

# Opasraportti

## FTEch - Courses in English for exchange students, Field of Industrial Engineering and Management (2017 - 2018)

### Courses in English for exchange students at the Study Field of Industrial Engineering and Management

This Course Catalogue lists the Industrial Engineering and Management courses taught in English that are available for exchange students **on the academic year 2017-18**.

**NB! Course availability:** Most of the listed **555-coded courses** are available for all **exchange students hosted by the Faculty of Technology** (engineering study fields of process engineering, environmental engineering, mechanical engineering, and industrial engineering and management, chemistry), **if they have the previous knowledge requirements** of the course (see "Prerequisites and co-requisites" in the course's description).

If you wish to do an **internship or a final thesis project** during your exchange at our Faculty, you need to **contact the Liaison** (contact information below) already when planning the exchange.

**Exchange students hosted by other University of Oulu faculties** have to contact the Liaison of the Faculty of Technology (see below) to ask if it is possible to participate to the courses, but also they must have the previous knowledge required for the course in question.

**When planning your exchange studies** and the required **Learning Agreement**, please **use the information provided under the Courses tab** in this Catalogue.

Please **read carefully** the provided information for each course you wish to take (course description, language of instruction, target group, course content, timing, preceding studies = required previous studies, additional information, etc.).

**All incoming exchange students must submit their Exchange Application online through the University of Oulu SoleMOVE system by the deadline given**, and they will **also need to include a course plan** to that application and **enclose the respective Learning Agreement signed** by them and their home university!

**Further information on application process** for incoming exchange students is available at <http://www oulu.fi/english/studentexchange> or at [international.office@oulu.fi](mailto:international.office@oulu.fi).

**For more information about the courses**, please contact Liaison (see contact info below).

**After arrival**, accepted exchange students are required to **register on-line in the WebOodi system to all courses (and later, to the possible final course exams too)**. Course registration takes place via the WebOodi system once you have arrived in Oulu and received your University of Oulu login information. When registering to a course you will be able to find detailed information on teaching and **schedules** here under the **Instruction** and **Examinations tabs**.

**Course levels:** Individual course codes include information on the **level of course**. There are 3 different levels of courses. The levels are marked with a **letter at the end of the course codes**, see explanations below. In WebOodi course descriptions the level is indicated in 'Type' section.

In academic year 2017-2018 there are **intermediate (A) and advanced (S) level courses available in English**. All **basic (P) level courses are only available in Finnish**, and therefore, not available for exchange students.

Teaching schedules are **periodical**: Courses organised during **periods 1-2** are given on the **autumn** term (September-December), and respectively **periods 3-4** refer to courses given during the **spring** term (January-May).

### Teaching periods for 2017-18

#### Autumn term 2017

Period 1: Sept 4 - Oct 27, 2017

Period 2: Oct 30 – Dec 22, 2017 (after period 2 there might be some exams until the end of January)

#### Spring term 2018

Period 3: Jan 8 – March 9, 2018

Period 4: March 12 – May 11, 2018 (after period 4 there might be some exams until the end of May)

For arrival and orientation dates see [www.oulu.fi/university/studentexchange/academic-calender](http://www.oulu.fi/university/studentexchange/academic-calender)

### Any questions about these courses should be addressed to:

Ms. M.Sc. Marita Puikkonen

Liaison for Faculty of Technology Student Exchange (Incoming & Outgoing Mobility) in

Process, Environmental and Mechanical Engineering, and Industrial Engineering and Management and Chemistry

Faculty of Technology, University of Oulu, Finland

Address: Study.Technology@oulu.fi

Further information on application process and services for incoming exchange students

[www.oulu.fi/university/studentexchange](http://www.oulu.fi/university/studentexchange) or at International.Office@oulu.fi

## Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

555351S: Advanced Course in Product Development, 5 op  
 555391S: Advanced Course in Project Management, 5 op  
 555310S: Demola Project, 5 op  
 555371S: Human Resource Management, 5 op  
 555375S: Lab to Market, 5 op  
 555313S: Management, 5 op  
 555382S: Management of a project-based firm, 5 op  
 555226A: Operations and supply chain management, 5 op  
 555343S: Product Data and product life cycle management, 5 op  
 555242A: Product development, 5 op  
 555346S: Product portfolio management, 5 op  
 555333S: Production Management, 5 op  
 555350S: Research and Technology Management, 5 op  
 555377S: Risk Management, 5 op  
 555378S: Seminar in industrial engineering and management, 5 op  
 555370S: Strategic Management, 5 op  
 555376S: Sustainable organisational development, 5 op

## Opintojaksojen kuvaukset

## Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset

## 555351S: Advanced Course in Product Development, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Haapasalo, Harri Jouni Olavi

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555345S    Advanced Course in Product Development    6.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Period 2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- understand the objectives of requirements engineering (RE), design for excellence (DfX) product design concept and delivery capability creation (DCC) in order to develop and ramp up sustainable products with minimum product specific investments
- understand requirements engineering process and its key activities, DfX product design concept as product design guidelines, targets and key performance indicators (KPIs)
- understand DCC process as a sub-process of new product development (NPD) process including key roles, tasks and milestone criteria
- analyse and further develop RM, DfX and DCC as a part of product development processes

**Contents:**

The concepts of requirements management, requirements engineering process, requirement prioritisation and valuation, Design for Excellence (DfX), delivery capability creation (DCC), different stakeholders and their requirements for product development

**Mode of delivery:**

The tuition will be implemented as face-to-face teaching.

**Learning activities and teaching methods:**

Lectures 20 h / group work and self-study 114 h.

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

555242A Product development, 555350S Research and Technology management (Technology Management).

**Recommended optional programme components:**

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**Recommended or required reading:**

Will be defined at the beginning of the course.

**Assessment methods and criteria:**

Group work, exam.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Harri Haapasalo.

**Working life cooperation:**

The group work will be done in cooperation with case companies.

**Other information:**

Substitutes course 555345S Advanced Course in Product Development.

## 555391S: Advanced Course in Project Management, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kirsi Aaltonen

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555381S Project Leadership 5.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Periods 1-2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- explain and describe the most important project management areas and tools
- identify and evaluate the most applicable managerial approaches for different types of projects
- identify development needs and opportunities in project-based organisations
- to develop project management processes in an organisation

**Contents:**

different type of projects and industry specific approaches to project management, agile project management, managing large international projects, project governance, project risk and uncertainty management, project time and schedule management, management of innovative projects.

**Mode of delivery:**

The tuition will be implemented as blended teaching (web-based teaching and face-to-face teaching).

**Learning activities and teaching methods:**

Lectures, web-based-lectures and workshops 26h, group exercises and cases 66h, self-study 42h.

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

555285A Basic course in project management.

**Recommended optional programme components:**

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**Recommended or required reading:**

Lecture materials and reading materials (articles, book chapters) related to each lecture.

**Assessment methods and criteria:**

This course utilises continuous assessment. The grading is based on case assignments solved in groups and discussed during the lecture, and group assignment that is presented and discussed in the workshops. Since the implementation of the cases and group work vary, the assessment methods and criteria will be defined at the beginning of the course.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Assistant professor Kirsi Aaltonen

**Working life cooperation:**

The course includes guest lectures from industry.

**Other information:**

Substitutes course 555381S Project Leadership.

**555310S: Demola Project, 5 op**

**Voimassaolo:** 01.01.2017 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Simo-Pekka Kekäläinen

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

5 ECTS cr

**Language of instruction:**

English

**Timing:**

Fall and Spring

**Learning outcomes:**

Upon completion of the course, the student is able to apply and use the core competencies of his/ her studies in a real life problem solving context. The student will learn skills that will allow him/ her to participate in a professional role in a project team that uses lean development methods to validate ideas and to create a demo or a prototype of a product, service, or other innovation. The course provides the student with experience in project work and improves the student's team working skills as the course assignments are carried out by a multidisciplinary and international teams comprising of students with different backgrounds and skill sets. The course will also improve student's communication and oral presentation skills as the student will need to summarize, rationalize, and present findings and ideas throughout the project.

**Contents:**

The entrepreneurial field project is organized within the international Demola network and the project comprises facilitated and supported real-life problem definition, data collection, problem solving, implementation and communication.

**Mode of delivery:**

Facilitated and supported project. Demola projects will be arranged two times per year; one season in the springtime (starting from January/February) and one in the autumn (starting from August/September). Dates can be checked from Weboodi.

**Learning activities and teaching methods:**

Learning takes place during the project as team learning and problem solving, with feedback from the responsible teachers and problem owning company or organization.

**Target group:**

Open to all. Students have to submit their application to Demola facilitators at [oulu.demola.net](http://oulu.demola.net) when the season starts (either in January or August).

**Prerequisites and co-requisites:**

It is recommended that before starting Demola, the student has acquired some theoretical knowledge through his /her degree studies. Otherwise, there are no prerequisite knowledge requirements.

**Recommended optional programme components:**

The course is an independent entity and does not require additional studies carried out at the same time.

**Recommended or required reading:**

Materials vary according to the assignment.

**Assessment methods and criteria:**

Active participation in the entire process, delivery of the required documents, presentations and a demo or a prototype.

**Grading:**

The course utilizes verbal grading scale "pass/fail"

**Person responsible:**

Simo Kekäläinen

**Working life cooperation:**

A group of students will carry out a development project to create a solution for the company's genuine and existing challenges. The project team reports to a supervising teacher and a company representative(s).

**Other information:**

The number of students is restricted.

## 555371S: Human Resource Management, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555360S Administration, Organization and Education in Working Life 5.0 op

## 555375S: Lab to Market, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Majava

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555327S Seminar in Production Management : Lab to Market 5.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Period 2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- analyse an industry to identify viable business ideas and opportunities
- use different frameworks including scenario planning, customer and user needs analysis, and technology evolution analysis
- apply frameworks and methods to distinguish interesting and promising ideas from viable opportunities, utilise frameworks and methods to evolve the ideas into viable products and businesses, and determine what business models are most effective
- present and defend own ideas, and critically examine and discuss the recommendations of others

**Contents:**

Industry analysis, scenario planning, customer and user needs analysis, technology evolution analysis, opportunity identification, business models.

**Mode of delivery:**

The tuition will be implemented as face-to-face teaching.

**Learning activities and teaching methods:**

Lectures 28 h / self-study and group work 106 h.

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

B.Sc. in Industrial Engineering and Management or equivalent.

**Recommended optional programme components:**

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**Recommended or required reading:**

Lecture materials, articles and case materials that will be provided at the beginning of the course.

**Assessment methods and criteria:**

This course utilises continuous assessment. During the course, there are mandatory individual assignments (75 % of the grade) and a group work (25 % of the grade).

**Grading:**

1-5.

**Person responsible:**

Adjunct professor Jukka Majava

**Working life cooperation:**

The students will pitch their idea to a jury that includes working life representation.

**Other information:**

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## 555313S: Management, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kess, Pekka Antero

**Opintokohteen kielet:** Finnish

## 555382S: Management of a project-based firm, 5 op

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jaakko Kujala

**Opintokohteen kielet:** Finnish

**Voidaan suorittaa useasti:** Kyllä

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Period 4.

**Learning outcomes:**

Upon completion of the course student will be able to:

- describe the core areas of the management of the project-based firm
- explain how different internal and external contextual factors affect the business of a project-based firm, and how they should be taken account in the design of a business model
- understand the role of services in the business of a project-based firm
- apply systematic approach to project negotiation
- evaluate the significance of a single project for the business of a project based-firm

**Contents:**

Contextual factors in project business, business model of a project-based firm, integration of services to the business of a project-based firm, project sales and marketing, contracting, project negotiations (negotiation analytic approach) and organising support functions in project-based firm.

**Mode of delivery:**

The tuition will be implemented as face-to-face teaching.

**Learning activities and teaching methods:**

Lectures 24h / self-study 56h / group exercise 54h

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

B.Sc. in Industrial Engineering and Management or equivalent.

**Recommended optional programme components:**

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**Recommended or required reading:**

Lecture materials. Other materials will be defined at the beginning of the course.

**Assessment methods and criteria:**

The course utilises continuous assessment. During the course, the students must write a learning diary for each lecture and participate actively in the lectures. 40% of the grade is based on the group work.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Jaakko Kujala

**Working life cooperation:**

Group work will be done for a project-based firm or public sector organisation.

**Other information:**

Previous course name was 'Management of a Project-based Firm'.

**555226A: Operations and supply chain management, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Majava

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555222A Demonstration in Industrial Engineering and Management 2.0 op

555223A Introduction to Production Control 3.0 op

**ECTS Credits:**

5 ECTS credits

**Language of instruction:**

English.

**Timing:**

Periods 1-2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- describe different production types
- apply different forecasting methods, plan needed production capacity, and apply location and transportation decisions related methods
- master common inventory management methods and aggregated and short-term scheduling
- create a sales and operations plan for a company

**Contents:**

Production types, forecasting methods, capacity planning and queuing models, location and transportation decisions, inventory management systems, aggregate scheduling, MRP & ERP, short-term scheduling, linear programming.

**Mode of delivery:**

The tuition will be implemented as blended teaching (web-based teaching and face-to-face teaching).

**Learning activities and teaching methods:**

Lectures 20 h / self-study (web-based exercises) 60 h / group work 54 h.

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

555225P Basics of industrial engineering and management or similar knowledge.

**Recommended optional programme components:**

Industrial Engineering and Management students will complete 902143Y Company presentations course simultaneously.



**Recommended or required reading:**

Lecture and exercise materials. Krajewski, L.J. et al. (2012) Operations management: processes and supply chains, 10th ed. Pearson. In addition, recommended material includes chapter 13 in Heizer, J. & Render, B. (2014) Operations management: sustainability and supply chain management, 11th ed. Pearson.

**Assessment methods and criteria:**

This course utilises continuous assessment. During the course, there are mandatory weekly assignments. At least half of the assignments must be passed. 40 % of the grade is based on the group work.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Adjunct professor Jukka Majava

**Working life cooperation:**

The group work will be done for a real company by using public information sources.

**Other information:**

Substitutes course 555222A Demonstration in Industrial Engineering and Management 2 ECTS cr and 555223A Introduction to Production Control 3 ECTS cr.

Previous course name was 'Operations and Production'.

**555343S: Product Data and product life cycle management, 5 op**

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** English

**Voidaan suorittaa useasti:** Kyllä

**Status:**

5 ECTS credits.

**ECTS Credits:**

English.

**Language of instruction:**

Period 3-4.

**Timing:**

The course familiarises students with the broad concepts of product data management (PDM) and product life cycle management (PLM). Upon completion of the course, the student will be able to:

- understand the basic terminology related to product, productisation, PDM and PLM
- analyse the current status of the productisation, product data structures, product life cycle management, commercial and technical product portfolios and related applications in case companies
- create strategic PDM and PLM concept based on the critical building blocks for one product data, product master data and product related business data
- model the company's HW, SW and Service product related commercial and technical product portfolios according to productisation concept
- understand the PDM and PLM processes including key roles as concept owners, education and support roles, data owners, data users including product data quality concept
- create and implement the governance model for PDM and PLM process and IT development as a part of company's business process development including PDM/PLM related information technology (IT) architecture for product master data and product related business data

**Learning outcomes:**

PDM and PPM strategic targets, productisation concept, commercial and technical product portfolios, PDM and PLM processes and tools, governance model and related IT applications and architecture

**Contents:**

The tuition will be implemented as face-to-face teaching.

**Mode of delivery:**

The tuition will be implemented as face-to-face teaching, course readings and by a practical assignment which is a common with a course 555346S Product portfolio management.

**Learning activities and teaching methods:**

Lectures 20 h, practical assignment (group work) and self-study 114 h.

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

555242 Product development, 555346S Product portfolio management.

**Recommended optional programme components:**

555351S Advanced course in product development, 555350S Research and technology management

**Recommended or required reading:**

Lecture materials and selected articles.

**Assessment methods and criteria:**

Group work report (50 % of the grade) and exam (50 % of the grade).

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Senior research fellow Arto Tolonen.

**Working life cooperation:**

The group work will be done in cooperation with case companies.

**Other information:**

Previous course name was 'Product Data Management'.

**555242A: Product development, 5 op**

**Voimassaolo:** 01.01.2014 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Haapasalo, Harri Jouni Olavi

**Opintokohteen kielet:** English

**Leikkaavuudet:**

ay555242A Product development (OPEN UNI) 5.0 op

555240A Basic Course in Product Development 3.0 op

Ei opintojaksokuvauksia.

**555346S: Product portfolio management, 5 op**

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opintokohteen kielet:** English

**Voidaan suorittaa useasti:** Kyllä

**Required proficiency level:**

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Periods 3-4.

**Learning outcomes:**

The course familiarizes students with the broad concepts of product management. After finishing the course, the student understands central principles and contents of product management and product portfolio management. Student knows the basic steps of the product portfolio management development and understands the ways to analyse and manage products and product portfolios. A student learns to see product and product portfolio management as strategic targets, performance indicators, governance models, process and product information management over horizontal and technical portfolios over product life cycle phases and product structure levels. The student can apply the learned things and methods in different industries in order to develop systematic product and product portfolio management processes.

**Contents:**

Basic issues in product and product portfolio management performance management, governance models, horizontal and vertical portfolios, processes, tools and product information.

**Mode of delivery:**

The tuition will be implemented as face-to-face learning and practical assignments.

**Learning activities and teaching methods:**

Will be defined at the beginning of the course.

**Target group:**

Industrial Engineering and Management and Master's Programme in Product Management students.

**Prerequisites and co-requisites:**

555242A Product development, 555350S Technology management.

**Recommended optional programme components:**

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**Recommended or required reading:**

Will be defined at the beginning of the course.

**Assessment methods and criteria:**

Will be defined at the beginning of the course.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Dr Arto Tolonen.

**Working life cooperation:**

No.

**Other information:**

Course name from 1.8.2017 is 'Product Portfolio Management'

**555333S: Production Management, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kess, Pekka Antero

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555322S Production Management 3.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English

**Timing:**

Period 2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- understand the key concepts of operations and production management
- know the essential production strategies
- understand the principles of the supply chain management, and should be able to apply JIT, Lean and TOC methods in analysing and constructing development plans for production organisations
- apply the management methods also in service systems
- understand the principles of the sustainable development in production

**Contents:**

Production strategies, sustainable development, Supply Chain Management, Just-In-Time (JIT), Theory of Constraints (TOC), Lean, Toyota Production System (TPS), management of the production of services.

**Mode of delivery:**

The tuition will be implemented as blended teaching (face-to-face teaching and a supervised group work).

**Learning activities and teaching methods:**

Lectures 20 h, assignment guidance 20 h, group work 94 h.

**Target group:**

Industrial Engineering and Management and Master's Programme in Product Management students.

**Prerequisites and co-requisites:**

B.Sc. in Industrial Engineering and Management or equivalent.

**Recommended optional programme components:**

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**Recommended or required reading:**

Liker J (2004) The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer. Goldratt, E. M. (2012) The Goal: A Process of Ongoing Improvement. Material delivered during the lectures.

**Assessment methods and criteria:**

The assessment is based on the group work.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Pekka Kess

**Working life cooperation:**

The group work is done in cooperation with case companies.

**Other information:**

Substitutes course 555322S Production Management.

**555350S: Research and Technology Management, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Haapasalo, Harri Jouni Olavi

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555340S Technology Management 4.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Period 2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- understand the differences between product development and technology management in a company
- piece together the development needs and cycles of technologies in an organisation
- combine technology development and technology management with strategic planning of a company

**Contents:**

Defining technology and its role within an enterprise and within society, the meaning of innovation in technological competition, the lifecycles of technology including development, acquirement, and transition

**Mode of delivery:**

The tuition will be implemented as face-to-face teaching

**Learning activities and teaching methods:**

Lectures 21 h / exercises, group work and self-study 114 h.

**Target group:**

Industrial Engineering and Management and Master's Programme in Product Management students.

**Prerequisites and co-requisites:**

555242A Product Development.

**Recommended optional programme components:**

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**Recommended or required reading:**

Lecture materials and articles.

**Assessment methods and criteria:**

Exam and group work.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Professor Harri Haapasalo

**Working life cooperation:**

Visitor lecturers from the industry

**Other information:**

Previous course name was 'Technology Management'.

Substitutes course 555340S Technology Management.

## 555377S: Risk Management, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kirsi Aaltonen

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555321S Risk Management 3.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English

**Timing:**

Period 2.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- explain the key concepts of enterprise risk management and uncertainty management
- explain the role of risk management in organisations and compare the specific features of risk management in different organisational contexts
- identify and classify risks and conduct systematic risk analyses in organisations
- make informed improvement suggestions related to enterprise risk management in organisations
- to develop enterprise risk management processes in organisations

**Contents:**

Definitions of risk and uncertainty, risk management standards, risk classification models, systematic risk management process, methods of risk management, psychological aspects of risk management, ERM and organising of risk management, risk management in different contexts, risk governance.

**Mode of delivery:**

The tuition will be implemented as blended teaching (web-based teaching and face-to-face teaching).

**Learning activities and teaching methods:**

Lectures 26h, self-study 42h, group assignment and cases 66h.

**Target group:**

Industrial Engineering and Management.

**Prerequisites and co-requisites:**

B.Sc. in Industrial Engineering and Management or equivalent.

**Recommended optional programme components:**

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**Recommended or required reading:**

Lecture materials and reading materials (articles, book chapters) related to each lecture. The materials will be defined at the beginning of the course.

**Assessment methods and criteria:**

This course utilises continuous assessment. The grading is based on case assignments solved in groups and discussed during the lecture, and group assignment that is presented and discussed in the workshops. Since the implementation of the cases and group work vary, the assessment methods and criteria will be defined at the beginning of the course.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Assistant Professor Kirsi Aaltonen

**Working life cooperation:**

The course includes guest lectures from industry.

**Other information:**

Substitutes course 555321S Risk Management.

**555378S: Seminar in industrial engineering and management, 5 op**

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Majava

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

555385S	Advanced Course in Quality Management	5.0 op
555386S	Advanced Course in Project Management	5.0 op
555347S	Seminar in Technology Management	5.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

Finnish/English.

**Timing:**

Periods 1-4.

**Learning outcomes:**

Learning outcomes depend on the content of each seminar. The seminar topics are related to production management, product management, organization and knowledge management, project management, and process and quality management.

**Contents:**

Will be defined at the beginning of the course.

**Mode of delivery:**

Will be defined at the beginning of the course.

**Learning activities and teaching methods:**

Will be defined at the beginning of the course.

**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

B.Sc. in Industrial Engineering and Management or equivalent.

**Recommended optional programme components:**

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**Recommended or required reading:**

Will be defined at the beginning of the course.

**Assessment methods and criteria:**

Will be defined at the beginning of the course.

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

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**Working life cooperation:**

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**Other information:**

Substitutes courses 555347S Seminar in Product Management, 555385S Research Project in Quality Management and 555386S Research Project in Project Management.

## 555370S: Strategic Management, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Jukka Majava

**Opintokohteen kielet:** English

**Leikkaavuudet:**

555320S Strategic Management 5.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

English.

**Timing:**

Period 3.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- utilise strategic thinking, planning, and management
- analyse and plan complex global business operations
- participate in strategic planning and strategy implementation in organisations
- apply strategy analysis frameworks and analyse the implementation of the chosen strategy

**Contents:**

Strategic thinking, strategic planning, strategic management, strategy analysis frameworks, strategy implementation with a simulation, analysis of the strategy implementation.

**Mode of delivery:**

The tuition will be implemented as blended teaching (web-based teaching and face-to-face teaching).

**Learning activities and teaching methods:**

Lectures 6 h / exercises 6 h / group work 122 h. Alternatively independent learning method: book examination 134 h.

**Target group:**

Industrial Engineering and Management.

**Prerequisites and co-requisites:**

B.Sc. in Industrial Engineering and Management or equivalent.

**Recommended optional programme components:**

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**Recommended or required reading:**

Isoherranen, V. (2012) Strategy analysis frameworks for strategy orientation and focus, University of Oulu, Faculty of Technology, Industrial Engineering and Management. Mintzberg, H. et al. (2009) Strategy safari: the complete guide through the wilds of strategic management, 2nd ed. Harlow, FT Prentice Hall.

**Assessment methods and criteria:**

This course utilises continuous assessment. The group work includes the creation of strategic plan (10 % of the grade), business simulation (30 % of the grade), and the analysis of the strategy (60 % of the grade).

**Grading:**

The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Adjunct professor Jukka Majava

**Working life cooperation:**

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**Other information:**

Substitutes course 555320S Strategic Management.

## 555376S: Sustainable organisational development, 5 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuyksikkö:** Field of Industrial Engineering and Management

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Arto Reiman

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

555360S Administration, Organization and Education in Working Life 5.0 op

**ECTS Credits:**

5 ECTS credits.

**Language of instruction:**

Finnish. English material is also used (the course can be completed in English as a book examination).

**Timing:**

Period 1.

**Learning outcomes:**

Upon completion of the course, the student will be able to:

- explain the general models regarding sustainable organisational development
- adapt the most central ones to the work organisations
- choose the most suitable models for different situations and can interpret the results gained from different approaches
- explain the most important quantitative and qualitative variables that are either preconditions or results of the operation of the organisation
- identify development needs and opportunities in companies and other organisations.

**Contents:**

The development of organisation is examined through e.g. the following concepts: productivity, well-being at work, quality control, quality of working life, safety and security, and responsibility. Various concepts and indicators will be discussed, for example, in relation with change processes (e.g. strategy, owner, partnerships, sizes of operations and personnel), implementation, participation, intervention, action research, and learning organisation.

**Mode of delivery:**

The tuition will be implemented as blended teaching (face-to-face teaching and web-based teaching).

**Learning activities and teaching methods:**

Lectures 22 h / self-study 100 h / group work & exercises 12 h.



**Target group:**

Industrial Engineering and Management students.

**Prerequisites and co-requisites:**

555265P Occupational safety and health management, 555264P Managing well-being and quality of working life, 555371S Human resource management.

**Recommended optional programme components:**

555371S Human resource management, 555370S Strategic management, 555377S Risk Management. Research project in industrial engineering and management related to Organisation and knowledge management topic and Faculty of Education's Organisational psychology course can be conducted to complement this course.

**Recommended or required reading:**

Applicable parts of: Hatch, M. J. and Cunliffe A.N. (2013) Organization Theory, Modern, Symbolic, and Postmodern Perspectives. Third Edition, Oxford University Press. Väyrynen, S., Häkkinen, K., Niskanen, T. (Eds.) (2015). Integrated Occupational Safety and Health Management - Solutions and Industrial Cases. Springer, Production & Process Engineering. 248 p. Other literature will be informed at the beginning of the course.

**Assessment methods and criteria:**

This course utilises continuous assessment including exercises during the lectures (weight 20 %), seminar work (weight 30 %) and examination (weight 50 %).

**Grading:**

The course utilises a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**

Dr. Arto Reiman

**Working life cooperation:**

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**Other information:**

Course's old name Organisational Development.

Substitutes course 555360S Administration, Organization and Education in Working Life.