

LAUREA UNIVERSITY OF APPLIED SCIENCES

Degree Programme in Business Information Technology (Laurea Kerava, tiko), NTE06SN

CURRICULUMS AT LAUREA

Learning Concept at Laurea

Universities of applied sciences have three tasks set by law: research and development, regional development, and pedagogy. The integration of these tasks has led Laurea to seek solutions that optimise our ability to respond to challenges. The aim is to produce graduates who are investigative developers of their work and of the workplace. We also hope to produce research-based development initiatives for the competence required at work, with visible effects in our operating environments.

As members of an information society, we are caught in a flood of information. Information no longer has to be provided; the most important thing is to learn to process and filter it to obtain important data to use and apply to one's own learning and development projects. Laurea also places importance on ensuring that students grow into skilled experts. Participation in development projects allows students to handle real work processes and to learn to use tools as concepts and skills. The work-oriented development projects provide learning for individuals and for the target community. They also generate new knowledge for developing and reforming the labour market.

As members of an information society, we are caught in a flood of information. Information no longer has to be provided; the most important thing is to learn to process and filter it to obtain important data to use and apply to one's own learning and development projects. Laurea also places importance on ensuring that students grow into skilled experts. Participation in development projects allows students to handle real work processes and to learn to use tools as concepts and skills. The work-oriented development projects provide learning for individuals and for the target community. They also generate new knowledge for developing and reforming the labour market.

Learning environment

Laurea's learning environment facilitates competence development for learners, organizations, region and partners. The learning environment is a physical and psychological space that expresses the current culture, nature, time, community and practices of development work. Thus, it forms a comprehensive operating environment for competence development. The aim of the learning environment is to facilitate the achievement of learning results while supporting the generation of new know-how and interaction within the operating environment. The learning environment is an implementation of Laurea's target-oriented development.

The learning environment utilizes internal and external networks and is in constant interaction with the world of work. New knowledge and skills are acquired in authentic problem-solving and development tasks, which make the complexity of the real world an object for competence development. Regional influence increases through enriching communities and the networks that they form. Students use projects to learn the basics of networking, social skills and communication with experts in the field. The meeting points between the industry and the study units are significant in terms of the growth of expertise and competence development. Students grow into developers by carrying out development tasks and by interacting in competence networks.

Students make use of diverse information sources and tools in their studies. Interactive learning environments are used to create a framework for structuring learning so that it offers situations, challenges and tools that help learners to utilize their own thought resources. The learning process becomes a continuous problem-solving process, with a focus on research, development and generating new competence. Conscious and systematic development work is used to formulate ideas and practices that boost development, and to generate new know-how. The result is a creation, a new operating method, a model or a product.

The creation of innovative processes is easier in structures that allow space for informal creativity, innovation and the promotion of things that motivate different participants internally. This work is characterised by communality and a socio-cultural environment for learning. It is important to create a spirit of development.

Development work takes place in projects that combine competences from various fields of study. Project teams consist of students, trainees, lecturers and workplace experts whose competences interact at the practical level. Students use projects to complete study units, job placements or theses. Lecturers do not organize and set targets for the project teams' activities in advance; instead, the team members take joint responsibility for this. Students

receive experience of the culture of expertise and of working as equal experts. They increase their self-management and set their own targets. Thus projects facilitate an unlimited learning process, where no glass ceilings are set by curricula, textbooks or instruction. Learning by Developing enables individuality in learning.

Practical applications of innovative learning environments include initiatives and projects carried out as innovative environments in networks, as well as various operating spaces designed for learning and development, skill hubs and development labs. Work consists of collaboration based on shared expertise, which is supported by methods of sharing competence, such as tutoring, lecturing sessions, demonstrations, team meetings, feedback events and seminars.

Students

In Laurea's work-oriented research and development projects, the concept of partnership implies cooperation between lecturers, experts from the labour market and students. The cooperation is based on responsible commitment to the project. All participants are seen as learners, because the development projects aim to produce change and generate new things. Partnership also means mutual respect and appreciation for diverse skills. The progress of the development project depends on sharing competence and building new competence out of different areas of expertise. Students participate as partners who increase their competence by learning how to use new tools and by taking part in various research and development initiatives. Competence is founded on research-based knowledge, understanding the professional context, handling the necessary tasks and managing various workplace situations, to the extent that these skills are needed for each student's degree. In the development projects, students learn as individuals while also participating in shared learning and in producing new know-how.

Lecturers

The role of lecturers in development projects can be described as that of an expert, a participant and a pedagogical leader, who facilitates the students' growth and development into experts in their fields. Laurea's lecturers are in other words researchers and developers, influential players in regional development and teachers.

Published reports by those teachers that work as researchers demonstrate the effectiveness of development projects as reformers and developers of competence in the labour market. Some teachers act as developer and are responsible for identifying and refining the processes of development projects. The third role of lecturers is in workshops, which transmit and share cultural knowledge, and provide students with tools. Lecturership also involves partnerships with the labour market. The industry experts participating in development projects contribute the knowledge contained in workplace competence, while lecturers ensure that evidence-based data are available for explaining this competence. They join forces to produce new know-how for developing and reforming the labour market.

Competence evaluation

The evaluation of competence in Learning by Developing directs future choices and demonstrates how well targets have been met. Competence is seen on the one hand as knowledge of information, skills and values, and on the other hand as experiential competence, which includes individuals' and their community's know-how. Evaluation in a development project looks at individuals' and the project community's learning, the progress and significance of different processes, and the results achieved.

Evaluation is based on the objectives provided in the competence-based curriculum. These objectives define the requirements that students have to meet to achieve their degrees. The generic competences describe the competences shared by all Laurea students as meta-competence placed in a professional context. Themes, on the other hand, define the substance of subject-specific competence, which is deepened by the generic competences. The generic competences build a level of education needed at a higher education institution and at work; meanwhile, the themes build competence needed for employment. The generic competences are defined on three levels. Students choose the level they wish to achieve in each generic competence together with their tutors, and these desired levels are used as a basis for the study plan. Progress in the generic competences is measured qualitatively through portfolios. The study units are graded on a scale of 1 to 5. These grades are shown on the students' degree certificates.

LAUREA'S GENERIC COMPETENCES

Laurea's generic competences

In addition to core competence in the field, five general areas have been defined at Laurea which are important for professionals in all areas to master. These are called generic competences. The generic competences are developed during the studies, and the level of competence is also evaluated. The curriculum's generic competences have been determined by analysing shared competences needed in different employment sectors in the future. The shared generic competences for all degree programmes are:

- ethical competence
- globalisation competence
- innovative competence
- reflective competence
- network competence

Generic competences are closely linked to the contents of the study units.

The generic competences are structured through levels. Each competence has been categorized further, comprising the personal competence level, organisational competence level and social reform level. The targeted generic competence levels have been defined in the curriculum for each degree programme. All Laurea BA students must reach at least the personal competence level in all generic competences. In the case of many generic competences, the social reform level cannot be achieved until in connection with a Master's degree.

Ethical competence

Morals refers to an individual's conception of right and wrong, whereas ethics refers to moral choices to which the individual is consciously committed. Ethics is a systematic attempt to understand moral conceptions. It consists of ethical rules and principles, virtues and values. In the generic competence of ethical competence, morals and ethics are fundamentally linked together, because students' moral competence forms a basis for their ethical competence. Ethical competence consists of four components: (1) ethical sensitivity; (2) ethical motivation; (3) moral-ethical problem-solving; and (4) ethical implementation skills.

In order for student activities to be ethical, they must be sensitive to ethical problems contained in different situations. Ethical sensitivity refers to the ability to recognise the special characteristics, needs, rights and responsibilities of each party. It includes awareness of how one's own actions affect other people's well-being, and involves envisaging and anticipating various action plans and their consequences for each party. Empathy and the ability to put oneself in another's position form the core of ethical sensitivity. Students also need knowledge of the special characteristics of major customer groups and ethical problems in the sector. Ethical sensitivity is characterised by professional interaction skills, which are a target for active development throughout each degree.

Ethical motivation refers to committing to moral-ethical values and taking responsibility for one's own actions. The students' responsibility grows from the personal level to the communal and social levels. In order to develop their ethical motivation, they must also know the value bases of their fields and participate in discussions on values.

Moral-ethical problem-solving refers to the ability to solve ethical problems through critical argumentation. It requires consideration of various possible solutions, as well as knowledge and application of the ethical norms and approaches of the field. Continuously developing competence includes the skill to solve problems in interpersonal relationships, work communities, communities and the global environment, and the ability to justify these solutions.

Moral implementation skills refer to the ability to take target-oriented action to solve ethical problems (negotiation and conflict-solving skills), as well as the courage to act in accordance with ethical values, even in complex situations. In order for professional activities to be ethically sustainable, competence must be developed in all these areas of ethical competence..

Levels of ethical competence

At the personal competence level, students are able to:

- reflect on their own values and the consequences of their actions on other people's well-being
- work with a basis in the profession's values, following ethical principles
- apply the field's ethical norms to problem-solving

- examine situations from different parties' perspectives
- work in a tolerant and understanding way in multicultural networks
- apply ethical principles to R&D projects

At the organisational development level, students are able to:

- take into account the special characteristics, needs and rights of major customer groups in their work
- build customer-oriented interactions and work dialogically
- assume responsibility for the welfare of the community and the ethics of the work done
- examine ethical issues from the point of view of the organisation and the community
- develop fair methods of proceeding in their work

At the social reform level, students are able to:

- critically reflect on their own attitudes and prejudices
- actively participate in social debates on values
- assume responsibility at social and global levels
- make arguments in favour of fair social and global changes
- solve conflicts and influence issues

Globalisation competence

Globalisation refers to series of events and processes that cause the world to merge into a single, all-encompassing social system. In other words, globalisation refers to the processes by which things acquire worldwide scope. 'Globalised' refers to worldwide phenomena and the results of the globalisation process: a fully integrated world. Sustainable development in relation to globalisation is a globalised political programme, whose aim is to increase welfare with environmental responsibility, within the limits of environmental capacity.

Global interaction can be classified as **financial, cultural, political or social interaction**. The science of globalisation also includes questions of **ecology and biology**. Sustainable development brings all these dimensions together, with the aim of observing economic growth, cultural diversity, social welfare and ecology in politics and practice.

Levels of globalisation competence:

At the personal competence level, students are able to:

- make use of international sources of information in the field
- take into account the effects and opportunities of multiculturalism and internationalisation on their fields
- recognise the significance of their professional actions in relation to global interactions and sustainable development
- evaluate their own value bases from the point of view of sustainable development and globalisation, and apply them to their work

At the organisational development level, students are able to:

- take into account the effects of their own sector and its organisations on sustainable development, responsibility and international connections
- promote the values of environmental and social responsibility in organisations in the sector, taking into account global interactions
- apply responsibility for sustainable development to an organisation in the sector
- work in international networks

At the social reform level, students are able to:

- recognise the global nature of social issues and the characteristics of sustainable development
- critically evaluate social values and practices from the point of view of sustainable development, taking into account global interactions

- make arguments at social level, applying the principles of sustainable development and taking into account global effects

Innovative competence

All of the processes of our modern society are undergoing constant changes. Laurea has followed the examples of the EU and Finland in choosing a positive attitude towards change as one of its strategic operating methods. The aim is not just to cope with change but also to see it as an opportunity, which requires constant innovation in order to be embraced. According to these strategies, future professionals must have abilities in innovation, so it is essential to include innovative competence in Laurea's generic competences.

Innovation refers to a novelty that is implemented to generate added value productively. There are three separate elements to this definition: 1) novelty; 2) implementation; and 3) added value. In other words, an idea by itself is not an innovation, nor does a wealth of ideas make a person an innovator.

The innovation process can be divided into three stages: continuous evaluation of the situation; generating innovative ideas; and carrying out an implementation project. Innovation can take place on five levels: individual, team, organisation, network and societal level.

At the personal innovation competence level, students learn to be innovative reformers at individual and professional group levels. In addition, they should be able to participate in the implementation of change initiatives in their immediate work environments.

At the organisational innovator level, students can start up innovation work in their own teams and use all the innovation tools that exist in the organisation's framework. In the increasingly network-oriented operating models of the future, organisational innovators should also support active reforms as part of an informal network.

At the social innovator level, students can complete the tasks of the previous levels as well as continuously monitor and analyse the operation of networks and the society. They can take larger frameworks into account in all change processes and motivate people to work towards shared goals.

Levels of innovative competence:

At the personal competence level, students are able to:

- analyse their own thought processes, knowledge and actions
- plan, organise and develop their own work
- set targets and turn them into appropriate, concrete actions
- come up with new ideas, working creatively, expressing their thoughts and convincing others to participate in developing them
- use various ideation methods
- manage themselves, work during change and in diverse projects
- conduct intermediate and final evaluations of a project

At the organisational development level, students are able to:

- monitor and analyse an organisation's work processes and results
- use benchmarking in developing their work
- use diverse teamwork methods
- lead projects, processes and networks or participate in leading them in ways that inspire commitment in others
- link innovation to an organisation's strategic targets
- take into account the nature and demands of innovation work

At the social reform level, students are able to:

- gather ideas from a network, convince others of them and link them to the social framework
- ensure that participants in innovation work are sufficiently committed (guidance, encouragement)
- create and commercialise innovations
- participate productively in innovation networks, and identify and investigate innovation mechanisms

Reflective competence

Reflection constitutes critical analysis of the principles, starting points and consequences of one's actions. Reflection can target the present moment or the past.

In the reflection of earlier experiences, an individual gives meaning to events. A new meaning makes development possible. As cognitive skills and concepts develop, an individual is able to deal with broader entities, differentiate phenomena and observe new ones more clearly.

In reflection of the present moment, simple, previously unconscious routine actions become conscious activity. In critical reflection, an individual's whole meaning-producing perspective changes as tacit knowledge becomes visible, transforming learned matters into action. Critical reflection implies a relationship with communities, concepts and theories.

Thus reflection is a thought process. Reflection is dialogue and problem-solving based on proven arguments. In open dialogue between people, different perspectives provide new challenges. Learners participating in dialogue can look at different perspectives in order to create shared meanings. Deep thought gives time and space for solving encountered problems by examining and investigating them using research methods.

In order to extend their understanding of themselves in relation to other students, customers, work communities or writers, students need skills in self-examination, critical peer evaluation and analysis of their own resources. Self-management emphasises communality and shared participation. Critical awareness helps students to identify their own learning opportunities and the factors that affect them. Shared reflection on their own activities allows students to test their thoughts and share them with others. Reflection means professional growth and competence led by human metacognitive abilities. In the process of becoming an expert, reflection forms part of an investigative and developmental approach towards work.

Levels of reflective competence:

At the personal competence level, students are able to:

- evaluate their own learning and competence and formulate a personal development plan
- identify development challenges and understand problems
- develop their competence independently and with others, and share what they have learnt in a work community
- assume a role in a group/team
- acquire and analyse information systematically

At the organisational development level, students are able to:

- work dialogically, collaboratively and with self-evaluation
- evaluate their self-management and professional competence as part of a community
- evaluate their own work as part of a group, community or professional field
- work during change, identifying and making use of various opportunities for learning and action
- critically justify the principles of their work
- apply the concepts of development challenges appropriately

At the social reform level, students are able to:

- analyse their own actions in relation to social and historical backgrounds
- evaluate and develop the functionality of regional operating methods and models
- evaluate systematic information that has been structured, produced and written, and develop social activities on the basis of it

Network competence

The generic competence of network competence encompasses a broad range of competences, from individual communication skills to organisation networking and strategic network leadership. Communication is essential to communality and a functioning society. Only with communication can we create shared meanings. Networking and the development of network processes are fuelled by interpersonal and interorganisational communication. In order for social and economic structures to become networked, new kinds of skills and attitudes are needed in the network's participants. Dialogue and interaction are essential resources of a networked society. Laurea's aim is to promote and develop its students' network competence in diverse ways, creating innovative network competence models.

Network competence refers to time-based management of internal and external efficiency in order to significantly increase the efficiency of common practices. Network competence can include networking and network leadership. Network competence and strategic networks are often synonymous. **Networking**, on the other hand, is a cooperation model for companies and organisations, and may involve operators from various fields. **Network leadership** is the model used to manage a network.

Network competence is largely based on the communication skills of the people participating in the networks in question. Without communication and interaction, there can be no functioning networks. Organisations must be able to operate flexibly in a changing operating environment and also to influence the development of the environment. A learning organisation has communication and interaction skills as a central tool for creating functioning networks and developing network competence.

The generic competence examines network competence on three levels. **The personal competence level** (basic level) focuses on developing communication skills and participation in networks. This is the basic level of network competence, which must be mastered by all Laurea students. It is important for students to obtain good communication skills in order to communicate effectively in various situations. Students must also be able to take on active, target-oriented roles in networks.

The organisational developer level (intermediate level) centres on understanding the strategic significance of network competence and partnerships, as well as on analysing and reflecting on his or her own actions from the point of view of the company. Graduates must be able to identify strategic partnerships, promote the organisation's networking with their actions and create new network relationships. The most important thing is a proactive, developmental approach towards network operations.

The social reformer level (advanced level) requires the ability to analyse the operation of entire strategic networks in relation to their environment. This level is achieved by top experts in network competence. Graduates have the ability to lead strategic networks (orchestration) and to anticipate complex social development trends (visioning).

Levels of network competence:

At the personal competence level, students are able to:

- present things in writing, verbally and visually using various communication styles
- act in situations requiring professional communication and interaction
- identify various team work models and work in teams
- participate collaboratively and actively in a network
- take into account cultural differences and work with people with different cultural backgrounds

At the organisational development level, students are able to:

- participate in and manage negotiations
- participate in group communications
- communicate on topics related to their specialist fields to a lay audience
- develop the networked operations of a professional organisation
- take initiatives in developing a network

At the social reform level, students are able to:

- work as experts in communication situations
- plan communications from a strategic point of view, and work with the media

- initiate networked operations and lead a strategic network
- adopt a developmental and predictive approach to work, and influence the work environment
- monitor and analyse networks' operating models

European higher education area

LAUREA'S COMPETENCE-BASED CURRICULUM FORMS PART OF THE EUROPEAN HIGHER EDUCATION AREA

Finnish higher education institutions have reformed their curricula in accordance with the Bologna Process, i.e., the creation of the European Higher Education Area. The EU's strategic targets for education also apply to Finnish education. Each country has its own education system; this diversity is still taken into account, but cooperation and mobility are also needed to allow the citizens of different countries to benefit from the diversity, rather than turning it into a restriction. The Bologna Process started in 1999 at a conference of ministers responsible for higher education. After that, Ministerial Conferences have been arranged regularly, with the latest one in Leuven in 2009. Currently the process involves 46 countries, some from outside the EU. The aim of the Bologna Process is to establish a consistent, compatible and attractive Higher Education Area in Europe by 2010.

The objectives of the process are:

- adoption of easily readable degree structures
- adoption of comparable degree structures
- establishment of a system of credits
- promotion of European cooperation in quality assurance
- increasing mobility
- participation of higher education and students
- lifelong learning
- promotion of European dimensions in higher education
- cooperation between higher education and research

To promote the adoption of easily readable, comparable degrees, the process has created a system based on two main cycles: undergraduate (Bachelor level) and graduate (Master level). Finland has adapted its degree structure to align it with this European objective. In universities of applied sciences, the two-cycle degree is implemented in a way that students obtain a Bachelor's degree, after which they have the opportunity of obtaining a Master's degree. The requirement for Master's degrees is an undergraduate degree plus three years' work experience. The long-term objective is that approximately 20 per cent of Bachelor's-degree graduates will take a Master's degree.

The establishment of a system of credits refers to the ECTS (European Credit Transfer and Accumulation System). Most European countries are adopting this credit system based on the amount of work in each academic year. In the ECTS, one year of study produces 60 credits. The ECTS was adopted more than ten years ago; initially it applied primarily to student exchanges, but now all credit accumulation (previously *transfer*) measurements are made according to the system. Finnish universities of applied sciences adopted ECTS credits in 2005.

The ECTS is a student-centric system, based on the *student workload* needed to achieve the targets set for each degree. The students' learning process is intended to be the focal point of curricula, which define *learning outcomes* and *competences*. Curricula should move away from a focus on individual subjects and the starting points of teaching towards a model that observes the holistic development of students and supports professional growth. This model is referred to as the competence-based curriculum.

From the point of view of promoting mobility, curricula must be internationally understandable. The aim of standardising the structures and learning targets of degrees is to improve the conditions for mobility within and between higher education institutions during the studies, and also in the workplace, after graduation. In terms of the recognition and comparability of degrees taken in different countries, it is important to link learning outcomes to concrete competence requirements and definitions in the labour market. These are the objectives of the "Tuning Educational Structures in Europe" project. It has defined a number of shared *generic competences* that are independent of subjects and fields of study, as well as *subject-specific* (professional) *competences* for certain degrees.

Laurea's competence-based curriculum takes into account the demands of the Common European Framework. Studies are accumulated in the form of credits, while study units are larger entities. Competence is defined in terms of the students' learning outcomes. The generic competences defined at Laurea correspond with the national and European learning outcomes considering the generic competencies and the objectives set for Bachelor-level degrees in the "Joint Quality Initiative" -network. Comparisons have shown globalisation and innovative competence in particular to be unique, so they are well suited to describing the competence produced at Laurea from the point of view of an international university of applied sciences specialising in service innovations. Laurea's innovative efforts in relation to the competence-based core curriculum are a proactive response to the challenges of international competitiveness in the Helsinki metropolitan area. Currently resources are being directed towards further enhancing the quality of the curriculum's implementations in generating new competence and innovations for Laura's operating environment.

Bologna Process

<http://www.minedu.fi/OPM/Koulutus/artikkelit/bologna/index.html>

Tuning Educational Structures in Europe

http://europa.eu.int/comm/education/policies/educ/tuning/tuning_en.html

Operating environment

In future, the operating environment for business information systems will focus on applied technology. The change is evident in company investments, which are increasingly directed towards research and development, training, organisational development, customer relationship management, marketing and software. Information and communication technology is utilised more widely and innovations in the field take on a key role.

The operating environment for business information systems requires skills in managing and developing a company's functions and processes using IT services and solutions. Applied research and its realisation through development work are essential in competence development. These tasks overlap and meet in product development.

Data networks are constantly needed and used more than before in our networked society. Those working in IT build and develop online services and data network solutions. New mobile services bring challenges for the developers of networks and their services. The capacity to change and learn new things is essential in order to innovatively identify novel IT-based services and systems that can arise from existing technologies and software.

Laurea forms part of a business information systems value network and operating environment. Laurea's learning environments are development units that form part of the labour market's business information systems operating environment, and act as meeting places for employment and education. Close interaction with the labour market produces new operating models and systems, and helps to document and analyse research and development. At the same time, the network generates knowledge reserves and application methods. The network develops competence as part of the regional innovation system, by merging R&D into teaching and learning activities. Thus students acquire the necessary competence for acquiring certification in the workplace.

The focal point of applied R&D aiming towards new services in business information systems is applied product development in networks, service systems and security. Major development areas lie in improving operating and production environments; improving recognition of service processes and customer demands; developing service process and service chain control systems; improving information management in service networks; and creating new work and operating methods.

Expertise

The knowledge base of business information systems is multidisciplinary. The main sciences involved are computer science, mathematics, engineering, behavioural science, business, linguistics and communications. Computer science is a methodological science that looks at the technology, methods, opportunities, effects and applications of systematic data processing and its development in businesses and organisations. Computer science examines the algorithms that describe and modify data, i.e. the theory, analysis, planning, implementation and application of algorithmic processes.

The development and application of business information systems involves not only computer science but also

engineering, linguistics, labour science and communications. The significance of behavioural science grows as processes become more interactive. At Laurea, the subject of business information systems relates to applying the results of the abovementioned sciences in multidisciplinary practical solutions.

Bachelors of Business Administration graduating from the Degree Programme in Business Information Systems may obtain employment as IT service experts, system experts, system designers, IT designers, software architects, technical designers, web application developers, network developers, programmers, micro support or online support people, IT trainers or consultants. As their experience grows, their careers may take them towards increasingly demanding IT jobs.

Graduates of Business Information Systems can work in companies that develop IT services and solutions or any other businesses or organisations that use these services and solutions. Employment opportunities lie in developing or maintaining IT services and solutions in trade, industry, social services, health care, education or public administration. They also have the necessary competence for becoming entrepreneurs.

Work in business information systems usually takes place in project-related teams. Cooperation, communication and social skills are important, while interaction skills are needed for internal and external customer contacts, and for meeting and working with various operators in the field.

Graduates work in making IT services and solutions usable for organisations and employees. This work requires consistency and planning; the ability to complete tasks from start to finish; persistence; accuracy; attention to detail and the ability to handle things as a whole; logical reasoning; and creative problem-solving skills. Experts in the field have to be prepared to continue learning and applying new things.

Graduates in Business Information Systems have the necessary practical skills for participating in developing, implementing and adopting information management solutions for organisations. The aim is to achieve a level of expertise that combines professional skills and a strong theoretical basis. Practical skills are acquired during the programme through projects, job placements and the thesis, which are carried out in authentic workplace situations in partnership with companies and other organisations.

At Laurea Leppävaara, students develop competences in planning and implementing information systems based on IT networks, which support business processes and comply with data protection regulations. Students can build, maintain and develop data networks, network solutions and service products with a basis in research and development. They can create information systems, data-intensive services and service products founded on applied R&D. They acquire skills in promoting and developing an organisation's data protection, security practices and information security solutions and services.

At Laurea Kerava, students develop competences in digital media and interface usability. They can develop and build customer-oriented, interactive, visual and usable digital media solutions. They can model and build databases and information structures utilising media elements. Students have mastered the methods of applied user culture and usability studies, and can apply their results to customer-driven planning. They acquire skills in promoting and developing various operating units' digital media solutions and services at different stages of the production chain, such as market research, product concepts, customer-driven planning, information structure design, visualisation, and image, video and sound production for media elements.

Competences

The competence produced by the Degree Programme in Business Information Systems is based on developing and promoting solutions and the field as a whole. The swift development of the business information systems sector and its competences, as well as the need for interaction with organisations operating in the society, pose challenges for the students' competence development. Students learn to evaluate the bases of their own learning and to plan their own development processes, as well as to work in groups and to identify needs for development in the field.

In the Degree Programme in Business Information Systems, competence development is based on developing the field and the region. This perspective enriches learning and the generation of new competence. Anticipatory examinations of the competences and technologies needed in the field facilitate the renewal of content in learning environments and in the curriculum's themes. Enriched skills and dynamic content production develop based on the principles for developing the sector, increasing the students' motivation and enthusiasm for acquiring and utilising new competence.

Students learn to become developers, using appropriate development methods for business information systems and acquiring an applied, investigative approach to work. They obtain skills in cooperating with organisations and other operators in the field. A part of this interaction process is founded in the skill to communicate in Finnish, Swedish and English.

Students of the Degree Programme in Business Information Systems also receive business skills, learning to recognise basic business functions, define business processes and understand the significance of their own work in terms of business operations. Business competence requires multidisciplinary understanding of the sector from the point of view of creating new services and new business. To be experts, students need comprehensive skills in finance and in developing practical solutions and applications. This, in turn, stresses the need for skills in marketing and sales.

Leadership competence is based on self-management, but the management of networks, groups and individuals is also important. General competence in human relations is essential, as are skills in interaction, cooperation and teamwork.

Some of the core competences in the Degree Programme in Business Information Systems relate to information systems, data processing infrastructures, data networks, digital communications, usability development, databases, information structures and applied research and development. Innovative competence is often emphasised in the multidisciplinary development of new solutions and services.

A further aim of the degree programme is to promote the implementation of ethical solutions in business information systems, a critical approach to solutions and their consequences, a global perspective to development, and the ability to act in multicultural environments.

Competence development process

Growth to be an expert in business information systems is a lifelong professional development process. Students develop by learning within a competent professional community, and by researching and developing chosen areas. Students act as investigative developers in development teams, with the aim of generating new competence in line with a given target. The objective of the learning process is the purposeful generation of data and the development of related social customs. Mastery of professional information and skills and knowledge of influencing mechanisms are essential requirements for development work. In the competence development process, the individual's skills, knowledge, beliefs and values develop and change.

The students' professional growth progresses through the stages of professional identity, which could be described as: committing to being a student at the university of applied sciences (settling); becoming socialised in the professional culture and working customs of the sector; and developing as an expert while engaging in professional development and lifelong learning.

Continuous learning is based on development work. The learning process requires and improves critical thought strategies and skills in justifying solutions and evaluating evidence. In other words, work consists of a continuous problem-solving process, with a focus on research, development and generating new competence. The result is a creation, a new operating method, a model or a product. During the process students continuously learn new things and increase their expertise.

Development work takes place in shared-expertise teams. When participating in communities, students interact with other learners, with lecturers and with partners from the employment market, adopting ways of operating that are characteristic to a culture of expertise. A build-up of culture-related information on the area of expertise, the nature of skills, techniques and teaching methods is necessary for competence development.

The chosen development projects put students into contact with actual developers of the world of work. Interaction facilitates competence development, skills in participating in employment networks and flexible transfers into working life. Students use their projects to learn the basics of networking, social skills and communication with experts in the field. Cooperation with diverse groups of experts teaches students to understand the principle of networking – i.e. dividing work sensibly between different areas of expertise.

Studying in the Degree Programme

Students of the Degree Programme in Business Information Systems progress towards expertise in their fields. Studies are staggered so as to allow a gradual deepening of expertise.

At the initial stage of their studies, students learn to use learning tools and to apply them, particularly in the context of LbD. Other skills are related to, for example, project work and an investigative approach. At the same time, students start to become familiar with the substance of business information systems, seeing the significance of the field in the social context.

In addition to specialist competence in business information systems, students develop skills in business and leadership. These competences are linked to the sector's operating environment and are studied from the first year.

In their second year, students develop their expertise in the field. They build the foundations of their ability to work in various operating environments of the sector. This is supported by job placements, whose content can be chosen by the students themselves.

The distribution of job placements over the degree programme is set in each student's personal study plan. The first placement is carried out towards the beginning of the degree, and is used to build a bridge to the employment sector. The second placement, towards the end of the studies, deepens the students' practical competence and helps them to become profiled as developers of the field.

Third-year students continue to develop their expertise in business information systems. The objective of the themes in the third year is to help students apply what they have learnt and grow into developers of their field. The thesis works towards these same aims, giving students opportunities for refining their career paths. Competence and expertise increase and deepen throughout the studies through optional and specialisation studies.

		1. year	2. year	3. year	4. year
OP	STUDIES	60	60	60	30
036	BUSINESS INFORMATION SYSTEMS AND PROFESSIONAL GROWTH				
00099	Becoming a Business Information Systems Professional	10			
00100	Swedish in the IT field	5			
037	DATA NETWORK COMPETENCE				
00101	Data Network Architecture	10			
00102	Data Networks at Work	10			
00103	Interconnecting Networks		10		
00104	Developing Data Network Services		10		
038	INFORMATION SYSTEMS COMPETENCE				
00105	From Requirement Specifications to Design Models	10			
00106	From Design to Implementation and Information Structures		10		
00107	Designing and Implementing a User Interface		10		
00108	Designing and Managing Service Systems			10	
039	INFORMATION SECURITY				
00393	Managing Information Security (MIS)				
00185	Security of Data Networks and Systems			10	
00551	Managing Information Security		10		
040	USER INTERFACES IN DIGITAL MEDIA				
00111	Developing User Interfaces	10			
00112	Visual Design and Media Elements	10			
041	DIGITAL MEDIA PRODUCTION PROCESS				
00113	User-Centred Design	15			
00114	From Design to Implementation in a Web Environment		10		
00115	Usability Studies			5	
00116	Managing Web Services			5	
00117	Audiovisual Production		5		
00118	Testing and Introducing Web Services		5		
047	LAUREA'S COMMON STUDIES				
00194	Preparatory Studies in English	3			
00195	Preparatory Studies in Swedish	3			
00202	Initial Test in English Skills	0			
00203	Initial Test in Swedish Skills	0			
00189	Preparatory Studies in Mathematics	3			
00190	Student tutoring				
00191	International Student Tutoring				
00331	Innoplaza, Study Unit in Entrepreneurship				
00387	Go abroad				
00388	Preparatory Studies in Finnish (as Mother tongue)	3			
00392	Work and Development in a Community of Experts				

080	ELECTIVE LANGUAGE STUDIES				
00206	Working French 1				
042	DIGITAL MEDIA SERVICES				
00119	Component-Centred Software Development		15		
00120	Advanced Internet Services			10	
006	BUSINESS COMPETENCE				
00004	Operating Environments, Clusters and Business Models	10			
00006	Managing Business Performance		10		
00005	Developing and Managing Customer Relationships		10		
007	LEADERSHIP COMPETENCE				
00007	Responsible Leadership in a Work Community	10			
00008	Effectiveness and Communications in an Organisation		10		
0000801	Effectiveness and Communications in Finnish		5		
0000802	Effectiveness and Communications in English		5		
00010	Competence Development and Coaching			10	
00009	Creative Teams		10		
010	INVESTIGATIVE ACTION IN SERVICE DEVELOPMENT				
00018	Developing Service Innovations			10	
00019	Service Innovations in Business Development				10
00047	Innovation-Based Entrepreneurship		10		
00020	Innovation-Based Entrepreneurship				10
046	WORKPLACE COMPETENCE IN BUSINESS INFORMATION SYSTEMS				
00121	Job placement in Business Information Systems			30	
019	THESIS				
00043	Thesis			15	
		60	60	60	30

Annual themes and competences

Study		Extent	Competences
00099	Becoming a Business Information Systems Professional	10	Reflektio-osaamisen kuvaus (H)
00100	Swedish in the IT field	5	Verkosto-osaamisen kuvaus (H)
00102	Data Networks at Work	10	Globalisaatio-osaamisen kuvaus (H), Verkosto-osaamisen kuvaus (O)
00105	From Requirement Specifications to Design Models	10	Innovaatio-osaamisen kuvaus (H)
00106	From Design to Implementation and Information Structures	10	Reflektio-osaamisen kuvaus (O)
00112	Visual Design and Media Elements	10	Globalisaatio-osaamisen kuvaus (H)

00113	User-Centred Design	15	Eettisen osaamisen kuvaus (H), Innovaatio-osaamisen kuvaus (H)
00114	From Design to Implementation in a Web Environment	10	Verkosto-osaamisen kuvaus (H)
00119	Component-Centred Software Development	15	Verkosto-osaamisen kuvaus (O)
00120	Advanced Internet Services	10	Reflektio-osaamisen kuvaus (O)
00004	Operating Environments, Clusters and Business Models	10	Verkosto-osaamisen kuvaus (H)
00006	Managing Business Performance	10	Eettisen osaamisen kuvaus (O)
00007	Responsible Leadership in a Work Community	10	Eettisen osaamisen kuvaus (H)
00008	Effectiveness and Communications in an Organisation	10	Globalisaatio-osaamisen kuvaus (O)
00018	Developing Service Innovations	10	Innovaatio-osaamisen kuvaus (O)
00121	Job placement in Business Information Systems	30	Reflektio-osaamisen kuvaus (H)

H - Personal competence level

O - Organisational development level

Y - Social reform level

036 BUSINESS INFORMATION SYSTEMS AND PROFESSIONAL GROWTH, 15 cr

Description:

Opiskelija osaa työelämälähtöisen tutkivan toiminnan perusteet, ennakoivan, tutkivan ja kehittävän työtavan sekä alan tarpeelliset työmenetelmät ja työkalut. Opiskelija suorittaa toisen kotimaisen kielen virkamiestutkinnon.

The student will be able to:

- hahmottaa itsensä kehittämisen tavoitteita ja valita kehittämisen kohteita
- luoda henkilökohtaisen oppimisen tavoitteet ja suunnitelmat
- hahmottaa ja arvioida alan osaamista ennakoivan tutkimuksen avulla
- luoda sisältöjä ja hahmottaa käsitteistöä englanninkielisestä aineistosta
- toimia sosiaalisessa arvoverkostossa ja osaamista rikastavassa yhteisössä
- havaita uusien ratkaisujen ja palvelujen merkityksiä menestymisen edellytyksinä
- sitoutua ja motivoitua vaikuttavaan toimintaan työyhteisössä ja toimialueen arvoverkostossa
- tarpeelliset työmenetelmät ja työvälineet
- perustella asiat kirjallisesti
- toimia työyhteisössä ruotsin kielellä

Content:

Teeman opintojaksot muodostavat kehittämisen kokonaisuuden, jonka lähtökohdat määräytyvät opiskelijan omista lähtökohdista ja alalla menestymisen edellytyksistä. Alalla tarvittavan ydinosaamisen ja tulevaisuuden tutkimuksen avulla hahmotetaan tärkeitä kehittämiskohteita ja muodostetaan kestävä pohja motivoitumiselle ja kehittäjäksi oppimiselle. Opintojaksoissa tarkastelunäkökulmana on osaamisen yhdistäminen ja osaamisen tuottaminen arvoverkostoon. Opintojaksot kiinnittävät opiskelijan valitseman oppimisen kohteellisuuden, toiminnan ja motivaation. Osa opinnoista toteutetaan ruotsinkielisenä, mikä tuottaa toisen kotimaisen kielen virkamiestutkinnon.

Learning process:

Teema on aloitusteema ja sijoittuu ammatillisen kasvun alkuun ensimmäiseen opintovuoden aloitukseen. Oppijan kehittämisosaaminen ja motivaatio ilmenevät yhteisöllisenä tutkivana ja kehittävänä työtapana. Oppimisprosessin lähtökohta on alan- ja alueen kehittäminen sekä toimiminen arvoverkostossa. Opiskelijan omat tavoitteet ja kehittämisen kohteet laaditaan henkilökohtaiseksi opintosuunnitelmaksi.

00099 Becoming a Business Information Systems Professional, 10 cr

The student is able to:

- analyse future needs for competence in business information systems
- communicate efficiently using spoken and written Finnish
- use general methods, tools and devices of the sector
- make use of Finnish and English IT-information sources
- outline the core competences of the sector and their significance
- define, choose and evaluate personal competence development objects and targets
- implement their personal study plans
- know the principles of development work
- use the methods and tools of the sector
- promote interaction and cooperation with their work

Contents of the study unit:

- Laurea's learning model
- core competences of the industry
- main development strategies and targets in the industry and the region
- creating a personal study plan based on an analysis of R&D needs
- planning, implementing and evaluating an applied research and development process
- working independently, in groups and in networks
- competence in tools, work methods and work stations
- argumentative writing and oral presentation

Study unit description:

The competence gained in this study unit forms the basis of developmental competence. Students map the core competences of the business information systems sector, as well as its future needs for competence. The study unit describes the effect and importance of new competence in a value network and in regional development. Students assess the value of their own competence as a success factor and enabler.

00100 Swedish in the IT field, 5 cr

The student is able to:

- communicate in Swedish in IT-jobs
- communicate in an interactive, customer-orientated manner
- obtain and make use of information related to IT

Contents of the study unit:

- essential IT- and company terminology
- oral and written professional communication
- introducing oneself, education and work experience •

Study unit description:

Students attain at least skill level B1.2 as defined in the Common European Framework. In addition, students receive grades of good or satisfactory in oral and written language skills in accordance with the language skill requirements of civil servants.

Previous studies:

Kasvu tietojenkäsittelyn ammattilaiseksi -opintojakso tai vastaavat tiedot.

037 DATA NETWORK COMPETENCE, 20 cr

Description:

Opiskelija osaa rakentaa, ylläpitää ja kehittää tietoverkkoja, verkossa tapahtuvia palveluja ja palvelutuotteita soveltavan tutkimuksen ja kehitystoiminnan avulla.

The student will be able to:

- analysoida, soveltaa ja yhdistellä tietojään eri tutkimus- ja kehittämismenetelmiä hyödyntäen
- tutkia alan kehitystä ja ymmärtää sen toiminnallinen vaikuttavuus
- toimia kehittäjänä tietoverkon toteutuksessa, prosesseissa ja hallinnassa
- kehittää vastuullisesti tietoverkko-osaamistaan monipuolisissa toimintaympäristöissä
- määrittää tietoverkon suorituskyky - ja palvelutasovaatimukset
- toimia muutoskykyisesti ja yhteistyössä eri toimijoiden kanssa
- mallintaa ja kuvata järjestelmän toiminnan ja verkkorakenteet
- suunnitella ja laatia verkkojärjestelmän arkkitehtuurin ja tietoturvaratkaisut
- laatia, kehittää ja testata verkkoratkaisuja ja verkkoelementtejä
- ottaa käyttöön ja ylläpitää tietoverkkoja ja verkkojärjestelmiä

Content:

Teeman sisältämä tietoverkko-osaaminen on alan keskeistä ammatillistiedollista ja ammatillistaidollista osaamista. Teeman opintojaksot muodostavat osaamisen kokonaisuuden, jolla yksilö osaa toimia tietoverkkoja uudistavana kehittäjänä muuttuvassa toimintaympäristössä sekä vaikuttajana osaamisverkostossa. Opiskelija osaa tietoverkkojen toteuttamiseen tarvittavat valitut menetelmät, kuvaustavat ja elementit sekä toteuttamisen. Opiskelija osaa työssään arvioida tietoverkkojen käytettävyyttä ja tulevaisuuden tarpeita. Valinnaisissa opinnoissa opiskelija voi laajentaa osaamistaan tietoverkkojen kehittämisen ja hallinnan asiantuntijaksi.

Learning process:

Teema sijoittuu ammattiopintojen alkuun. Autenttiset kehittämishankkeet suuntaavat, syventävät, konkretisoivat ja jäsentävät oppimisprosessia

00101 Data Network Architecture, 10 cr

The student is able to:

- examine network architectures as a whole and analyse their functionality
- know the theories and concepts of LANs, WANs and WLANs
- describe and define operation and active equipment of a LAN
- design network solutions for a company's operations
- justify solutions and purchases related to data networks
- work responsibly in a company's data network
- define and implement service and network system platforms

Contents of the study unit:

- developing a data network and creating or selecting a network architecture
- assessing a data network architecture, determining its requirements and evaluating its performance
- interaction in development work
- data network design and implementation process
- describing and modelling data networks
- planning and implementing a network system initiative or project
- future network architectures and key technologies

Study unit description:

The study unit provides skills in determining the requirements of data networks and consequently defining, designing and implementing the operation and structure of a network system.

00102 Data Networks at Work, 10 cr**The student is able to:**

- build or expand data networks according to plan
- make use of the benefits of network management
- know the techniques for connecting the networks of a company's different offices
- know the opportunities and threats brought by the latest wireless technologies
- know the practical and theoretical issues related to IP phones and their management
- solve problems related to building, expanding, managing and maintaining networks, independently and in groups
- manage and maintain equipment and services of the network

Contents of the study unit:

- building or expanding a data network
- managing and maintaining networks and network servers
- centralised network management; theory and practice
- main network connection methods and their theories
- wireless network connection methods
- basics of VOIP (Voice Over IP) technology
- solving problems related to building, expanding, managing and maintaining networks, independently and in groups (diagnostics)
- lab practice (network management, wireless technologies, IP phones)
- genuine projects and LivingLab work
- describing and modelling data networks

Study unit description:

The competence gained in the study unit relates to designing, building and expanding data networks. It allows students to develop and maintain networks and network servers. Network connection competence is acquired in combining, designing and implementing various kinds of networks.

Previous studies:

Data Network Architecture or equivalent knowledge.

00103 Interconnecting Networks, 10 cr**The student is able to:**

- be learners and developers in an international value network

- participate in an internationally benchmarked learning process
- handle data network building in practice
- manage and maintain selected data network equipment
- design and implement network environments in lab work
- describe and define the workings, characteristics and components of WANs
- test and diagnose network connections

Contents of the study unit:

- content and materials of an internationally benchmarked, employer-driven study unit
- facilitating lifelong learning as participants in a value network
- lab work

Study unit description:

The competence gained in the study unit relates to using and managing telecommunications equipment made by a chosen manufacturer. Students master the practical use of chosen equipment and deepen their competence as experts in data networks.

Previous studies:

Data Networks at Work or equivalent knowledge.

00104 Developing Data Network Services, 10 cr

The student is able to:

- apply new network technologies and develop data network services
- implement and analyse chosen network server environments
- implement, change, combine and program network-based services
- implement and develop information security solutions
- implement name services in different network environments
- know about wireless network technologies and their practical bases
- know about IP phones and related new technologies in practice
- evaluate their own development work
- provide documentation related to development work

Contents of the study unit:

- network server systems
- programming network server systems
- shared services such as Windows Active Directory and LDAP
- selected firewall solutions and pointer-related services
- name services
- WLANs, support stations and their maintenance
- IP technologies such as VOIP
- LivingLab work and developing the field in practice
- network technologies of the future
- core competence of the future

Study unit description:

The deepening competence gained in the study unit relates to developing LAN services and their implementations. Knowledge of architectures, the solution to be implemented and the service forms the basis of development work and competence. The emphasis is on applying theory and new technologies to services and usability. Learning takes place through research and development in Laurea's learning environments. The study unit also generates evaluation competence.

Previous studies:

Data Networks at Work or equivalent knowledge.

038 INFORMATION SYSTEMS COMPETENCE, 30 cr

Description:

Opiskelija osaa kehittää ja ylläpitää tietojärjestelmiä, tietointensiivisiä palvelutuotteita ja palveluja, jotka perustuvat soveltavaan tutkimukseen ja kehitystoimintaan. Opiskelija osaa järjestelmän kehittämiseen ja toteuttamiseen tarvittavat valitut menetelmät, kuvaustavat ja välineet.

The student will be able to:

- analysoida, soveltaa ja yhdistellä tietojaan eri tutkimus- ja kehittämismenetelmiä hyödyntämällä
- tutkia alan kehitystä ja ymmärtää sen kytkeytymisen strategiaan arvoverkostoihin
- toimia kehittäjänä järjestelmän toteutuksessa, prosesseissa ja hallinnassa
- kehittää vastuullisesti tietojärjestelmäosaamistaan monipuolisissa toimintaympäristöissä
- määrittää liiketoimintaprosessien ja niiden kehittämisen yhteydet tietojärjestelmiin
- toimia muutoskykyisesti ja yhteistyössä eri toimijoiden kanssa
- mallintaa ja kuvata järjestelmän toiminnan ja tietokannan
- suunnitella ja laatia järjestelmän arkkitehtuurin ja tietoturvaratkaisut
- suunnitella ja toteuttaa käyttöliittymän audiovisuaalisine elementteineen
- toteuttaa ja testata järjestelmän ohjelmat ja komponentit
- määrittää ja perustaa tietokannat
- ottaa käyttöön ja ylläpitää tietojärjestelmiä

Content:

Teeman sisältämä tietojärjestelmäosaaminen on keskeistä tietojenkäsittelyn ammatillistiedollista ja ammatillistaidollista osaamista. Teeman opintojaksot muodostavat osaamisen kokonaisuuden, jolla yksilö osaa toimia tietojärjestelmiä uudistavana kehittäjänä muuttuvassa toimintaympäristössä se-kä ennakoivana innovatiivisena vaikuttajana osaamisverkostossa. Opiskelija osaa työssään arvioida järjestelmiä, niiden käyttökelpoisuutta ja tulevaisuuden tarpeita. Valinnaisissa opinnoissa opiskelija voi syventää osaamistaan tietojärjestelmien kehittäjänä.

Learning process:

Teema sijoittuu ammattiopintojen alkuun. Autenttiset kehittämishankkeet suuntaavat, syventävät, konkretisoivat ja jäsentävät oppimisprosessia.

00105 From Requirement Specifications to Design Models, 10 cr

The student is able to:

- acquire the latest data of development possibilities needed for a development target
- know the process of building a system and how to apply it to a development target
- define and describe the links and between information systems and business processes
- plan and implement a system project in partnership with various operators
- model and describe the operation and structures of a system and the functional logic of user interfaces
- plan and test the operation of models on prototypes and with simulations

Contents of the study unit:

- development of information systems using chosen methods
- interaction in development work
- system design and implementation process
- planning a system initiative or project
- requirement specifications and business processes
- modelling and describing the operation of a system
- modelling and describing the information structure of a system
- testing the descriptions and models of the system
- testing the plans and models of the system

Study unit description:

The study unit provides skills in determining the requirements of information systems and consequently defining and designing the operation and structure of a system.

Previous studies:

Becoming a Business Information Systems Professional or equivalent knowledge.

00106 From Design to Implementation and Information Structures, 10 cr

The student is able to:

- create usable and applicable programs and components on the basis of system design documents
- create design models and documentation for components, programs and systems as well as for the interfaces between them
- know the basic techniques and description methods for program and database planning and implementation
- know the basic mathematics of data processing and the algebra of information structure processing
- use appropriate programming and data processing languages for each task and network
- create components, programs, systems and information structure solutions
- plan and implement testing of a system and its subsystems

Contents of the study unit:

- programs and programming
- program design
- program control structures
- program tables and functions
- basic mathematics of information systems
- databases and files
- relational databases and relational algebra
- planning and implementing a database structure
- data processing languages
- program testing

Study unit description:

The study unit focuses on creating competence in implementation and information structure processing.

Previous studies:

From Requirement Specifications to Design Models or equivalent knowledge.

00107 Designing and Implementing a User Interface, 10 cr

The student is able to:

- understand the significance and content of user interfaces and usability
- know the human principles of information system usability
- know user interface standards
- use the tools and technologies of the internet
- know the visual elements of user interfaces
- design and create user interfaces
- use prototypes in user interface design
- evaluate the usability of an information system
- organise usability tests

Contents of the study unit:

- user interfaces and usability
- recognising users in a system
- humans as users
- user interface design process
- closed and open use environments
- navigation models
- visual elements and their use in traditional graphical user interfaces
- objects and user interfaces
- use of controls
- window design
- icons
- menu design
- internet technologies and tools
- multimedia elements and their use
- differences between browser-based interfaces and traditional graphic ones

- implementing a user interface
- use of prototypes
- evaluating user interfaces and usability

Study unit description:

Students acquire competence in designing and implementing well-functioning user interfaces.

Previous studies:

From Design to Implementation and Information Structures or equivalent knowledge.

00108 Designing and Managing Service Systems, 10 cr

The student is able to:

- be learners and developers in an international value network
- participate in an internationally benchmarked learning process (e.g. Oracle University)
- define and design services and systems built on databases
- define and design the components of an information system with a basis in functionality and structure
- implement information systems in practice with a basis in components
- maintain services and systems based on databases
- plan and implement a information system testing

Contents of the study unit:

- content and materials of an internationally benchmarked, employer-driven study unit
- facilitating lifelong learning as participants in a value network
- opportunity for taking a certification test
- opportunities and guidance for extending internationally certified learning
- system architect, system developer and system administrator

Study unit description:

The competence gained in the study unit relates to developing and maintaining information systems and services. Students know the operating principles of target systems, the structure of databases and the programming principles used in their development. They deepen their competence as experts in development and administration.

Previous studies:

Designing and Implementing a User Interface or equivalent knowledge.

039 INFORMATION SECURITY, 20 cr

Description:

Opiskelija osaa kehittää ja soveltaa tietoturvallisuutta olennaisena osana organisaation toimintaa sekä omaa laaja-alaiseen turvallisuuskäsitykseen, jossa turvallisuus on osa organisaation strategi-aa, toiminnan varmistamista, kilpailukykyä ja imagoa. Opiskelija osaa edistää ja kehittää tiedon kannalta tärkeitä teknologisia ratkaisuja tietoturvaan liittyviä asioita ja palveluja

The student will be able to:

- hahmottaa sovelletun tietoturvallisuuden osana organisaation strategiaa
- määritellä organisaation tietoturvatarpeita ja etsiä niihin ratkaisuja
- kehittää ja soveltaa organisaatioon turvallisesti tietointensiivisiä teknologioita
- toteuttaa ja ylläpitää organisaation tietoturvapoliittikan
- arvioida turvallisuusteknologisia toteutuksia ja palveluja
- toimia muutoskykyisenä turvallisuutta edistävänä toimijana
- havaita, kartoittaa ja analysoida tietoon liittyviä turvallisuusriskejä
- suunnitella, toteuttaa ja ylläpitää tietoturvallisuusratkaisuja

Learning process:

Teema on tietoturvallisuuden ja tietointensiivisten turvallisuusteknologioiden perusosaamista. Opiskelijalla on mahdollisuus syventää teemassa syntyvää osaamistaan yhdessä tietoverkko- ja tietojärjestelmäosaamisen teemojen kanssa integratiivisten verkkopalvelujen teemassa, jossa pää-paino on tietoturvallisten ratkaisujen ja

palvelujen kehittämisellä ja tietointensiivisten turvallisuus-teknologioiden soveltamisella ja uusien palvelujen kehittämisellä.

00393 Managing Information Security (MIS), 10 cr

The student is able to:

- understand basic concepts of information security
- use risk management methods in developing information security
- protect the organisation from information risks and evaluate the impacts of realised information risks on operations
- plan a conclusive information risk management system for an organisation applying technical and administrative information security solutions
- apply legislation related to data protection, information security and information crime
- formulate continuity and disaster recovery plans for systems

Contents of the study unit:

- sub-areas and basic terminology of information security
- the tasks of information and security officer in an organisation
- external and internal information security threats, analysis and evaluation of related risks
- protection from information risks with technical and non-technical methods
- legislation related to data protection and information security
- personnel security and information security awareness
- security surveys and non-disclosure agreements
- information security instructions and issues affecting compliance
- planning an information security management system and a development programme for information security
- continuity planning and disaster recovery

Study unit description:

The study unit relates to student's development in applying information security competence. Competence gained realises above all as a skill to analyse and evaluate organisation's information risks, protect from them and evaluate the possible impacts on organisation's operations. The aim is to learn to create a conclusive information risk management system.

00185 Security of Data Networks and Systems, 10 cr

The student is able to:

- recognise and analyse the vulnerabilities of data networks
- safeguard the functionality of information systems in various fault situations
- apply technical information security solutions
- determine security requirements in developing and purchasing information systems

Contents of the study unit:

- basics of IP networks (Degree Programme in Security Management)
- threats and risks related to information systems
- technical protection from information risks
- protecting the confidentiality and integrity of data in information systems and networks
- encryption methods and applications
 - public key encryption and public key infrastructure
- information security in networks
- preventing intrusions into information systems

Study unit description:

This study unit relates to students' development in applying their competence in information systems and networks.

Previous studies:

Managing Information Security or equivalent knowledge.

00551 Managing Information Security, 10 cr

The student is able to:

- apply the basic principles of information security
- use risk management methods in developing information security
- protect organisations from information risks and assess the effects of these risks on operations
- plan a comprehensive information risk management system for an organisation, using technical and administrative data protection solutions
- apply legislation related to data protection, information security and data crime

Contents of the study unit:

- elements and basic concepts of information security
- duties of an information security manager in an organisation
- good information processing practice
- internal and external data protection risks; analysing and evaluating related information risks
- protection from information risks using technical and non-technical methods
- legislation related to data protection and information security
- employee security and information security awareness
- security reports and confidentiality agreements
- information security instructions and compliance-related issues
- information risk management systems based on actual risks; planning an information security de-velopment programme

Study unit description:

- elements and basic concepts of information security
- duties of an information security manager in an organisation
- good information processing practice
- internal and external data protection risks; analysing and evaluating related information risks
- protection from information risks using technical and non-technical methods
- legislation related to data protection and information security
- employee security and information security awareness
- security reports and confidentiality agreements
- information security instructions and compliance-related issues
- information risk management systems based on actual risks; planning an information security de-velopment programme

040 USER INTERFACES IN DIGITAL MEDIA, 20 cr**Description:**

Opiskelija osaa suunnitella, toteuttaa ja kehittää toimeksiantajan strategisia tavoitteita tukevia, visuaaliselta ilmeeltään laadukkaita käyttöliittymiä soveltavan tutkimus- ja kehittämistoiminnan avulla.

The student will be able to:

- toimia kehittäjänä digitaalisen median käyttöliittymiä tuottavissa monipuolisissa ympäristöissä
- toimia joustavasti ja muutосkykyisesti yhteistyössä eri toimijoiden kanssa
- analysoida, huomioida ja soveltaa asiakkaan tarpeita ja toiveita kehityksen lähtökohtana kulttuuriset erot huomioiden
- soveltaa työskentelyssään visuaalisen suunnittelun perusperiaatteita
- suunnitella, tuottaa ja yhdistää eri mediatyyppejä tarkoituksenmukaiseksi kokonaisuudeksi
- hallinnoida ja mallintaa projektin toteutus
- käyttää tietoverkkoa tietoliikennealustana
- seurata alansa kehitystä ja ymmärtää sen toiminnallinen vaikuttavuus
- analysoida, soveltaa ja yhdistellä tietojaan ja taitojaan eri tutkimus- ja kehittämismenetelmiä hyödyntäen

Content:

Teema sijoittuu ammatillisen kasvun ensimmäiseen vaiheeseen tuottaen opiskelijalle digitaalisen median perustyövälineet, joiden varassa hän pystyy kehittämään osaamistaan. Autenttiset kehittämishankkeet suuntaavat, syventävät, konkretisoivat ja jäsentävät oppimisprosessia.

Learning process:

Teeman sisältämä digitaalisen median verkkoviestintäosaaminen on perustana tietojenkäsittelyn ammatillistiedolliselle ja ammatillistaidolliselle osaamiselle. Teeman opintojaksot muodostavat osaamisen kokonaisuuden, jolla opiskelija voi toimia verkkoviestinnän kehittäjänä globaalissa toimintaympäristössä sekä vaikuttajana monialaisessa osaamisverkostossa. Opiskelija osaa työssään käyttää soveltavaa, tutkiva ja kehittävää otetta ja tutkia ja kehittää olemassa olevia käyttöliittymiä.

00111 Developing User Interfaces, 10 cr

The student is able to:

- kuvata, kehittää ja toteuttaa käyttöliittymiä toimeksiantajan strategisten tavoitteiden tukemisen näkökulmasta
- käyttää verkkojulkaisun keskeisiä työvälineitä ja tekniikoita
- kehittää ja julkaista verkossa esitettäviä sisältöjä
- analysoida verkkosisältöjen erilaisia toteusratkaisuja
- huomioida sovellusalueeseen perehtymisen merkityksen sivuston kehittämisessä
- arvioida www-sivustojen kehittämistarpeita ja käyttökelpoisuutta
- hyödyntää tietoverkkoa tietoliikennealustana
- huomioida verkkosisältöjen kehitystyössä erilaiset immateriaali- ja sopimusoikeudelliset näkökulmat sekä muut oikeudelliset ongelmat
- toimia vastuullisena osallistujana digitaalisen median projektimuotoisessa tuotannossa

Contents of the study unit:

- www-sivuston kokonaisvaltainen suunnittelu, kehittäminen ja julkaisu
- käyttöliittymäsuunnittelun perusteet
- selainpohjaisen käyttöliittymän tekninen toteutus
- käyttöliittymästandardit
- verkkoviestintä ja käsikirjoittamisen vaatimukset
- projektityöskentelyn hallinnointi
- tietoverkko työskentely-ympäristönä
- verkkosivustoon liittyvät immateriaali- ja sopimusoikeudelliset sekä muut oikeudelliset ongelmat

Study unit description:

Opintojaksolla saavutettava osaaminen ilmenee valmiutena suunnitella, kehittää ja toteuttaa sisällöltään harkittuja ja rakenteellisesti oikeellisia www-sivustoja. Opintojaksolla luodaan valmiudet digitaalisen median projektimuotoiseen työskentelyyn osallistumiselle sekä alan keskeisten työvälineiden hallintaan.

Previous studies:

Kasvu tietojenkäsittelyn ammattilaiseksi -opintojakso tai vastaavat tiedot.

00112 Visual Design and Media Elements, 10 cr

The student is able to:

- kehittää luovasti www-sivustolle aihetta ilmentävän visuaalisen ilmeen
- digitaalisten kuvien tuotantoprosessin ja osaa hyödyntää digitaalisen median sovellusohjelmien mahdollisuuksia markkinointiviestinnän kehittämisessä
- hyödyntää vektorigrafiikkaa digitaalisen median tuotantovälineenä luovasti
- tuottaa 2D animaatioita ja hyödyntää niitä digitaalisen median viestinnän kehittämisessä
- ottaa huomioon kansainväliset trendit visuaalisessa suunnittelussa
- toimia globaaleissa tieto- ja mediaympäristöissä, hankkia tietoa ja olla osana niiden kehitystä

Contents of the study unit:

- multimediallin visuaalinen suunnittelu
- digitaalinen kuvankäsittely
- vektorigrafiikkaohjelmien käyttö mediaelementtien toteuttamisessa
- 2D-animaatio-ohjelmien käyttö multimediaesitysten toteutukseen
- multimediaesitysten suunnittelu ja käsikirjoittaminen
- mediaelementtien liittäminen osaksi verkkosivuja
- globaalien kehittämisympäristöjen hyödyntäminen multimediallin toteutuksissa

Study unit description:

Opiskelija osaa tuottaa sekä optimoida mediaelementtejä osaksi multimediaesityksiä siten, että sivustolla on halutun tavoitteen mukainen visuaalinen ilme. Opiskelija osaa vektorigrafiikan ja digitaalisen median työvälineiden hyödyntämismahdollisuudet multimediaesitysten tuotannossa sekä hallitsee erilaisten grafiikan tuotanto-ohjelmien yhteiskäytön monipuolisesti. Opiskelija oppii 2D animaatioiden perusteet ja rakenteen suunnittelun ja osaa lisätä mediaelementtejä niihin. Opiskelija hallitsee animaation hyödyntämisen multimediaesityksissä, sekä osaa liittää animaatioita osaksi muuta verkkoviestintää. Opiskelija osaa hankkia tietoa ja tuottaa sitä kansainvälisen multimedian kehitysympäristöihin ja hallitsee eri kulttuurien ja genren vaikutuksen mediaillaisuun.

Previous studies:

Käyttöliittymien kehittäminen-opintojakso tai vastaavat tiedot.

041 DIGITAL MEDIA PRODUCTION PROCESS, 25 cr**Description:**

Opiskelija osaa toimia digitaalisen ja interaktiivisen median suunnittelu-, toteutus- ja kehitystehtävissä. Opiskelija työskentelee käyttäjäkeskeisen suunnitteluprosessin mukaisesti soveltavaa tutkimus- ja kehitystoimintaa hyödyntäen.

The student will be able to:

- toimia kehittäjänä digitaalisen median monipuolisissa toimintaympäristöissä
- tutkia ja kehittää digitaalisen median palveluja, tuotteita ja tuotantoprosesseja
- työskennellä käyttäjäkeskeisen suunnittelu- ja tuotantoprosessin sekä alan eettisten sääntöjen mukaisesti
- kehittää vastuullisesti osaamistaan digitaalisen median ratkaisujen suunnittelussa ja toteutuksessa
- kehittää ja toteuttaa innovatiivisia suunnitteluratkaisuja käyttäjäkeskeisten tutkimusmenetelmien avulla uudenaikaisissa kehitysympäristöissä
- toimia muutostyökykyisesti ja yhteistyössä eri toimijoiden kanssa
- suunnitella, toteuttaa ja kehittää tietorakenteita ja tietokantoja

Content:

Teeman sisältämä digitaalisen median tuotantoprosessiosaaminen on alan keskeistä ammatillistiedollista ja ammatillistaidollista osaamista. Teeman opintojaksot muodostavat kokonaisuuden, jonka avulla yksilö osaa toimia innovatiivisesti vuorovaikutteisten digitaalisten mediatuotteiden kehittäjänä muuttuvassa toimintaympäristössä. Opiskelija osaa sekä suunnitella että arvioida ohjelmistoratkaisuja eettisesti kestäväällä tavalla ja tulevaisuuden tarpeet huomioiden. Valinnaisissa opinnoissa opiskelija voi syventää osaamista mm. mediaelementtien käytössä, käytettä-vyystutkimuksessa sekä verkkopalvelun hallinnoinnissa ja testauksessa.

Learning process:

Teema sijoittuu ammatillisessa kasvussa keskivaiheille. Autenttiset kehittämishankkeet suuntaavat, syventävät, konkretisoivat ja jäsentävät oppimisprosessia.

00113 User-Centred Design, 15 cr**The student is able to:**

- toimia digitaalisen median alan suunnittelu- ja tuotantoprosessin innovatiivisena kehittäjänä
- nähdä tuotteen tai palvelun käyttäjät innovaatioprosessin voimavarana
- suunnitella, toteuttaa ja hallinnoida käyttäjäkeskeisen suunnittelu- ja tuotantoprosessin
- hahmottaa konseptisuunnittelun ja luovan ongelmanratkaisun menetelmien mahdollisuudet suunnitteluprosessissa
- organisoida, analysoida ja raportoida käyttäjätutkimuksen alan eettisten normien mukaisesti
- hyödyntää prototyyppejä käyttöliittymäsuunnittelussa
- mallintaa, suunnitella ja toteuttaa tietorakenteita ja tietokantoja osana käyttöliittymän iteratiivista kehittämistä
- tiedon kyselykielen tehokkaan käytön tietokannan hallinnan välineenä

Contents of the study unit:

- käyttäjäkeskeinen suunnittelu
- käyttäjä- ja käytettävyystutkimus
- esteetön suunnittelu
- iteratiivinen tuotekehitys

- ideointimenetelmät ja konseptointi
- tietorakenteen ideointi ja kehittämismenetelmät
- tiedonhallinta ja tietokannat
- tiedon kyselykielet
- käytettävyyden arviointi ja arviointimenetelmät

Study unit description:

Opintojaksolla hankitaan valmiudet toimia digitaalisen median alan suunnittelu- ja tuotantoprosessissa sekä osallistua tutkimus- ja kehitystoimintaan. Opintojakso antaa valmiudet käyttäjävetoisen digitaalisen mediatuotteen rakenne- ja käyttöliittymäsuunnitteluun.

Previous studies:

Käyttöliittymän kehittäminen -opintojakso tai vastaavat tiedot.

00114 From Design to Implementation in a Web Environment, 10 cr

The student is able to:

- ohjelman suunnittelun ja toteutuksen menetelmät ja kuvaustavat
- ohjelmointikielen perussyntaksin ja rakenteen
- suunnitella, toteuttaa ja kehittää toimivia vuorovaikutteisia tietokantapohjaisia verkko-palveluja
- suunnitella ja toteuttaa ratkaisuja uudenaikaisissa kehitysympäristöissä
- suunnitella, toteuttaa, kehittää ja testata interaktiivisia digitaalisen median ratkaisuja

00115 Usability Studies, 5 cr

The student is able to:

- toimia digitaalisen median alan suunnittelu- ja tuotantoprosessin innovatiivisena kehittäjänä
- evaluoida digitaalisen mediatuotteen käytettävyyttä
- ymmärtää saavutettavuuden periaatteen
- suunnitella, organisoida, analysoida ja raportoida käytettävyytystutkimusta
- soveltaa käytettävyytystutkimuksen menetelmiä ja tekniikoita tuote- ja palvelusuunnittelua hyödyttävien tutkimus- ja kehittämishankkeiden suunnittelussa ja toteutuksessa

Contents of the study unit:

- käyttäjäkeskeinen tuote- ja palvelusuunnittelu
- toimeksiantoon vastaavan käytettävyytystutkimuksen suunnittelu
- suunnittelun käytettävyytystutkimuksen toteuttaminen ja hallinnointi
- tutkimustulosten analysointi ja raportointi
- käytettävyyden arviointi ja arviointimenetelmät
- käytettävyyden testaaminen

Study unit description:

Opintojaksolla syvennetään valmiuksia itsenäiseen digitaalisen median tuotannon tutkimus- ja kehittämistoimintaan. Opintojakson osaaminen ilmenee valmiutena suunnitella, toteuttaa sekä analysoida ja raportoida toimeksiantajan tuote- ja palvelukehitystä tukevaa käytettävyytystutkimusta. Osaaminen saavutetaan osallistumalla t&k -toimintaan monipuolisissa testbed-ympäristöissä.

Previous studies:

Käyttöliittymän kehittäminen -opintojakso tai vastaavat tiedot.

00116 Managing Web Services, 5 cr

The student is able to:

- kehittää ja hallinnoida verkkopalvelua
- ylläpitää www-palvelinta
- julkaisujärjestelmän asennuksen ja käyttöönoton
- kehittää yrityksen sisällöntuotantoratkaisuja

Contents of the study unit:

- verkkopalvelun ylläpito
- www-palvelimen ylläpito
- julkaisujärjestelmän asennus ja käyttöönotto

Study unit description:

Opintojakso antaa valmiudet kehittää ja hallinnoida verkkopalvelua ja toimia palvelun ylläpitäjänä. Opintojaksolla syvennetään opiskelijan osaamista sisällöntuotannon tekniikoissa, mikä mahdollistaa toimimisen asiantuntijana yrityksen sisällöntuotantoratkaisujen kehittämisessä ja suunnittelussa.

Previous studies:

Suunnitelmasta toteutukseen verkkoympäristössä -opintojakso tai vastaavat tiedot.

00117 Audiovisual Production, 5 cr**The student is able to:**

- tallentaa ääni- ja videomateriaalia
- editoida ääni- ja videomateriaalia
- tuntee äänen ja videon käsittelyyn menetelmät ja niiden toimintaperiaatteet
- muokata audio- ja videotiedostoja eri medioihin
- tutkia ja kehittää eri sovellusten hyödyntämistä verkkoviestinnässä ja markkinoinnissa
- luoda video ja ääniesityksiä

Contents of the study unit:

- audio- ja videotiedostojen tuotantoprosessi ja muokkaus
- multimediapalvelimen käyttöympäristön hallinta ja kehittäminen
- audio- ja videoelementtien optimointi ja streaming tekniikat ja niiden käyttö verkkoviestinnässä
- mediaelementtien liittäminen osaksi multimediaesityksiä
- multimediaelementtien hyödyntäminen verkkoviestinnässä
- kerronnallisen esityksen luomisprosessin

Study unit description:

Opiskelija tutustuu audio- ja videotuotantoprosesseihin ja osaa tuottaa sekä optimoida niitä osaksi multimediaesityksiä. Opiskelija hallitsee ääni- ja videoiden materiaalin editoimiseen tarkoitettujen ohjelmien käytön. Opiskelija osaa luoda ääni- ja videoelementtejä multimediaohjelmien osaksi sekä liittää niitä osaksi muuta verkkoviestintää. Opiskelija tutkii ja kehittää multimediakäyttöympäristöä verkkopalvelimella sekä kehittää verkkoviestinnän ja markkinointiviestinnän osaamisen hallintaa multimediaelementtien avulla. Luo pienimuotoisen kerronnallisen elokuvan.

Previous studies:

Suunnitelmasta toteutukseen verkkoympäristössä -opintojakso tai vastaavat tiedot.

00118 Testing and Introducing Web Services, 5 cr**The student is able to:**

- testata verkkopalveluja toiminnallisesti ja ei-toiminnallisesti
- käyttää testauksen työkaluja ja tekniikoita
- opiskelija pystyy varmistamaan verkkopalvelun näkyvyyden ja saavutettavuuden sekä hallitsee käytön seurannan työkalut
- soveltaa erilaisia testausmenetelmiä ja tekniikoita palvelun kehittämisen välineenä

Contents of the study unit:

- palvelunkehittäjän testaustekniikat
- testauksen suunnittelu
- yksikkötestaus ja järjestelmätestaus
- suorituskyvyn testaus
- käyttöönottotestaus

- tulosten analysointi sekä palvelun kehittäminen analyysin perusteella

Study unit description:

Opiskelija oppii testauksen peruskäsitteet ja saa selkeän kuvan verkkopalvelun testauksesta ja siinä käytettävistä tekniikoista ja työkaluista. Opiskelija pystyy kehittämään verkkopalvelua testauksen tuloksena ja osaa suunnitella ja toteuttaa testauksen sekä raportoida testauksesta ja sen kulusta.

Previous studies:

Suunnitelmasta toteutukseen verkkoympäristössä –opintojakso tai vastaavat tiedot.

047 LAUREA'S COMMON STUDIES, 0 cr**00194 Preparatory Studies in English, 3 cr****The student is able to:**

- master basic English vocabulary and grammar
- use various methods for improving their language skills

Contents of the study unit:

- main structures of the English language
- basic English vocabulary

Study unit description:

Students improve their skills in communicating in English as preparation for completing actual studies in the language.

00195 Preparatory Studies in Swedish, 3 cr**The student is able to:**

- master basic Swedish vocabulary and grammar
- use various methods for improving their language skills

Contents of the study unit:

- main structures of the Swedish language
- basic Swedish vocabulary

Study unit description:

Students improve their skills in communicating in Swedish as preparation for completing actual studies in the language.

00202 Initial Test in English Skills, 0 cr**Study unit description:**

At the beginning of their studies, all students who have English and/or Swedish qualifications on prior certificates required for studies at Laurea, or who have received previous instruction in English and/or Swedish take initial tests in these languages. The initial tests are the same for all fields of study and may only be taken once. Students who transfer between degrees within Laurea do not have to retake the test. The test is used to check the students' starting level before language studies begin. Students who fail the test must take preparatory studies in the language at the start of their studies. Having passed the preparatory studies, students obtain credits for inclusion in elective studies.

00203 Initial Test in Swedish Skills, 0 cr**Study unit description:**

At the beginning of their studies, all students who have English and/or Swedish qualifications on prior certificates

required for studies at Laurea, or who have received previous instruction in English and/or Swedish take initial tests in these languages. The initial tests are the same for all fields of study and may only be taken once. Students who transfer between degrees within Laurea do not have to retake the test. The test is used to check the students' starting level before language studies begin. Students who fail the test must take preparatory studies in the language at the start of their studies. Having passed the preparatory studies, students obtain credits for inclusion in elective studies.

00189 Preparatory Studies in Mathematics, 3 cr

The student is able to:

- demonstrate the basic skills of mathematical applications required by his / her field of study

Contents of the study unit:

- recapitulation of upper secondary school mathematics

Study unit description:

Student practices his / her mathematic skills and develops preparedness to complete studies in mathematical applications within the main courses.

00190 Student tutoring, 5 cr

The student is able to:

- understand the objectives and operating methods of the university of applied science and their degree programme
- plan ways of encouraging and motivating new students
- orientate new students in the local learning environment and culture
- market Laurea and its opportunities for studying
- use the communicating and marketing skills needed in marketing Laurea
- act as mentors for students who need special support
- actively promote well-being in a work community

Contents of the study unit:

- intensive training shared by all Laurea student tutors
- planning of the tutoring process at each unit
- orientation of new students
- marketing Laurea's studying opportunities
- acting as a student tutor
- developing competence in personal guidance and counselling

Study unit description:

The competence gained in the study unit relates to orientating new students and to behaving responsibly in typical situations requiring student tutoring at Laurea or one of its units. Competence is based on understanding Laurea's objectives and the basic principles of its operating culture.

00191 International Student Tutoring, 5 cr

The student is able to:

- understand the objectives and operating methods of the university of applied science and their degree programme
- understand the content of their culture
- plan operating methods related to grouping international students
- familiarise international students with Finnish learning environments and cultures
- actively promote well-being in a work community

Contents of the study unit:

- intensive international student tutor training
- planning of the tutoring process at each unit
- orientation of new international students
- tutoring of exchange students throughout the exchange; participation in exchange student orientation and in

coordinated leisure activities

- developing competence in personal guidance and counselling

Study unit description:

The competence gained in the study unit relates to helping international degree and exchange students become settled in Finland, and to behaving responsibly in typical international situations at Laurea or one of its units. Competence is based on understanding Laurea's objectives, the basic principles of its operating culture, and the Finnish culture.

00331 Innoplaza, Study Unit in Entrepreneurship, 15 cr

The student is able to:

- assess their own qualities and their ability to become entrepreneurs
- work in teams of students with diverse backgrounds
- develop business ideas
- evaluate business opportunities
- investigate and analyse markets and target customer groups
- create business models and earnings principles that suit their business ideas
- come up with realistic business plans, including budgets, on the basis of their business ideas
- present their business plans in a concise manner

Contents of the study unit:

- innovation process and systems
- internal and external company analyses and positioning on the market
- business ideas, business models and business plans
- customer orientation, competitiveness, sales and marketing
- planning the finances and funding of a company
- regulations governing business

Study unit description:

Students develop the ability to create a business plan for a start-up, on the basis of an innovative business idea. Students from different institutions and fields of study work in teams at agreed times over several months, producing business plans. The study unit consists of three modules. The diversity of the students' skills in creating a business plan is supported by the opportunity to attend courses at some of the other participating universities of applied sciences. Each institution grants 15 cr for completing the unit. The study unit's coordinators are Jussi Järvi and Teppo Leppälahti.

00387 Go abroad, 3 cr

The student is able to:

- work successfully in a foreign country's learning and work environment.

Contents of the study unit:

- process of cultural encounters
- target country and target higher education institution, company or organisation
- Finnish culture and education system
- practical arrangements related to exchanges

Study unit description:

In order to apply for the Erasmus grant awarded by the EU or for a grant awarded by Laurea, students departing for international exchanges or job placements must generally complete preparatory international studies.

The studies include the online studies, contact sessions and learning exercises, which vary by unit/region.

Previous studies:

Acceptance onto an international exchange or job placement.

00388 Preparatory Studies in Finnish (as Mother tongue), 3 cr

The student is able to:

- compose varied factual and functional texts
- make use of different writer's tools and grammar aid
- take on the communicative responses of team work

Contents of the study unit:

- creating a personal communicative profile
- using dictionaries and other tools for language aid
- providing the student for oral and written challenges of study time

Study unit description:

Students improve their skills in speech communication and writing in order to be able to successfully complete their studies in Laurea.

00392 Work and Development in a Community of Experts, 3 cr

Study unit description:

The Work and Development in a Community of Experts study unit is implemented through genuine development and innovation activities. Students can analyse the core phenomena of development and quality in practice. They can systematically look for solutions related to functions and problems in the expert organisation on which the development project is focused.

Students learn the principles of development work and form a development team. The members of the development team participate in a specific Laurea development work group or project for one academic year.

Thus students receive experience of working as equal experts. They learn to develop their own influencing skills, as well as to evaluate their work as opinion leaders in diverse innovation environments and as collaborative network players.

They evaluate their activities as modifiers, developers and influencers of practices.

080 ELECTIVE LANGUAGE STUDIES, 0 cr

00206 Working French 1, 5 cr

The student is able to:

- communicate in common workplace situations
- write clear general texts using tools
- recognise typical cultural characteristics of the areas where the language is spoken
- know the main professional vocabulary related to their fields
- use and deepen basic language skills acquired earlier

Contents of the study unit:

- workplace communication events, service events
- small talk
- strengthening and deepening basic grammar skills
- cultural differences

Study unit description:

Students attain skill level B1 as defined in the Common European Framework.

Previous studies:

Basic language study unit (10 cr) or upper secondary school courses.

042 DIGITAL MEDIA SERVICES, 25 cr

Description:

Opiskelija osaa suunnitella, toteuttaa ja kehittää käyttäjakeskeisiä, selkeitä ja korkeatasoisia digitaalisen median ratkaisuja ja niihin liittyviä sisältöjä ja palveluja soveltavan tutkimus- ja kehitystoiminnan avulla

The student will be able to:

- analysoida ja mallintaa yrityksen toimintaprosesseja palvelujärjestelmien kehittämiseksi
- toimia kehittäjänä digitaalisten palvelujärjestelmien toteutuksessa ja hallinnassa
- kehittää, suunnitella ja toteuttaa digitaalisen median verkkopalveluja
- tutkia alan kehitystä ja ottaa käyttöön alan uusimpia teknologioita.
- tuottaa uusia innovatiivisia palveluja
- tuottaa sisältöä mobiililaitteisiin
- kehittää vastuullisesti palvelujärjestelmäosaamistaan monipuolisissa toimintaympäristöissä
- kehittää järjestelmän toteutusprosessia

Content:

Teema sijoittuu ammatillisessa kasvussa ammatillisuuden syventävään vaiheeseen, jossa opiskelija oppii toimimaan oman alansa asiantuntijana ja kehittäjänä kansainvälisessä arvoverkostossa. Autenttiset kehittämishankkeet laboratorioissa suuntaavat ja syventävät oppimisprosessia.

00119 Component-Centred Software Development, 15 cr

The student is able to:

- analysoida ja mallintaa yrityksen toimintaprosesseja
- hahmottaa ohjelmistoarkkitehtuuria sekä komponenttikeskeisen ohjelmistosuunnittelun periaatteita
- käyttää graafisia käyttöliittymäkomponentteja osana toimivan käyttöliittymän suunnittelua
- soveltaa uusia teknologisia ratkaisuja itsenäisten web-palvelujen tekoon tai osana laajempaa arkkitehtuuriratkaisua
- kehittää, suunnitella, toteuttaa ja dokumentoida skaalautuvia digitaalisen median verkkopalveluja
- tutkia palvelujen kehitystä ja ottaa käyttöön alan uusimpia teknologioita

Contents of the study unit:

- mallinnus- ja suunnitteluprosessi
- oliopohjainen kehittämisprosessi
- ohjelmistotuotteen dokumentointi
- nykyaikaisten arkkitehtuuriratkaisujen konseptointi ja kehittäminen
- verkkopalvelujen suunnittelu, toteutus, kehittäminen ja innovointi
- tulevaisuuden verkkopalveluratkaisut

Study unit description:

Opintojakson syventyvä osaaminen ilmenee nykyaikaisten verkkopalvelujen ja niiden toteutusten kehittämisenä. Kehitystyön perustana opiskelija saa kokonaisnäkemyksen nykyaikaisista arkkitehtuuriratkaisuista ja niiden mahdollisuuksista ja kehittää osaamistaan korkeatasoisten verkkopalvelujen asiantuntijana

Previous studies:

Suunnitelmasta toteutukseen verkkoympäristössä -opintojakso tai vastaavat tiedot.

00120 Advanced Internet Services, 10 cr

The student is able to:

- suunnitella, kehittää ja toteuttaa usean median kautta julkaistavaa sisältöä
- tutkia ja soveltaa informaatioarkkitehtuuriratkaisuja, jotka tuottavat keskenään kommunikoivia älykkäitä verkkopalveluja
- yhdistää tietojärjestelmiä ja sisällöntuotantoteknologiaa
- tuottaa sisältöä mobiililaitteisiin
- käyttää erilaisia digitaalisia kanavia yrityksen liiketoiminnan tukena
- toteuttaa yrityksen tarpeita vastaavia palveluratkaisuja
- arvioida omaa kehitystyötä sekä dokumentoida sitä

Contents of the study unit:

- universaalit sisällöntuotantostandardit
- internetin lisäarvopalveluiden hyödyntäminen yritysten liiketoiminnan tukena
- sisällön tuottaminen langattomille laitteille
- livinglab-toiminta ja alan kehittäminen
- uusien informaatioteknologisten soveltojen soveltaminen
- tulevaisuuden sisällöntuotantopalveluratkaisut

Study unit description:

Opintojakso liittyy opiskelijan kehittymiseen uusien teknologiaratkaisujen soveltamisessa. Opiskelija oppii hyödyntämään ja kehittämään ratkaisuja, jotka pohjautuvat uusimpiin kehittyviin sisällöntuotantoteknologioihin ja niihin liittyviin standardeihin. Oppiminen tapahtuu oppimisympäristöissä tutkivan ja kehittävän toiminnan avulla.

Previous studies:

Komponenttikeskeinen ohjelmistotuotanto -opintojakso tai vastaavat tiedot.

006 BUSINESS COMPETENCE, 20 cr**Description:**

Students understand the structure of the sector and its clusters, and achieve the basic abilities to develop company operations and processes.

The student will be able to:

- examine a company's operating environment holistically, analysing its major dynamics
- recognise different business models and earnings principles
- evaluate the significance of a company's operations and processes as critical success factors and generators of added value for the customer
- use tools for directing and managing a company
- create a customer-focused and profitability-oriented business plan

Content:

The theme's study units form a learning module that allows students to examine business operations holistically as part of an operating environment. Instead of traditional sectors, business is defined in terms of clusters that transcend the boundaries between sectors. At the level of individual companies' operations, the study units look at operating models that describe the organisation's core logic in creating value for customers, a company and other stakeholders. With regard to companies' core processes, essential skills lie in marketing and selling products/ services, managing customer relationships, and business management and support processes. On the basis of the competence gained in the compulsory study units, students achieve the abilities to formulate customer-focused and profitability-oriented business plans.

00004 Operating Environments, Clusters and Business Models, 10 cr**The student is able to:**

- understand the structure and dynamics of a business environment, and the related opportunities and challenges
- understand the business through business models and earnings principles
- describe various value chains and networks
- determine the core functions of a company's operations

Contents of the study unit:

- structures of the operating environment
- central dynamics of the operating environment
- value chains and networks
- clusters in the operating environment
- different business models and earnings principles
- value generation for customers
- company's operations, core and support processes
- company stakeholders

Study unit description:

The competence gained in the study unit appears as a holistic view of business environments and clusters in the sector, and the role of an individual company within these. Competence is based on understanding different business models and earnings principles in general. From the viewpoint of individual companies, competence involves managing the business as a whole through separate functions and processes. It is important that students can generally determine who the company's customers are, how value can be generated for them, what the company's earnings mechanism is, what its operating models are, and who its partners are.

Previous studies:

None.

00006 Managing Business Performance, 10 cr**The student is able to:**

- determine a company's critical success factors
- determine whether business targets are in line with strategy
- set company targets for finance, customer relationships, internal operations, competence and commitment
- interpret and make use of a company's financial analyses
- use information systems in managing operations
- interpret rules that apply to business operations and understand their significance for a company's operations

Contents of the study unit:

- critical success factors
- balanced scorecard (BSC)
- basics of internal and external accounting
- profitability accounting
- IT systems in functional management
- business plan
- main rules for business operations
- basic ethical issues in business

Study unit description:

The competence gained in the study unit relates to the mastery of financial and non-financial business targets and indicators, and the use of business-related IT systems. It is essential that students understand the strategic nature of business targets, and the role of various analyses in managing a business as a whole. This forms a comprehensive foundation for the long-term development of business operations in changing circumstances. Students also develop competence in assessing the ethics of a business and in developing practices to be ethically, economically, socially and environmentally sustainable.

Previous studies:

Operating Environments, Clusters and Business Models or equivalent knowledge.

00005 Developing and Managing Customer Relationships, 10 cr**The student is able to:**

- understand key trends of marketing
- analyse different customer relationships (consumer, business or public sector), customer needs and behaviours
- manage customer relationships and main customer relationship management (CRM) processes

Contents of the study unit:

- customer-orientation as a unifying factor for all company functions
- principles of customer behaviour and an organisations' purchasing behaviour
- competitive marketing methods
- basic processes of CRM, commercialisation, sales and customer relationship marketing
- analysing and developing customer relationships
- customer profitability
- significance of productisation and brand development

- selected research methods

Study unit description:

The competence gained in the study unit relates to continuous analysis, development and management of long-term and profitable customer relationships using market-appropriate methods. Customer relationship development and management are based on knowledge of the customer and management of customer information. It is essential to understand the various challenges faced by CRM depending on the type of customer group, the stage of the value chain/network and the information-intensiveness of the business, each of which generates its own challenges.

Previous studies:

Operating Environments, Clusters and Business Models or equivalent knowledge.

007 LEADERSHIP COMPETENCE, 20 cr

Description:

- * Students learn to analyse and develop their leadership competence and to work as experts.
- * Students learn to manage work groups and networks in line with a strategy.

The student will be able to:

- * ethically and productively manage work communities and networks
- * manage and develop competence
- * evaluate, lead and develop teamwork
- * promote creativity in a work community
- * manage and develop multicultural work-related communication

Content:

The first study unit of the theme helps students learn the basics of leadership, so that they can act as managers of a group, team, work community or organisation, or as opinion leaders in a community of experts. The optional study units support the social aspect of leadership, deepening the students' skills in innovation management and employee competence development.

Learning process:

The theme strengthens the students' leadership skills within the framework of organisations, complementing skills attained through projects and teams in other studies.

00007 Responsible Leadership in a Work Community, 10 cr

The student is able to:

- * act responsibly and in a target-oriented way in situations requiring management in an organisation
- * analyse and develop their own actions as responsible work community and team members
- * apply labour legislation in practical situations

Contents of the study unit:

- * Strategic management and leadership
- * Self-management
- * Organisational culture and values
- * Human resource management/occupational welfare
- * Labour law and contract matters

Study unit description:

The competence gained in this study unit relates to the mastery and responsible use of the main management tools in workplace situations. Competence is based on knowledge of the operating structures, targets and profitability of an organisation. The perspective is ethical responsibility in management.

00008 Effectiveness and Communications in an Organisation, 10 cr

The student is able to:

- * plan, implement and evaluate an organisation's communications in Finnish and English
- * communicate effectively on themselves, their work and their work community, as experts and with the help of their networks

Contents of the study unit:

- * Roles of communication in networks and organisations
- * Target-oriented planning, implementation and evaluation of an organisation's communications
- * Managing communication according to plan
- * Expert's communication skills
- * Intercultural communication

Study unit description:

The emphasis of the study unit is on organisational communication. The competence gained in the study unit relates to influencing people, work groups and networks using communication. The framework for competence development is formed by organisations that use Finnish and English as their working languages. The study unit is bilingual (Finnish and English).

Previous studies:

Pass in the initial English language test.

0000801 Effectiveness and Communications in Finnish, 5 cr

0000802 Effectiveness and Communications in English, 5 cr

00010 Competence Development and Coaching, 10 cr

The student is able to:

- create enriching communities
- manage competence
- develop an organisation's competences
- plan and implement competence development programmes, development seminars and training events

Contents of the study unit:

- coaching
- coaching methods
- learning organisation
- learning and competence development
- developing an operating culture

Study unit description:

The framework for this study unit consists of competence-enriching communities, i.e. networked communities whose operations are primarily aimed at creating new competence. The focus is on competence development using development and training tools.

Previous studies:

Responsible Leadership in a Work Community or equivalent knowledge.

00009 Creative Teams, 10 cr

The student is able to:

- lead teams to conduct dialogues
- give constructive feedback to team members
- use various ideation methods in a team
- set team targets together with others
- motivate other team members to reach common targets
- analyse team activities and work methods

- model experts' and workers' tacit knowledge
- generate information on the work community's activities and make use of it in development
- present and sell ideas at organisation-wide level

Contents of the study unit:

- shared expertise, interaction and dialogue as development tools
- team development stages
- ideation methods in teamwork
- team leadership (especially motivation)
- shared expertise and modelling tacit knowledge
- analysing and benchmarking an organisation's operating processes
- analysing innovations generated in teams in relation to an organisation's values and strategic targets
- refining ideas into concrete plans
- selling an idea in an organisation
- developing a work community

Study unit description:

The competence gained in the study unit relates to participating innovatively in teams and leading teams in a proactive, target-oriented way. The central areas of expertise include active interaction and leadership skills needed in teams, the use of various ideation methods, analysing team activities and targets, and modelling competence and processes in an organisation. Competence is reflected concretely in the management of a project that aims to develop an innovative idea. The focus is on teamwork as a development tool.

Previous studies:

Responsible Leadership in a Work Community or equivalent knowledge.

010 INVESTIGATIVE ACTION IN SERVICE DEVELOPMENT, 10 cr

Description:

Students can innovatively develop and create service operations using methods of applied research and development.

The student will be able to:

- outline development objectives for a chosen object
- acquire, assess and use competence to achieve development targets
- create partnerships and act as partners
- recognise and disseminate good practice in a network
- participate in an enriching community and a multidisciplinary environment
- generate plans and new solutions
- understand the effects of their own actions in an open network for the sector
- promote creativity with their actions

Content:

The theme's study units form a development module based on the principles of innovation work in the metropolitan area. The elective study unit examines the industry from the point of view of combining competences and producing competence for cluster interfaces. It links the development of new competence to examining the conditions of a new business. After completing this theme, students can move on to develop their entrepreneurial skills at the InnoPlaza shared entrepreneurship module, or at business incubators operating in the area.

Learning process:

This theme is completed at the deepening stage of professional competence, usually in the third year. The students' developmental competence becomes apparent as an investigative and developmental approach to work

00018 Developing Service Innovations, 10 cr

The student is able to:

- describe development objectives from the perspectives of the labour market and regional development
- participate in a partnership network

- work effectively in a team and act as opinion leaders in a community of experts
- evaluate their own and others' competence, work and results in accordance with development objectives
- use the tools and methods of applied R&D in development work
- carry out and report on an objective-oriented development project

Contents of the study unit:

- determining development needs
- creating a context and knowledge base
- planning, implementing and evaluating the development process
- working in a shared expertise group

Study unit description:

The study unit forms an objective-oriented development project, where the competence gained is that of a developer using investigative research methods. The object of competence development is determined for each cluster by Laurea's research and development policy.

Previous studies:

Main professional competences minimum of 120 cr or equivalent knowledge.

00019 Service Innovations in Business Development, 10 cr

The student is able to:

- analyse the competence of the region and of organisations and set suitable development objectives
- carry out an objective-oriented development project
- generate new solutions, services and service systems
- assess their usefulness in terms of the profitability of either a start-up company or an existing business
- understand the effects of their own actions in an open network for the sector
- promote creativity with their actions

Contents of the study unit:

- familiarisation with major regional and national development strategies
- creating a context and knowledge base
- planning, implementing and evaluating the development process
- working in a shared expertise group as part of an innovation network
- analysing development and information needs
- evaluating the usefulness of generated solutions, services, products or systems
- copyright issues

Study unit description:

The competence gained in this study unit forms the basis of target-oriented developmental competence in promoting business operations. The framework is the promotion of innovations and related entrepreneurship. A development project is carried out to produce new competence for cluster interfaces and evaluate the added value generated by the competence for a network. Multidisciplinary teams are formed on the basis of the competence needs of each development project.

Previous studies:

Developing Service Innovations or equivalent knowledge.

00047 Innovation-Based Entrepreneurship, 10 cr

The student is able to:

- evaluate their own opportunities for starting up an innovation-based service business
- formulate an appropriate business model for their business ideas
- formulate a realistic business plan
- start up a business
- interpret the financial reports of a small business

Contents of the study unit:

- business ideas, business models and business plans
- planning the finances and funding of a start-up company
- choosing a form of enterprise and the rules steering business activities
- authorities and official activities related to starting up a business
- product-specific expenses and pricing
- entrepreneurs as employers

Study unit description:

In this study unit, students evaluate their own opportunities for putting business ideas based on service innovations into practice through entrepreneurship. Students formulate a business plan for their business idea, including all the appropriate documentation, and become familiar with the practical obligations and responsibilities of planned bu

Previous studies:

Developing Service Innovations or equivalent knowledge.

00020 Innovation-Based Entrepreneurship, 10 cr

The student is able to:

- evaluate their own opportunities for starting up an innovation-based service business
- formulate an appropriate business model for their business ideas
- formulate a realistic business plan
- start up a business
- interpret the financial reports of a small business

Contents of the study unit:

- business ideas, business models and business plans
- planning the finances and funding of a start-up company
- choosing a form of enterprise and the rules steering business activities
- authorities and official activities related to starting up a business
- product-specific expenses and pricing
- entrepreneurs as employers

Study unit description:

In this study unit, students evaluate their own opportunities for putting business ideas based on service innovations into practice through entrepreneurship. Students formulate a business plan for their business idea, including all the appropriate documentation, and become familiar with the practical obligations and responsibilities of planned business operations.

Previous studies:

Developing Service Innovations or equivalent knowledge.

046 WORKPLACE COMPETENCE IN BUSINESS INFORMATION SYSTEMS, 30 cr

Description:

Opiskelija soveltaa ja kasvattaa osaamistaan työelämän tietojenkäsittelytehtävissä analysoimalla ja kehittämällä harjoitteluorganisaation tietojenkäsittely-ympäristöä tai käytänteitä.

The student will be able to:

- soveltaa ja kehittää osaamistaan työelämän tietojenkäsittelytehtävissä
- toimia täysvaltaisena työyhteisön jäsenenä
- perehtyä itsenäisesti harjoittelutehtävissä tarvittaviin uusiin taitoihin
- havainnoida ja analysoida kriittisesti harjoitteluorganisaation tietojenkäsittelyn toimintaympäristöä
- laatia harjoitteluorganisaation tietojenkäsittelyn toimintaympäristöä tai tietojenkäsittelykäytäntöjä koskevia perusteltuja kehittämis ehdotuksia
- hahmottaa ehdotettujen muutosten vaikutuksen harjoitteluorganisaation arvover-kostossa
- arvioida omaa tietojenkäsittelyosaamistaan
- arvioida uramahdollisuuksia tietojenkäsittelytehtävissä

Content:

Teema painottuu käytännön työelämän ja siihen liittyvän osaamisen kehittämiseen

00121 Job placement in Business Information Systems, 30 cr**The student is able to:**

- apply and develop their competence in workplace business information system tasks
- participate fully in a work community
- independently acquire new skills required for the job placement
- observe and critically analyse the data processing environment of the host organisation
- formulate well-founded development proposals regarding the host organisation's data processing environment or practices
- outline the effects of proposed changes on the host organisation's value network
- evaluate their own competence in business information systems
- evaluate their career opportunities in business information systems

Contents of the study unit:

- creating a work competence development plan
- practical work in a host organisation
- drawing up a development report
- evaluating competence and complementing career plans

019 THESIS, 15 cr**Description:**

Students can apply an investigative approach to developing the workplace.

The student will be able to:

- cooperate with the workplace and other partners, and evaluate their own work and solutions critically
- work in persistent, target-oriented ways
- produce new information systematically, critically and creatively, and develop the workplace
- conceptualise the phenomena of the workplace with a basis in research data
- manage the big picture, presenting their ideas logically and with justifications
- present well-grounded, practical work development proposals

Content:

The bachelor's thesis is a systematic and logical investigation or practical development task based on research data on a subject that extends the student's professional skills. Theses help students to grow professionally and are linked to the employment sector and to regional development. They can also form part of Laurea's research and development work.

The process begins with familiarisation with the thesis process. After this, students come up with a subject and formulate a thesis plan. The process progresses from implementing the thesis plan to finishing and publishing the thesis. The thesis process includes guided independent work as well as seminars.

The thesis is based on a real-life development challenge. It emphasises interaction with the labour market and an investigative approach. Thesis reports are based around describing object-oriented activities and their results, as well as on theoretical and research-based analyses. Theses contain development proposals for the sector or the workplace, and, at best, broadly significant innovations.

The theme involves the completion of a maturity test, in which students must demonstrate mastery of the subject and good language skills.

Learning process:

In terms of professional growth, the thesis is related to deepening professional competence.

00043 Thesis, 15 cr

The student is able to:

- present well-grounded work development proposals
- conceptualise the phenomena of the workplace with a basis in research data
- use appropriate research and development methods for generating new data
- participate in development projects, working responsibly in a team with employers and other partners
- evaluate their own work and solutions critically
- manage the big picture, presenting their ideas logically and with justifications

Contents of the study unit:

- familiarisation with the thesis and development project process, and coming up with a subject
- thesis plan describing the background and objectives of the thesis, main data from previous research on the subject, the research and development methods used and an implementation plan
- carrying out the work for the thesis
- reporting on and publishing the thesis
- maturity test

Study unit description:

Students learn to develop real work processes through research, producing new solutions in the form of products, operating models or work cultures.