

CURRICULUM

INFORMATION TEHCNOLOGY Centre for Business and Engineering

Information technology has become an integral part of modern society and its more versatile use is expanding into new fields. It creates opportunities to implement new solutions which fulfill the increasing demands. All this requires good professional expertise. Education in the field of information technology gives you a solid and broad base to understand modern information technology as a whole. In Karelia University of Applied Sciences you will complete the degree in information technology in modern multiprofessional learning environments closely connected with working life. During your studies you will make use of various learning methods and modern technology. As a student of information technology you will network with the expert communities in the region and develop to be an expert yourself.

Degree

Degree Title	Bachelor of Engineering
Extent	240 cre/ 4 years

Typical Tasks for Graduates

As an information technology engineer you will work in various tasks in industry, business and administration in designing, selling, production management, supervising and expert duties or as independent growth entrepreneur. As an engineer specialized in software technology you will work in various duties in software production. Specializing in information technology services gives you versatile skills to work in planning, implementing and maintenance tasks in a company or organization.

Implementation of Studies

Studies will be implemented as contact, blended and virtual studies. You will work in versatile learning environments using diverse development tools and technologies. Learning in project studies is closely connected to real working life development tasks and they are implemented in co-operation with the local companies. During your studies you will work in project on various subjects both in your degree programme and together with local companies. You will also co-operate with students from other degree programmes during your studies.

Structure and Content of Studies

The degree contains common core and complementary studies enhancing your key and specialized competences. The extent of common core studies in information technology is 195 credits and that of complementary studies 45 credits. The common core studies include 70 credits of project studies, 30 credits of practical training and the thesis of 15 credits.



Project studies are an important part of your studies. They can facilitate the adjustment of teaching to constantly changing requirements and challenges in the field. In project studies you can choose between projects emphasizing programming or data systems. The project organization is formed by students operating in various roles. With targeted teaching the teachers ensure the sufficient starting skills of the students before the actual project is started. The projects are relatively comprehensive, but they proceed in phases, applying modern agility and in the meantime you will get the credits. Uniform criteria are used in assessment, which ensures equal grading.

The complementary studies mostly contain modules of 15 credits. The following modules suit especially those who study information technology. These studies are implemented during the $2^{nd} - 4^{th}$ years of your studies:

- Development of Electronic Business
 - Electronic Business
 - Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM)
 - Data Administration and Data Security
- Development of Applications
 - Web-development and Game Programming
 - Usability and Artificial Intelligence
 - Corporate Systems and Graphics Programming

In addition, you can choose studies from the common complementary studies in Karelia University of Applied Sciences:

- Management and Supervision
- Business Competence and Entrepreneurship
- Operations Management
- Customer-Oriented Marketing
- Innovation and Productisation
- Financial Administration and Taxation in Practice
- Geoinformatics
- Expertise Pertaining to Russia
- Developing Competence in Ageing
- Optional Language (Spanish, Chinese, French, German, Russian)
- Refresher Courses in Languages and Mathematics (3-9 credits)
- Training Programme of Joensuu Sports Academy (3-15 credits)
- Participation in Peer Tutoring and Student Union Activities (3-15 credits)

Complementary studies have been scheduled to take place in the autumn and spring semesters of the second year and to the autumn semester of the fourth year. Additionally, complementary studies can be taken during summer months. Participation in Sports Academy training, peer tutoring or student union activities as well as optional language studies can be spread over several semesters. If the studies mentioned above do not match with your professional objectives, you can discuss other alternatives you're your teacher tutor or study counselor.

INFORMATION TECHNOLOGY

Bachelor of Engineering | 240 cr / 4 years



30 сг

Software Engineering Competence | Data Systems Competence | Data System Life Cycle Competence | Business Competence | Mathematic-Scientific Competence | Ethical Competence | Internationalisation Competence | Learning Skills | Innovation Competence | Work Community Competence

4th year **APPLIER, DEVELOPER, MULTIDISCIPLINARITY**

E-Business Project	15 cr	Thesis	15 сг
Complementary Studies	15 сг	Career Planning and Development	1 сг
		Advanced Professional English for IT Engineers	3 сг
		Expert Communications	3 сг
		Release Project	8 сг

Brd year **DESIGNER, MORE COMPLEX UNITIES**

Systems Project	13 сг
ICT Project	13 сг
English for IT Engineering	З сг
Career Planning and Development	1 сг

Work Placement

2nd year **EXPERT, SIMPLE UNITIES**

Swedish for Information Technology	5 сг	Planning Project	11 сг
Information Technology Project	10 сг	Career Planning and Development	1 сг
Complementary Studies	15 сг	Discrete Mathematics	3 сг
- Web-development and Game Programming		Complementary Studies	15 сг
- Electric Business - Usab		- Usability and Artificial Intelligence	
- Enterprise Resource Planning (ERP) and		and	
		Customer Relationship Management	(CRM)

1st year **NOVICE, FAMILIARIZING WITH THE FIELD**

Software Engineering	5 сг
ICT Basic Services	5 сг
Career Planning and Development	2 сг
Reporting and Written Communication	2 сг
Mechanics, Electricity and Thermophysics	6 сг
Algebra and Geometry	5 сг
English for ICT Engineering	3 сг
Software Tools	2 сг

Oscillation and Wave Physics	З сг
Calculus	5 сг
Planning and Implementation of	
Information Systems	7 сг
Gnu/Linux Basic Services	5 сг
Logic	2 сг
LAN Technologies	5 сг
Databases	З сг

www.karelia.fi



Competence Requirements

Area of	Description of Competence
Competence	Bachelor of Engineering (UAS)
Software Engineering Competence	 masters software programming : understands the logic in programming and knows the most common algorithms and data structures knows how to plan, program and test knows the principles of data storing, planning and implementation knows how to operate in programming projects considering the needs of the company and client
Data Systems Competence	 understands the role of data systems services as a support for business activities knows how to plan, acquire and maintain data systems according to the requirements of the organization knows how to operate as member of work community both as a supervisor and as an expert knows how to operate in various roles in data systems development projects has basic readiness to operate as a service provider in data technology
Data System Life Cycle Competence	 understands the role of data systems services as a support for business activities knows how to plan, acquire and maintain data systems according to the requirements of the organization knows how to operate as member of work community both as a supervisor and as an expert knows how to operate in various roles in data systems development projects has basic readiness to operate as a service provider in data technology
Business Competence	 understands the central processes and activities in business understands the significance of data technology as a part of an organization and its role in developing activities knows how to develop business processes and look for support for solutions in data technology understands the meaning of contracts, quotations, licenses and copyright in his/her own work
Mathematic- Scientific Competence	 knows how to apply natural scientific thinking and common regularity in technical designing, implementation, product development and problem solving is able to communicate with actors in other fields of engineering



Ethical	- is able to take responsibility for his/her own actions and their
Competence	consequences
	- knows how to operate according to the professional ethic principles of
	one's own field
	 is able to consider various actors in working
	 knows how to apply the principles of equality
	 knows how to apply the principles of sustainable development
Innovation	- is able to work in projects
Competence	 is able to carry out research and development projects and to apply
	existing knowledge and methods of one's field
	- is able to find customer-oriented, sustainable and profitable solutions
Internationaliza-	- has the language competence necessary for the work in the field and its
tion Competence	development
	- is able to cooperate with people from different cultural backgrounds
	- is able to take into account the opportunities and effects of
	internationalisation
Learning Skills	- is able to assess and develop one's competences and learning methods
	 knows how to retrieve/search, process and analyse information critically
	- can assume responsibility for team learning and knowledge sharing
Work Community	- is able to function as a member of a work community and to contribute to
Competence	its work well-being
	- is able to function in various communication and interactive situations at
	work
	- is able to use information and communications technology in the tasks of
	one's field
	- is able to establish personal occupational contacts and to work in net-
	works
	- is able to make decisions in new and unforeseen situations
	- is able to manage one's work and to work independently in tasks requiring
	expertise
	 has developed entrepreneurial skills