Systems: 2-5 ECTS

• Compulsory advanced module: 20 ECTS

- From Åbo Akademi: 15 ECTS selectable from:
 - o 400107.0 Applied discrete mathematics: 5 ECTS
 - o 456514.0 Experimentation in engineering: 5 ECTS
 - o 454300.0 Basic course in signal processing: 5 ECTS
 - o 455303.0 Parallel programming: 5 ECTS
- From Esigelec:
 - o Signal Processing: a minimum of 5 ECTS selectable from:
 - o *In French*
 - (TS2C1-F) Signal processing (Y2, S1): 2 ECTS
 - (EL2C1-F) Analog filtering (Y2, S1): 2 ECTS
 - (EL2C3-F) Analog to digital conversion (Y2,S1): 2 ECTS
 - (EL2C5-F) Modulation (Y2, S1): 2 ECTS

• Compulsory project course: 10 ECTS

- From Åbo Akademi: 10 ECTS
 - o 451000.0 Project course: 10 ECTS

• Compulsory Intermediate Studies: 20 ECTS

- From Esigelec: a minimum of 15 ECTS selectable from:
 - o (IN2C1-F) Network interconnections (Y2, S1) : 2 ECTS
 - o (GE2C1-F)(GE2C2-F) Automation Engineering I (Y2, S1): 2 ECTS
 - o (ISE203-A) Tools and Methods for Software (in English) (Y2,S2): 3 ECTS
 - o (ISE204-A) Communication buses (in English) (Y2,S2): 2 ECTS
 - o (ISE205-A) Innovation with Android (in English) (Y2,S2): 3 ECTS
 - o (ISE207-A) Localisation and trajectory (in English) (Y2,S2): 3 ECTS
 - o (ISE306-F) Communication systems (Y3,S2): 1 ECTS
 - o (ISE307-F) Lab. communication systems (Y3,S2): 1 ECTS
 - o (PI2C1-F) Engineering project (Y2,S2): 4 ECTS
 - o (C02C1-F) Project management (Y2,S2): 2 ECTS
- From Åbo Akademi (*in Swedish*): a minimum of 5 ECTS selectable from:
 - o 452303.0 Practicum in Software Engineering: 5 ECTS
 - o 452306.0 Programming paradigms: 5 ECTS
 - o 452307.0 System design II: 5 ECTS
 - o 456306.0 Compiler technology: 5 ECTS
- **Compulsory language courses: 8 ECTS**
- From ESIGELEC: 8 ECTS
 - o French as a foreign language: 5 ECTS
 - o English: 3 ECTS
- **Free optional courses 12 ECTS**
- From Esigelec: 6 ECTS
 - o Any courses offered by Esigelec
- From Åbo Akademi: 6 ECTS
 - o Any courses offered by Åbo Akademi University.
- **Master's thesis 30 ECTS**
- Has to be graded and approved by Åbo Akademi and by ESIGELEC

The above structure is based on 2014-2015 syllabus of ESIGELEC and 2014-2015 syllabus of Åbo Akademi. It may be subject to possible annual updates and modifications.

Computer science - Autumn 2015									
Code	Course	Credits	Lecturer	Weeks Period	Time and place				
					Mon	Tue	Wed	Thu	Fri
Lecture hours at ÅAU if nothing else is mentioned: 8-10 = 8.15-9.45, 10-12 = 10.15-11.45, 13-15 = 13.30-15.00, 15-17 = 15.15-16.45									
451000.0	Project Course	10	Björkqvist L. Petre Truscan Rönholm	36-51					8-12, Fortran
909970.0	Swedish as a foreign language level 1 (The course is not mandatory but is recommended for Computer Science students) The course requires registration in MinPlan.	5	Sandberg						
	-Group 1 (period 1-2)			37-51	10.15-11.45				
	-Group 2 (period 1-2)			37-51	13.30-15.00				
	-Group 3 (period 1-2)			37-51		8.15-9.45		8.15-9.45	
	-Group 4 (period 3-4)			3-20	10.15-11.45				
	-Group 5 (period 3-4)			3-20	13.30-15.00				
	-Group 6 (period 3-4)			3-20		8.15-9.45		8.30-10.00	
456309.0	Specification Methods	5	Troubitsyna	36-43				15-17, Cobol	15-17, Algol
452501.0	Development of Web Applications and Web Services	5	Truscan	36-43		13-15, Fortran		13-15, Dilbert	
455304.0	Code optimization	5	Aspnäs	36-43		15-17, Fortran		13-15, Fortran	
456511.0	Introduction to computational and systems biology	5	I. Petre	36-43	10-12, 13-15 Catbert			10-12, Catbert	
456405.0	Special Course in CS: Molecular Computing	5	Rogojin	36-43	15-17, Cobol			10-12, Algol	
456794.0	Masters Thesis and Seminar in Computer Science	30	Waldén	36-51		10-12, Cobol			
452502.0	Software Testing	5	Truscan	44-51		13-15, Algol		13-15, Dilbert	
456508.0	Computability and Computational Complexity	5	I. Petre	44-51	10-12, 13-15, Catbert		10-12, Catbert	15-17, Dilbert	
457512.0	Business Intelligence	5	Back	44-51		15-17, Catbert			
456513.0	Advanced computational modeling	5	I. Petre	Not 2015-2016					
456402.0	Computational modeling techniques	5	I. Petre	Not 2015-2016					
456504.0	Network software	5	L. Petre	Not 2015-2016					
455303.0	Parallel programming	5	Aspnäs	Not 2015-2016					
456505.0	Program derivation	5	Boström Waldén	Not 2015-2106					
456502.0	Software Architectures	5	L. Petre	Not 2015-2016					
456401.0	Special course in CS: Advanced Text Algorithms	5	Rogojin	Not 2015-2016					

Computer science - Spring 2016									
Code	Course	Credits	Lecturer	Weeks	Time and place	Tue	Wed	Thu	Fri
Please notice that period 3 starts Thursday 7.1 on week 1									
451000.0	Project Course, continues.	10	Björkqvist L. Petre Truscan Rönholm	2-10					8-12, 115A
456509.0	Logic for Computer Science - exercises (mandatory attendance)	5	Sibeliuss	2-10	13-15, LT2 aud (74)			10-12, LT2 aud (74)	
456400.5	Special Course in CS: Distributed systems and algorithms	5	Troubitsyna	2-10	15-17, 115A	10-12, 115A	13-15, K124B		
456314.0	Approximation and randomized algorithms	5	L. Petre	2-10			10-12, 115A		10-12, 347 sem.
455302.0	Advanced computer graphics and graphic hardware	5	Westerholm	1-10		15-17, 115A		15-17, 115A	
456404.0	Special Course in CS: Graph Algorithms	5	Rogojin	2-10	10-12, 115A		15-17, 115A		
457513.0	Data Mining and Text Mining - exercises	5	Back	2-10		15-17, LT2 aud (74)			
456400.9	Special Course in CS: Reliable Distributed Systems - exercises	5	Waldén	11-20		13-15, 110B 10-12, 332A		10-12, K126A&B 13-15, 115A	
456400.8	Special Course in CS: Local Networks	5	L. Petre	11-20			10-12, 115A		10-12, 115A
457307.0	Data Warehousing	5	Eklund	11-20	10-12, 115A				
424511.0	Evolutionary Algorithms	5	Petterson	11-21	Intensive internet course				
424501.0	Neural Networks	5	Saxén	Period 4	Intensive course				
456506.0	Cryptography and Network Security	5	Rogojin	Not 2015-2016					
456512.0	Databases 2	5	Aspnäs	Not 2015-2016					
455301.0	Introduction to computer graphics	5	Westerholm	Not 2015-2016					
456501.0	Software Safety	5	Troubitsyna	Not 2015-2016					
456503.0	Software Quality	5	Troubitsyna	Not 2015-2016					

Algol, Catbert, Cobol, Dilbert (computer class), Fortran and Gamma are located in the ICT-building, Joukahainengatan 3 Salin and Ringbom are located in the Axelia II building, Biskopsgatan 8.
 Campus map: <http://www.abo.fi/public/en/media/2141/campuskartaengelska.pdf>

Computer/Software engineering - Autumn 2015										
Code	Course	Credits	Lecturer	Weeks		Time and place		Wed	Thu	Fri
				Term	Mon	Tue				
Lecture hours at ÅAU if nothing else is mentioned: 8-10 = 8.15-9.45, 10-12= 10.15-11.45, 13-15= 13.30-15.00, 15-17= 15.15-16.45										
451000.0	Project Course	10	Björkqvist L. Petre Truscan Rönholm	36-51						8-12, Fortran
452400.0	Special Course in Software Engineering	5		See notice						
909970.0	Swedish as a foreign language level 1 (The course is not mandatory but is recommended for Software Engineering students)	5	Sandberg							
	The course requires registration in MinPlan.									
	-Group 1 (period 1-2)			37-51	10.15-11.45			10.15-11.45		
	-Group 2 (period 1-2)			37-51	13.30-15.00			13.30-15.00		
	-Group 3 (period 1-2)			37-51		8.15-9.45			8.15-9.45	
	-Group 4 (period 3-4)			3-20	10.15-11.45			10.15-11.45		
	-Group 5 (period 3-4)			3-20	13.30-15.00			13.30-15.00		
	-Group 6 (period 3-4)			3-20		8.15-9.45			8.30-10.00	
452501.0	Development of Web Applications and Web Services	5	Truscan	36-43		13-15, Fortran			13-15, Dilbert	
456516.0	Experimentation in Software Engineering <i>(replaces 456514.0 Experimentation in Engineering)</i>	5	Porres	36-43		8-10, Cobol			8-10, Cobol	
455304.0	Code optimization	5	Aspnäs	36-43		15-17, Fortran		13-15, Fortran		
456309.0	Specification Methods	5	Troubitsyna	36-43				15-17, Cobol	15-17, Algol	
452502.0	Software Testing	5	Truscan	44-51		13-15, Algol			13-15, Dilbert	
453600.0	Special Course in ES: Introduction to Many-Core Programmin	5	Lilius Tsiopoulos	44-51		15-17, Cobol		15-17, Cobol		
456513.0	Advanced computational modeling	5	I. Petre	Not 2015-2016						
456504.0	Network software	5	L. Petre	Not 2015-2016						
455303.0	Parallel programming	5	Aspnäs	Not 2015-2016						
456502.0	Software Architectures	5	L. Petre	Not 2015-2016						
456401.0	Special course in CS: Advanced Text Algorithms	5	Rogojin	Not 2015-2016						
456505.0	Program Derivation	5	Boström Waldén	Not 2015-2016						

Computer/Software engineering - Spring 2016									
Code	Course	Credits	Lecturer	Weeks	Time and place				
				Period	Mon	Tue	Wed	Thu	Fri
Please notice that period 3 starts Thursday 7.1 on week 1									
Lecture rooms (110A/B, 115A, 332A, 347, K124B, K126A&B, LT2 aud) are in the building Agora on the University Hill									
451000.0	Project Course (continues)	10	Björkqvist L. Petre Truscan Rönholm	2-10					8-12, 115A
455302.0	Advanced computer graphics and graphic hardware	5	Westerholm	1-10		15-17, 115A		15-17, 115A	
424511.0	Evolutionary Algorithms	5	Pettersson	2-20	<i>Internet course</i>				
456400.8	Special Course in CS: Local Networks	5	L. Petre	11-20			10-12, 115A		10-12, 115A
453505.0	Multimedia Algorithm Implementation	5	Lilius	11-20	13-17, 115A			10-12, 347 seminarierum	
453306.0	Real-Time Systems	5	Lilius NN	11-20			15-17, 115A		10-12, 110A
424501.0	Neural Networks	5	Saxén	Period 4	<i>intensive course</i>				
456506.0	Cryptography and Network Security	5	Rogojin	Not 2015-2016					
456512.0	Databases 2	5	Aspnäs	Not 2015-2016					
455301.0	Introduction to computer graphics	5	Westerholm	Not 2015-2016					
456501.0	Software Safety	5	Troubitsyna	Not 2015-2016					
456503.0	Software Quality	5	Troubitsyna	Not 2015-2016					

Algol, Catbert, Cobol, Dilbert (computer class), Fortran and Gamma are located in the ICT-building, Joukahainenengatan 3 Salin and Ringbom are located in the Axelia II building, Biskopsgatan 8.
 Campus map: <http://www.abo.fi/public/en/media/2141/campuskartaengelska.pdf>

Embedded Computing - Autumn 2015						
Code	Course	Credits	Lecturer	Weeks Period	Time and place Mon Tue Wed Thu Fri	
451000.0	Project Course	10	Björkqvist L. Petre Truscan Rönholm	36-51		8-12, Fortran
909970.0	Swedish as a foreign language level 1 (The course is not mandatory but is recommended for Embedded Computing students)	5	Sandberg			
	The course requires registration in MinPlan.					
	-Group 1 (period 1-2)			37-51	10.15-11.45	10.15-11.45
	-Group 2 (period 1-2)			37-51	13.30-15.00	13.30-15.00
	-Group 3 (period 1-2)			37-51	8.15-9.45	8.15-9.45
	-Group 4 (period 3-4)			3-20	10.15-11.45	10.15-11.45
	-Group 5 (period 3-4)			3-20	13.30-15.00	13.30-15.00
	-Group 6 (period 3-4)			3-20	8.15-9.45	8.30-10.00
455304.0	Code optimization	5	Aspnäs	36-43	15-17, Fortran	13-15, Fortran
453506.0	Design methods for Energy Efficient Embedded Systems	5	Lafond	36-43	13-15, Algol	10-12, Algol
453600.0	Special Course in ES: Introduction to Many-Core Programming	5	Lilius Tsiopoulos	44-51	15-17, Cobol	15-17, Cobol

Embedded Computing - Spring 2016						
Code	Course	Credits	Lecturer	Weeks Period	Time and place Mon Tue Wed Thu Fri	
451000.0	Please notice that period 3 starts Thursday 7.1 on week 1 Project Course (continues)	Lecture rooms (110A/B, 115A, 332A, 347, K124B, K 126A&B, LT2 aud) are in the building Agora on the University Hill 10	Björkqvist L. Petre Truscan Rönholm	2-10		8-12, 115A
453502.0	Programming Embedded Systems	5	Björkqvist	2-10	10-12, 110B	
453503.0	Modeling of Embedded Systems	5	Lafond	2-20		13-15, 347
453306.0	Real-Time Systems	5	Lilius NN	11-20	15-17, 115A	10-12, 110A
453505.0	Multimedia Algorithm Implementation	5	Lilius	11-20	13-17, 115A	
454506.0	Applied Signal Processing	5	Toivonen	Not 2015-2016		10-12, 347

Algol, Catbert, Cobol, Dilbert (computer class), Fortran and Gamma are located in the ICT-building, Joukahainengatan 3 Salin and Ringbom are located in the Axelia II building, Biskopsgatan 8.
 Campus map: <http://www.abo.fi/public/en/media/2141/campuskartaengelska.pdf>

Registration in MnPlan is required **eight (8)** days before the examination. Examinations are held on Fridays at **12.30-16.30**. In the Autumn term 2015 examinations are held in auditorium Alpha/CT building. As from Spring term 2016 examinations are held in the building Agora, University Hill, 20014 Åbo.

o = Course Exam
x = General Exam
x/o = Course exam and general exam

Code	Course
455302.0	Advanced computer graphics and graphic hardware
456313.0	Algorithmr
456314.0	Approximation and randomized algorithms
457512.0	Business Intelligence
455304.0	Code Optimization
456508.0	Computability and computational complexity
456402.0	Computational modeling techniques (not held 2015-2016)
456506.0	Cryptography and Network Security (not held 2015-2016)
456302.0	Databaser
456512.0	Databases 2 (not held 2015-2016)
457513.0	Data Mining and Text Mining
456312.0	Datastrukturer (gamla studerande)
456312.0	Datastrukturer (nya studerande)
457307.0	Data warehousing
456311.0	Datornätverk
456301.0	Datorteknik
453501.0	Digital Television Techniques
456400.5	Distributed systems and algorithms
456516.0	Experimentation in Software Engineering
452302.0	Formella språk och automater
456404.0	Graph Algorithms
454300.0	Grundkurs i signalbehandling

