Opasraportti

ECTS Guide for the Faculty of Technology (2009 - 2010)

This is the ECTS Guide for the **Faculty of Technology** (also known as the ECTS Course Catalogue). It consists of four parts:

1) Information on Degree Programmes and Course Descriptions
2) Information on the University of Oulu
3) General Information for Students
4) General Description on Studies in the Faculty

1) Information on Degree Programmes and Course Descriptions

Through the links presented below you can find e.g. more specific descriptions of the programmes taught in the Faculty and their course information. NOTE that there are descriptions in English also on programmes and courses that are NOT taught in English. Please remember to check the language of teaching.

Department of Achitecture

Department of Electrical and Information Engineering

Mathematics Division

Department of Industrial Engineering and Management

Department of Mechanical Engineering

Department of process and environmental engineering

2. Information on the University of Oulu

3. General Information for Students

4. General Description on Studies in the Faculty of Technology

1. Faculty of Technology

The Faculty of Technology houses five separate departments:

Department of Architecture

Department of Mechanical Engineering

Department of Process and Environmental Engineering

Department of Electrical and Information Engineering

Department of Industrial Engineering and Management

In addition, the Mathematics Division of the Department of Electrical and Information Engineering and the Work Science Unit of the Department of Industrial Engineering and Management serve all the degree programmes of the faculty.

The administration of the faculty is run *by the Faculty Council ,* Dean and Vice-Dean, assisted by the Chief Administrative Officer and Chief Academic Officer acting as preparing and presenting officials. Elected for a period of three years, the 26 members of the council comprise 12 professors, 7 representatives of other staff and 7 students. It is chaired by the Dean, who must be a professor, with the Vice-Dean serving as Vice-Chair. Their term of office coincides with that of the council.

Duties and responsibilities of the Faculty Council include:

- promoting research and education within the faculty as well as formulating proposals and issuing statements thereon
- monitoring and evaluating the impact, productivity and economic efficiency of the faculty
- advancing collaboration and information sharing among different departments and faculties
- filling posts and making proposals for nominations
- approving plans pertaining to the activities, finances and human resources of the faculty
- deciding on detailed selection criteria
- making proposals to launch new degree programmes
- approving curricula for degree programmes, post-graduate programmes and other studies
- accepting dissertations.

The Dean is responsible for:

- coordinating strategic planning and leading faculty activities
- ensuring that the faculty meets is productivity goals
- promoting cooperation and communication both within the faculty and among the faculties of the university as well as coordinating departmental development activities
- dealing with vacancies and nominations
- accepting new students
- awarding degree certificates and non-degree graduate certificates

Each department is led by a Department Head and a Department Council, consisting of professors and representatives of other staff and students in accordance with the following scheme:

Department of Architecture	8+5+5
Department of Mechanical Engineering	11+6+6
Department of Process and Environmental Engineering	10+5+5
Department of Electrical and Information Engineering	12+7+7
Department of Industrial Engineering and Management	6+4+4

Its term of office coinciding with that of the faculty council, the department council is responsible for dealing with general administration and curricular policy. Thus, one of the duties of the council or the working groups under its auspices involves developing degree curricula.

Faculty Office

Linnanmaa, YT 103, Entrance R

Telephone (08) 553 1011 (telephone exchange) or direct dialling in 553 2001 and 553 2002, fax 553 2006

office hours 9:00 - 13:00

Dean:

LEIVISKÄ, Kauko, prof., tel. 553 2460; office hours upon agreement.

Vice-Dean:

SILVÉN, Olli, prof., tel. 553 2788

Chief Administrative Officer:

KUHALAMPI, Laila, MBA, tel. 553 2005

Chief Academic Officer:

WALLIN, Eero, Phil.Lic, tel. 553 2003

Training Coordinator:

SIMI, Outi, MA, tel. 553 2004

Data Systems Designer:

LAHDENPERÄ, Pentti, tel. 553 2012

Office:

RUNTTI, Liisa, Department Secretary (student services), tel. 553 2001

RIMPINEN, Helena, Study Secretary (student services), tel. 553 2002

Science Library Tellus:

Open Mon - Thur 8-19, Fri 8-16, Sat 10-15. Luna is closed on Saturdays. During summer: Mon - Fri 9-16, Sat closed.

Customer services tel. (08) 553 1090

http://www.kirjasto.oulu.fi/kirjastoyksikot/tellus/

e-mail: tellus.kirjasto@oulu.fi.

Science Library Tellus has facilities and rooms designated for collaborative work. All told, there are about 400 work stations at the disposal of students and staff.

In addition to housing literature on science and technology in both Finnish and foreign languages, the library's collections include all Master's, Licentiate and Doctoral theses produced at the faculties. While the standard loan period is 28 days, copies of course books in the reference collection are only available for overnight and weekend loans. Loanable copies of set books are located in the main library. Apart from books, Tellus subscribes to about 800 printed journals and magazines, whose loan period is 7 days. However, latest and current year issues are not loanable.

Through the Nelli Portal, access can be gained either via the university network or remotely to approximately 16 000 e-journals, 250 reference databases and 20 000 e-books as well as to reference books and dictionaries.

During their first year, students familiarize themselves with general library services, loan principles, library facilities and the OULA database. Courses on discipline-specific information retrieval methods follow in the second or third year.

Information Services at Tellus provide instruction and assistance in information retrieval within science and technology. In addition, information searches and literature surveys are conducted on request.

2. Admission requirements

General eligibility for higher education is given by the Matriculation examination and the upper secondary vocational qualification. These qualifications require at least 12 years of schooling. Equivalent foreign qualifications also give general eligibility for higher education.

Foreign students are elected to study at Master's level. The applicant is required to hold a Bachelor's level degree from an institution of higher education which entitles the applicant to apply for Master's level studies in his/her own home country. Also, degree programmes in the field of Engineering require from their applicants:

- either "very good" or "excellent" grades in Basic studies in Mathematical Sciences (e.g., mathematics, physics /chemistry) and
- the applicant should have a Bachelor's degree in Engineering, or equivalent degree, suitable for engineering studies, with "very good" or "excellent" grades.

The applicant is required also to command a sufficient level of English.

The required documentation for the application is:

- degree certification (Bachelor's and/or Master's) from a higher education institution,
- transcript of records from a higher education institution where the applicant has finished his or her degree,
- proof of English language skills, please refer to Language Requirements for more information,
- portfolio (only applicants for Architectural Design) which shows that the applicant has "very good" or "excellent" drawing and design skills
    - Portfolio is a printed document presenting a selection of the applicant's best academic and professional design projects and a short CV. Maximum size A4 (210 × 297 mm), maximum number of pages 20.
    - Digital portfolios will not be accepted.

3. Degrees and studies

As graduate degrees, the Faculty of Technology offers the lower university degree, or Bachelor of Science (Technology)/(Architecture), and the higher university degree, or Master of Science (Technology)/(Architecture), while its post-graduate degrees are the Licentiate of Science (Technology) and Doctor of Science (Technology)/ (Architecture). In addition, it is possible to obtain the Doctor of Philosophy degree.

Degree studies are regulated by the Government Decree on University Degrees (794/04) and the Degree Regulations for Technology degrees, which specifies degree requirements.

3.1. Graduate degrees

Studies leading to graduate degrees are organized in degree programmes. Having first taken the Bachelor's degree, students in the architecture programme go on to take the Master's degree in architecture, while students in the programmes for mechanical engineering, process engineering, environmental engineering, electrical engineering, information technology, information networks and production engineering take a Master's degree in technology.

All graduate degrees are modular in structure and comprise basic, intermediate and advanced studies as well as a thesis. The degree structure is shown in the figure below (p.7).

Education is organized in course units, which are either compulsory or elective. Each degree programme has a curriculum which specifies the range of courses students are required to take.

Credits are used to measure the student workload. The average workload for one academic year is 1600 hours, which corresponds to 60 ECTS credits.

3.1.1. Bachelor of Science (Technology/Architecture)

Education leading to a Bachelor's degree provides the student with:

- fundamental knowledge in the field of study as well as the ability to follow developments in that field;
- capability to understand scientific thinking and to use scientific methods; or the knowledge and skills required by artistic work;
- capability to continue to the higher university degree and the capability for continuing learning;
- capacity to understand and analyze the impact and applicability of technology;
- ability to participate in cooperative and goal-oriented teamwork
- capability to apply the acquired knowledge in working life;
- proficiency in Finnish and Swedish as stipulated in the Degree Statute, as well as proficiency in a foreign language;
- communication skills required by working life.

The credit requirement for the lower university degree of Bachelor of Science (Technology/Architecture) is 180. Studies are organized such that students can complete the degree within three years of full-time study.

Obligatory course units at the beginning of studies are common to all programmes, but towards the end of studies students select course units specific to their specialization option (architecture/technology).

A Bachelor's degree consists of the following elements (see figure below, p. 7):

- basic and intermediate studies, 100/120 cr
- supplementary module, 20/0 cr
- preparatory specialization module(s), 2 x 20 cr or 40 cr
- elective studies, 10 cr
- Bachelor's thesis (8 cr) with associated seminars and communication studies (2 cr).

3.1.2. Master of Science (Technology/Architecture)

Education leading to a Master's degree in technology or architecture provides the student with:

- good knowledge in the major subject;
- capacity to apply scientific knowledge and methods to topical tasks or to undertake independent, demanding artistic work as well as capacity for continuous learning;
- capacity to view problems within the field from the vantage point of users, technical and social systems and the environment;
- capability to function in working life as expert and developer:
- good language skills for national and international tasks; and
- capability for scientific or artistic postgraduate work.

Education provided by the faculty is based on scientific or artistic research and professional practices within the field.

The extent of the degree is 120 credits, and the studies are organized such that students can complete the degree within two years of full-time study.

Students pursue their studies in accordance with their specialization option.

A Master's degree consists of the following elements (see figure below, p. 7):

- specialization module, 30/40 cr
- advanced module or supplementary module, 20/30 cr

- supplementary module, 20/30 cr
- special module, 10/0 cr
- thesis, 30 cr.

If the selected special module is 20 credits in scope, it can be implemented as an extension of an advanced or supplementary module. In view of the restrictions above, the degree may comprise four 30 credit modules.

Course units must be selected such that the scope of advanced studies is at least 60 credits, including the thesis (30 cr).

Master of Science (Technology/Architecture) degree, 120 credits, 2 years

Thesis 30 cr
Supplementary module 20/30 cr
Special module 0/10 cr
Advanced module 20/30 op or Supplementary module 20/30 cr
Specialization module 30/40 cr

Bachelor of Science (Technology/Architecture) degree, 180 credits, 3 years

Thesis (8 cr) and accompanying seminars or communication studies (2 cr)	Elective studies 10 cr
Preparatory specialization module 20 cr	Preparatory specialization module 20 cr
Supplementary module 20 cr	
Basic and Intermediate studies 100 cr	

3.2. Post-graduate degrees

As post-graduate degrees, the faculty offers Licentiate of Science and Doctor of Science as well as Doctor of Philosophy. Post-graduate studies consist of major, supplementary and general studies and include either a Licentiate thesis or a doctoral dissertation.

There are two ways of obtaining the degree of Doctor of Science: either after a Licentiate degree, in which case the candidate must write a doctoral thesis and publicly defend it, or directly after the Master's degree. In this case the candidate must first complete the study requirements for a Licentiate degree, without a thesis, and then write a doctoral thesis and publicly defend it.

All students will prepare a personal study plan, which must be approved by the faculty.

Individual course units and study modules included in degree curricula are graded on a scale of 1 - 5, while study blocks and the thesis are graded Pass/Pass with distinction.

Further details regarding post-graduate studies can be found in degree regulations and instructions for post-graduate students, which are available from the faculty office. In addition, they are posted on the faculty's home page. Further information is also given by the professors and the Chief Academic Officer.

3.3. International student exchange

Students at the University of Oulu have the option of substituting part of their programme requirements by studying abroad as exchange students. Usually, the duration of an exchange period is 3 - 12 months, and students become eligible for exchange programmes after having completed at least one year of studies. Students may select from among several programmes (ERASMUS, NORDPLUS, bilateral exchange agreements, ISEP, UNC-EP consortium, FIRST and north2north) and hundreds of universities and institutes of higher education. Application dates vary from programme to programme and further information is available on the web pages of the departments and the university's International Relations office. Every term, International Relations arranges information sessions to all interested students. In addition, the various departments also hold their own information meetings.

For further guidance, students may consult each department's International Studies Coordinator or the university's International Relations (kv-yksikkö) office, situated on the premises of the Department of Chemistry. In principle, the student's own department coordinates Erasmus exchanges, the Faculty of Technology Nordtek exchanges and International Relations all other programmes.

Exchange students engage in education provided by the receiving university, live in student housing and participate in student life on equal terms with their native counterparts. The thus acquired credits will be transferred to the study record at the University of Oulu in accordance with the practices of the individual departments. It is therefore essential that outgoing students carefully draft a study plan and have it approved before going abroad. Assistance will be provided by the International Studies Coordinator in each department.

A student may go on exchange several times. However, it is not possible to receive more than one grant per exchange programme. Sources of funding are the undergraduate allowance, larger housing allowance and study loan, complemented by an exchange grant, whose amount depends on destination and programme. Students on exchange programmes are exempted from paying potential tuition fees.

For further information about international student exchange opportunities, see http://www.oulu.fi/intl/indeksi.html.

3.4. Instructions and regulations concerning studies

General instructions regarding studies in the faculty are given in the degree regulations. They are complemented by departmental instructions and procedures, which will be specified later in sections presenting the different departments.

Information on topical and important matters will be posted on notice boards. This information includes beginning dates for lecture series, examinations, examination results and diverse changes which may have occurred after the publication of the study guide. Students are therefore advised to check notice boards and the department's web site on a regular basis.

3.4.1. Credit record

The university uses the OODI student data system, which contains information about students, study rights and student performance.

Each student's study credits are registered on the credit record. Although the procedure may vary from one department to another, most departments process credit transfers centrally at the department office. In case of inconsistency, the student should contact the department (office) responsible for providing the education in question. With tuition offered by another faculty, the student should contact the institution providing the teaching.

A transcript of the credit record is available from the faculty office or from the university's Student Services office. Transcript requests can be processed in one day and are ready for collection the next day, but delivery by mail will take three days.

Students of architecture and of process and environmental engineering may obtain a transcript from their department office.

Use of WebOodi, the student interface to the Oodi student data system, requires a valid user name.

WebOodi allows students to update their contact information and to register at the university. They can also browse through their own credit record and order a transcript via e-mail. In some departments, students can even register for an examination via WebOodi or give feedback on tuition.

More information on WebOodi can be found at https://weboodi.oulu.fi/oodi/.

3.4.2. Examinations

A list of examinations will be posted on the notice boards of all departments well in advance of the beginning of a new term. They can also be accessed on the department's web site.

The preparation, administration and grading of examinations is governed by the regulations of the University of Oulu regarding teaching and students. This document can be accessed at www.oulu.fi/yliopisto/, by clicking 'For Students' and then following the link 'Rules and regulations concerning degrees, teaching and students'.

3.4.3. Selection of specialization option

Students select their specialization option as specified by the department offering the degree programme no later than during the third year of study. Departments are responsible for organizing information sessions focusing on presenting the different options on offer and the application procedures.

If the number of applicants exceeds the number of available places, selection of students will be determined on the basis of academic performance and acquired experience in the field.

3.4.4. Transfer and accreditation of credits

Arrangements for the recognition of student's prior learning are as follows:

- student's prior learning is assessed in relation to the learning outcomes determined in the curriculum of the programme or its study units,

- prior learning acquired through formal studies in relation to the study unit in question is mainly assessed on the basis of diplomas and certificates

- the faculty requires a display of learning in order to recognise of prior learning through non-formal studies and work or other experiences. The display usually is in the form of an examination, but the programme or the teacher responsible for a certain unit can also permit a learning portfolio, learning diary, description of work related learning, interview or some other means as an adequate form of the display

- a study unit that has already been assessed and acquired through formal studies, will not be assessed again when it is accepted as part of the degree through the recognition of prior learning

- each student has the responsibility for showing adequate diplomas, certificates and displays, in other words recognition process is based on the application made by the student

Students may receive credits for previous studies undertaken at another university or institute of higher education according to the above mentioned principles, provided that these studies are equivalent in content to course units in the department's curriculum. Course units falling outside this requirement can only be accredited for very compelling reasons.

Faculty-wide instructions can be found in the degree regulations and specific decisions of the faculty. Students wishing to use previous studies at another faculty, university, university of applied sciences (polytechnic) or other institute of higher education to count toward graduate degree requirements in the faculty are advised to initiate the accreditation process as soon as possible. Further information can be obtained from the department office and the Student Advisor.

3.4.5. Internships

To promote students' professional skills, Bachelor of Science programmes include a practical training period, known as an internship, with a minimum scope of 3 credits. It is intended to provide students with an opportunity to familiarize themselves with the physical and social environment, traditions, jargon, problems and solutions of their future profession.

The Master's degree requires advanced practical training worth a minimum of 3 credits, allowing students to translate theoretical knowledge to practical use.

This internship has detailed programme-specific requirements regarding its scope, objectives, contents and modes of study. These requirements are presented in the section introducing the different departments.

A Training Coordinator is assigned to coordinate internship activities under the faculty's purview, provide counselling for national and international programmes of training and act as contact person for the IAESTE programme. Moreover, each department has its own dedicated Training Counsellor offering programme-specific information on internships.

3.4.6. Thesis and maturity test

Bachelor's thesis

A module within intermediate studies, the Bachelor's thesis may comprise one or more course units. 8 credits in scope, it is graded either Pass or Fail.

By completing a thesis, students demonstrate their ability to apply acquired knowledge to solving a technical problem. It also presents students with an opportunity to analyze, process and document information.

Students receive credits for this module once they have taken the course units therein and passed the maturity test.

More detailed instructions are available from the departments.

Master's thesis

A central part of advanced studies, the Master's thesis is worth 30 credits. Instructions for writing a thesis can be obtained from each department's office, specifying how to start work, select a topic, seek guidance and complete the thesis. As a rule, theses are written in Finnish or Swedish, but on application the department may grant a student permission to write in some other language. A completed thesis is approved by the department council.

Maturity test for the Bachelor's degree

Students are required to take a written maturity test to demonstrate their language skills and to show their mastery of the topic of their thesis. Three pages in length, the maturity test is taken in a supervised environment and written in the language in which the student has received his or her education in Finland. Graded Pass or Fail, the content and language of the thesis will be assessed by the thesis supervisor.

Students are eligible to take the maturity test once they have fulfilled all other degree requirements. The test is taken in conjunction with an ordinary examination, and registering follows the normal procedure.

Maturity test for the Master's degree (Technology/Architecture)

For the Master's degree, students must take a written maturity test to demonstrate their language skills and to show their mastery of the topic of their thesis. This maturity test is taken in the language in which the student has received his or her education in Finland. The requirements of the test are the same as for the maturity test for the Bachelor's degree.

If a student has demonstrated his or her language skills in connection with the Bachelor's degree or a previous university degree, the language of the maturity test will not be evaluated, only the contents.

3.4.7. Degree certificate

Application for certificate

Having completed the course requirements for the Bachelor's or Master's degree, including practical training, and having completed a Bachelor's thesis or presented a final Master's thesis to the supervisor, students may submit an application to the faculty for a degree certificate. A special form must be used, which is available from the department office.

The application form must be accompanied by a transcript of the credit record and other documentation requested by the department. Since processing of these documents takes some time, they must be returned to the department office well in advance of the department council's meeting.

Degree certificates are generally awarded once a month during the academic term. These dates are posted on notice boards. The thesis must be approved at least 14 days before the awarding of the certificate.

Although certificates are awarded in graduation ceremonies, they can also be collected from the department or the faculty office or even mailed to the recipients. How the applicants wish to receive their certificates must be specified in an appendix to the application form.

Accompanying the degree certificate is the so-called Diploma Supplement. Intended particularly for international use, it contains information about the university and the degree, such as its standard and status within the Finnish educational system.

Grading

Graduate degrees, study blocks, (most) individual course units and the Master's thesis are graded on the following scale: Satisfactory (1), Very Satisfactory (2), Good (3), Very Good (4) and Excellent (5).

Overall grades for study blocks are determined as follows:

Satisfactory (1)	1,00-1,49
Very Satisfactory (2)	1,50-2,49
Good (3)	2,50-3,49
Very Good (4)	3,50-4,49

Excellent (5)	4,50-5,0

Bachelor's thesis and maturity tests are graded Pass or Fail.

Individual course unit units may also be graded using the Pass/Fail scale.

Proficiency in Finnish and Swedish is assessed on the scale Satisfactory/Good.

On the numerical scale, 0 corresponds to the grade Fail.

Excellent Bachelor's degree

If a student has an excellent academic record and has also completed a Bachelor's thesis, the department may decide to recognize and honour the achievement by awarding the student a degree with the grade Excellent.

This distinction may be given when the weighted average of all course grades in the degree programme, except the Bachelor's thesis, is at least 4.0. Course units graded Pass/Fail will be ignored.

However, the department should not make the acknowledgment when more than half of the degree requirements, excepting the Bachelor's thesis, have been completed at another institute of higher education.

Outstanding Master's degree

If a student has an excellent academic record and has also demonstrated exceptional maturity and judgement in Master's thesis, the department may decide to recognize and honour the achievement by awarding the student a degree with the grade Outstanding.

This distinction may be given when the weighted average of all course grades in the degree programme and the Master's thesis is at least 4. Since the calculation is made without rounding, the average must be at least 4.00. Course units graded Pass/Fail will be ignored in this calculation.

However, the department should not make the acknowledgment when more than half of the degree requirements, excepting the Master's thesis, have been completed at another institute of higher education.

3.5. Student counselling

3.5.1. Study planning

This study guide has been compiled to assist students in planning and conducting studies. Start the planning process by reading Chapters 1, 2 and 3 of this guide as well as the sections on your own department and degree programme. This will give you a good orientation to your studies.

In addition, you'll receive counselling and support from the department's **Student Advisor**, who can be a Department Secretary, Student Affairs Secretary, Lecturer, Coordinator or Assistant. The advisor's name, office hour and address will be posted on the notice boards and web pages of the department and faculty at the beginning of each term. Duties of the advisor include providing personal counselling regarding studies in the department, application procedures and the selection of course units and specialization options.

ECTS departmental co-ordinators

- Department of Architecture; Coordinator Leena Kuorelahti
- Department of Mechanical Engineering; Lecturer Reijo Saari
- Department of Process and Environmental Engineering; Coordinator Saara Luhtaanmäki
- Department of Electrical and Information Engineering; Coordinator Maritta Juvani
- Department of Production Engineering and Management; Coordinator Mirja Väänänen

Teachers will provide information and guidance in their own fields.

Student advisory staff can be contacted in all matters relating to studies, such as study rights, degree regulations, small-group tutoring and student selection. The Chief Academic Officer is available for consultation in the faculty office during office hours.

Remember to check traditional and electric notice boards regularly for the latest news!

Also remember to check the university's English web site for students, which contains information on a number of topics, as well as links to the pages of International Relations and Career Services.

3.5.2. Small-group tutoring

Aimed at all new students, small-group tutoring seeks to familiarize new students with academic studies, the academic learning environment and higher education. Consisting of about 10 members, these groups are supervised by a senior student. Students are divided into groups at the initial information meeting in the autumn. In terms of curriculum, small-group tutoring forms part of the Studies and Planning of Studies course unit.

3.5.3. Teacher tutoring

Teacher tutoring has been launched as a novel mode of counselling in most departments of the faculty. Its fundamental goal is to provide a means of extending the provision of support to students by assigning a "personal teacher" to each new student. This teacher will offer guidance and advice in all matters relating to studies.

Opintojaksojen kuvaukset