CURRICULUM

Industrial Management

The Degree Programme in Industrial Management enables you to develop competences required in global business. The four-year degree studies give you strong expertise in intelligent production, sales, life cycle management of products and services, and team and project leadership. Studying in a multicultural environment in close cooperation with companies enhances your communication and interaction skills. It also provides you with an excellent start for the development of your organisational, self-management and leadership skills. In Industrial Management training, you will strengthen your educational and work-related migration path in the region and in Finland.

Degree
Degree Title: Bachelor of Engineering
Extent: 240 cr / 4 years

Typical Tasks for Graduates
An engineer with the Industrial Management degree has exceptionally good career opportunities. There are jobs available in more than one field. There are international companies and several growing SME's in the region that use English as their common corporate language and that cooperate with us. Your training is closely related to both manufacturing and software industry, which gives you a vast array of opportunities for the beginning of your engineering career. Your prospective job title may be, for example, Quality Engineer, Production Engineer, Project Designer, Sales Engineer, Procurement Engineer, or Technical Service Expert.

Implementation of Studies
Karelia University of Applied Sciences offers a multicultural learning environment where you can develop your competences with a special focus on intelligent production, finance and sales. The course supply also includes studies in quality and project management, intercultural communication and 30 credits of projects with and for the surrounding industry. Moreover, you can choose complementary studies from other degree programmes of Karelia UAS or preferably from our international partner institutions of higher education. You also have the possibility to participate in student exchange either in our partner universities or in work exchange either in a foreign branch of a company located near Joensuu or some other foreign company. Learning the profession of an engineer consists of lectures, problem solving individually or as part of a group, self-studies, project work and any other necessary method required when preparing for the future profession. Some of the courses will be joint courses with our International Business degree programme.

Structure and Content of Studies
The degree contains common core and complementary studies enhancing your key and specialised competences. The extent of common core studies in Industrial Management is 225 credits and that of complementary studies 15 credits. The common core studies include 30 credits of practical training and 15 credits of thesis. The thesis process is divided into three 5-credit courses. Each course can be completed at different stages of studies.

In the beginning of your studies, you will become familiar with the basics of both component and software manufacturing as well as sales and marketing. The first three semesters include 5 credits of mandatory Finnish language studies per semester. Native Finnish students have other studies to replace these. During your second year, you enhance and deepen your knowledge based on the things you learnt during the first year. You are introduced into more advanced concepts, such as supply chain management, quality systems and tender processes. These (and other) concepts come together in a 10-credit company project during the spring semester of the second study year. The third year continues the same way. The ideas, subjects and concepts continue to become more complex and the skills and work standards required from a student are closer to the level required from an engineer at the starting point of a career. The spring of the third year has two 8-credit project studies with five-credit support studies each. The aim of these projects is to give the student the chance to prove that s/he is a potential employee for companies involved in the projects. These projects combine all previous studies into a real industry case. The fourth year consists of complementary studies (15 credits), thesis (15 credits) and practical training (30 credits). There is also the possibility to plan the studies in a way that graduation in three years is possible. This requires that the training is completed during the previous summers and the student is able to get a thesis subject from a company early enough during the third study year. In addition, complementary studies need to be finished in time.

Complementary studies mostly contain 15-credit modules. The following modules suit especially those who study in the Degree Programme in Industrial Management:

- Precision Engineering
- Environmental Management
- International Studies 1
- Optional Language (Finnish, Spanish, Chinese, French, German, Russian)
- Refresher Courses in Languages and Mathematics (3 –12 credits)
- Training Programme of Joensuu Sports Academy (3–15 credits)
- Participation in Peer Tutoring and Student Union Activities (3 –15 credits)
- Other Complementary Studies (15 credits)
    - These can be any higher education studies

If you are already an entrepreneur or thinking of becoming one, some core and complementary studies, international exchange, practical training and thesis can be combined with your business activities or with the development of your business idea. As a current or future entrepreneur, you have the possibility to get guidance and support in combining studies and entrepreneurship during your studies. Complementary studies will be completed in the autumn semester of the fourth study year. Additionally, you can study complementary courses during summer months. Participation in Sports Academy training and optional language studies can be spread over several semesters. If the studies mentioned above do not match with your professional objectives, you can discuss other alternatives with your student counsellor.

INDUSTRIAL MANAGEMENT

Bachelor of Engineering (UAS)

240 cr / 4 years

Karelia

Mechanical Components and Software Manufacturing | ICT Services | Design and Planning of Processes | Knowledge and Quality Management | Sales and Customer Relationships | Business Management | Ethical Competence | Innovation Competence | Internationalisation Competence | Learning Skills | Work Community Competence

4th year SPECIALISATION

Practical Training	15 cr	Thesis	15 cr
Complementary Studies	15 cr	Practical Training	15 cr

3rd year SOLUTION DEVELOPMENT

Career Planning and Development 3	1 cr	Customer Requirements Defining Project	8 cr
Digital Solutions and Service Design	5 cr	Production Process Design Project	8 cr
Production Management	5 cr	Business Process Management	5 cr
International Sales	3 cr	Career Planning and Development 4	1 cr
Investment Accounting	3 cr	Research Methods	3 cr
Lean Green Belt	5 cr	Production Planning and Control	4 cr
Project Management	3 cr	Digital Transformation	2 cr
Risk Management and Contract Technology	4 cr		

2nd year KNOWLEDGE-BASED MANAGEMENT

Teamwork	2 cr	Data Collection on Production and Products	5 cr
Value and Supply Chain Management	5 cr	Methods for Analysing Numerical Data	5 cr
Career Planning and Development 2	1 cr	Knowledge-based Decision-making	5 cr
Information Systems and Big Data	4 cr	Project Work	6 cr
Basics of Sales, Marketing and Bidding	3 cr	Intercultural Management	3 cr
Cost and Profitability Calculation	4 cr	Project Documentation	2 cr
Basics of Quality Systems	4 cr	Requirements Engineering	2 cr
Finnish Language/ Business Communication	5 cr	Entrepreneurship and Design Thinking	2 cr
Advanced Statistical Mathematics	3 cr		

1st year FOUNDATION

Career Planning and Development 1	2 cr	Manufacturing	5 cr
Basics of Algebra and Statistical Mathematics	5 cr	Project Work in Production	5 cr
Academic English	3 cr	Project Work in Software	5 cr
Materials Engineering	3 cr	Finnish Language / 3. language	5 cr
Basics of Software Engineering	5 cr	Working in Finland / Svenska för arbetslivet	5 cr
Finnish Language / 3. language	5 cr	Value Creation in Production Process	5 cr
Basics of Marketing	3 cr		
Intercultural Communication	2 cr		
Sales Coaching	2 cr		

Competence Requirements

Area of Competence	Description of Competence Bachelor of Engineering
Mechanical Components and Software Manufacturing	- understands most common production methods - is able to analyse production processes - understands the basic requirements for automatization and robotization - is able to use measuring tools used in industry - is able to use production information systems
ICT Services	- is able to manage solution development in a multidisciplinary team - is able to design and manage the requirements of an ICT project - understands the concepts of software design and control - understands the basic concepts of ICT infrastructure and platforms - is able to manage an Internet of Things project from data acquisition to decision-making
Design and Planning of Processes	- is able to select and use suitable problem-solving tools for a certain task - is able to select and use suitable development tools for processes and products - has knowledge of all the things required for successful life-cycle management - is able to do a meaningful requirement list for a software or mechanical component development process - is able to plan and manage a relatively small project - is able to model and simulate processes
Knowledge and Quality Management	- is able to extract data from businesses and processes - is able to do and/or manage data-analysis of essential information - has demonstrated his/her knowledge and ability to apply the Six Sigma tools appropriate for Green Belt level - understands the most commonly used quality systems in industry
Sales and Customer Relationships	- is able to apply basic marketing and sales methods for B2B - is able to define and handle tenders - is able to use customer resource management software successfully - is able to handle and manage technical customer service
Business Management	- is able to do cost accounting of a certain product or process - is able to do investment calculations at least on a single investment level - is able to analyse business models
Ethical Competence	- is able to assume responsibility for one's own actions and their consequences - is able to work according to the code of professional ethics of one's field. - is able to consider various actors in working - knows how to apply the principles of equality - knows how to apply the principles of sustainable development

Innovation Competence	- is able to solve problems and develop working methods innovatively - is able to work in projects - is able to carry out research and development projects and apply existing knowledge and methods of one's field - is able to find customer-oriented, sustainable and profitable solutions
Internationalisation Competence	- has the language competence necessary for the work in the field and its development - is able to cooperate with people from different cultural backgrounds - is able to take into account the opportunities and effects of internationalisation
Learning Skills	- is able to assess and develop one's competences and learning methods - is able to retrieve/ search, process and analyse information critically - can assume responsibility for team learning and knowledge sharing
Work Community Competence	- is able to function as a member of a work community and contribute to its work well-being - is able to function in various communication and interaction situations at work - is able to use information and communication technology in the tasks of one's field - is able to establish personal occupational contacts and to work in networks - is able to make decisions in new and unforeseen situations - is able to manage one's work and to work independently in tasks requiring expertise