Opasraportti

Department of Industrial Engineering and Management (2014 - 2015)

Tutkintorakenteet

MSc (Tech) in Product Management

Tutkintorakenteen tila: published

Lukuvuosi: 2014-15

Lukuvuoden alkamispäivämäärä: 01.08.2014

Orientation studies (vähintään 28 op)

All the studies in this module are compulsory.

A440140: Orientation studies, Product Management, 28 op
- *Obligatory*
  - 555212P: Orientation Course for New Students, 1 op
  - 555280P: Basic Course of Project Management, 2 op
  - 555224A: Methods of Production Management and Logistics, 4 op
  - 555240A: Basic Course in Product Development, 3 op
  - 555320S: Strategic Management, 5 op
  - 555321S: Risk Management, 3 op
  - 555340S: Technology Management, 4 op
  - 555345S: Advanced Course in Product Development, 6 op

Major Subject Studies (vähintään 62 op)

All the studies in this module are compulsory.

A440258: Major subject studies, Product Management, 62 op
- *Compulsory*
  - 555311S: Advanced Internship, 3 op
  - 555322S: Production Management, 3 op
  - 555341S: Productivity and Performance Management, 3 op
  - 555343S: Product Data management, 5 op
  - 555344S: Management Information Systems, 5 op
  - 555346S: Product portfolio management, 5 op
  - 555347S: Seminar in product development management, 5 op
  - 555348S: Research project in product development management, 5 op
  - 555360S: Administration, Organization and Education in Working Life, 5 op
  - 555380S: Quality Management, 5 op
  - 555382S: Project Business, 5 op
  - 555387S: Project Work in Quality Management, 5 op

555388S: Project Work in Project Management, 5 op

Thesis (vähintään 30 op)

470099S: Master's Thesis in Industrial Engineering and Management, 30 op
555312S: Maturity Test / Industrial Engineering and Management, 0 op

Msc (Tech) in Industrial Engineering and Management

Tutkintorakenteen tila: archived

Lukuvuosi: 2014-15

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Instructions

THE STRUCTURE OF THE DEGREE PROGRAMME IN INDUSTRIAL ENGINEERING AND MANAGEMENT, MASTER OF SCIENCE (TECHNOLOGY) 120 ECTS

Modules of the Options (at least 60 ECTS)

- Obligatory Module for all IEM students (30 ECTS)
- Advanced Module of the Option (at least 30 ECTS)

Supplementary Module (Technical Engineering Studies) (at least 20 ECTS)

Elective studies (10 ECTS)

Master's Thesis (30 ECTS)

1. Choose one of the Advanced Modules of the Option

1. Usability Design and Management of Well-Being at Work
2. Quality and Project Management
3. Production Management
4. Management of Product Development.

2. Choose Supplementary Module (Technical Engineering Studies)

3. Schedule your studies.

4. Plan and schedule your elective studies.

Supplementary studies or "Bridge Studies" , IEM (enintään 60 op)

These studies are meant only for students who got admission directly to the IEM Master programme and haven't had IEM studies in earlier studies.

From the course list will be chosen the courses which has been discussed with the study advisor. These studies will not be included in degreee.

A440257: Supplementary studies, Industrial Engineering and Management, 0 - 60 op
'Bridge studies'
555221P: Introduction to Production, 2 op
555223A: Introduction to Production Control, 3 op
555224A: Methods of Production Management and Logistics, 4 op

555240A: Basic Course in Product Development, 3 op
555280P: Basic Course of Project Management, 2 op
555282A: Project Management, 4 op
555286A: Process and quality management, 5 op
555260P: Basic Course in Occupational Safety and Wellbeing at Work, 3 op
555262A: Usability and Safety in Product Development, 3 op

Module of the Option, obligatory (vähintään 30 op)

Compulsory module for all IEM students.

The students studying the option Usability Design and Management of Well-Being at Work choose the course 555363S Creativity at work and in product development. All the others choose the course 555342S Operations Research.

Module of the Option

A440221: Module of the Option, obligatory, 30 op
Usability Design and Management of Well-being at Work, choose 555363S Crativity at work and in product development, in other specialization options choose 555342S Operations research
555363S: Creativity at Work and in Product Development, 5 op
555342S: Operations Research, 5 op
Compulsory
555321S: Risk Management, 3 op
555320S: Strategic Management, 5 op
555340S: Technology Management, 4 op
555360S: Administration, Organization and Education in Working Life, 5 op
555380S: Quality Management, 5 op
555311S: Advanced Internship, 3 op

Advanced Module, of Option/Usability Design and Management of Well-Being at Work (vähintään 30 op)

Usability Design and Management of Well-Being at Work, obligatory

A440222: Usability Design and Management of Well-Being at Work, Advanced Module, 30 op
Electives
555361A: Machine Safety and Usability, 3,5 op
555362S: Safety in Process Industry, 5 op
555364S: Ergonomics, 5 op
555366S: Chemical and Physical Hazards in Industrial Environments, 3 op
555367S: Exercises in Work Science, 6 op
721614A: Labour Law, 7 op

Usability Design and Management of Well-Being at Work, optional studies

A440223: Module of the Option/ Usability Design and Management of Well-Being at Work, Optional, 3 - 13 op
Electives
555322S: Production Management, 3 op
555385S: Advanced Course in Quality Management, 5 op
555386S: Advanced Course in Project Management, 5 op
555387S: Project Work in Quality Management, 5 op
555388S: Project Work in Project Management, 5 op
813352A: Usability Testing, 5 op
555368S: Contemporary Ergonomics, 3 op

Advanced Module of Quality and Project Management (vähintään 30 op)

Choose at least 30 ECTS,

A440224: Module of the Option/Quality and Project Management, Advanced Module, 30 - 40 op
Electives
555382S: Project Business, 5 op
555381S: Project Leadership, 5 op
555322S: Production Management, 3 op
555323S: Sourcing Management, 3 op
555324S: Advanced Supply Chain Management, 3 op
555385S: Advanced Course in Quality Management, 5 op
555386S: Advanced Course in Project Management, 5 op
555387S: Project Work in Quality Management, 5 op
555388S: Project Work in Project Management, 5 op
555345S: Advanced Course in Product Development, 6 op

Module of the Option, Production Management, Advanced Module (vähintään 30 op)

Choose at least 30 ECTS.

A440226: Module of the Option/ Production Management, Advanced Module, 30 - 40 op
Choose 555326S Research project in production management or 555327S Seminar in production management.
555326S: Research Project in Production Management, 5 op
555327S: Seminar in Production Management : Lab to Market, 5 op
Electives
555322S: Production Management, 3 op
555323S: Sourcing Management, 3 op
555324S: Advanced Supply Chain Management, 3 op
555344S: Management Information Systems, 5 op
555341S: Productivity and Performance Management, 3 op
555381S: Project Leadership, 5 op
555346S: Product portfolio management, 5 op

Advanced Module, Management of Product Development (vähintään 30 op)

Choose at least 30 credits.

Choose the course 555347S Seminar in product development management or the course 555348S Research project in product development management.

A440225: Module of the Option/ Management of Product Development, Advanced Module, 30 - 40 op
Alternative
555347S: Seminar in product development management, 5 op
555348S: Research project in product development management, 5 op
Electives
555341S: Productivity and Performance Management, 3 op
555343S: Product Data management, 5 op
555344S: Management Information Systems, 5 op
555322S: Production Management, 3 op
555381S: Project Leadership, 5 op
555345S: Advanced Course in Product Development, 6 op
555346S: Product portfolio management, 5 op

Supplementary Module, Mechanical Engineering (vähintään 20 op)

Continue technical studies you started during bachelor degree.

Plan and choose courses to get at least 20 ECTS to your module of Mechanical Engineering.

A440255: Supplementary Module, Mechanical Engineering, 20 - 30 op

Supplemantary Module, Civil Engineering (vähintään 20 op)

Continue technical studies you started during bachelor degree.

Plan and choose courses to get at least 20 ECTS to your module of Civil Engineering.

A440248: Supplementary Module, Structural Engineering and Construction Technology, 20 - 30 op

Supplementary Module, Process Engineering (vähintään 20 op)

Continue technical studies you started during bachelor degree.
Plan and choose courses to get at least 20 ECTS to your module of Process Engineering.

A440249: Supplementary Module, Process Engineering, 20 - 30 op

Supplementary Module, Environmental Engineering (vähintään 20 op)

Continue technical studies you started during bachelor degree.

Plan and choose courses to get at least 20 ECTS to your module of Environmental Engineering.

A440256: Supplementary Module, Environmental Engineering, 20 - 30 op

Supplementary Module: Electrical Engineering (vähintään 20 op)

Continue technical studies you started during bachelor degree.

Plan and choose courses to get at least 20 ECTS to your module of Electrical Engineering.

A440253: Supplementary Module, Electrical Engineering, 20 - 30 op

Supplementary Module, Information Engineering (vähintään 20 op)

Continue technical studies you started during bachelor degree.

Plan and choose courses to get at least 20 ECTS to your module of Information Engineering.

A440254: Supplementary Module, Information, 20 - 30 op

Supplementary Module, other engineering (20 op)

Stuides in this module **should be planned together with study advisor**.

Continue your engineering studies you studied in your bachelor studies. Choose at least **20 ECTS credits** from Oulu University study guide.

A400072: Module Preparing for the Option, 20 - 40 op

Elective Studies (enintään 10 op)

Master level studies include maximum 10 ECTS elective studies. Students choose courses that supplement or deepen the competencies of Industrial Engineering and Management.

Courses with same content cannot be included twice to the degree programmes in Industrial Engineering and Management.

A440273: Special Module, 10 op

Master's Thesis (30 op)

Master's Thesis

470099S: Master's Thesis in Industrial Engineering and Management, 30 op
555312S: Maturity Test / Industrial Engineering and Management, 0 op

BSc (Tech) in Industrial Engineering and Management

Tutkintorakenteen tila: archived

Lukuvuosi: 2014-15

Lukuvuoden alkamispäivämäärä: 01.08.2014

THE STRUCTURE OF THE DEGREE PROGRAMME IN INDUSTRIAL ENGINEERING AND MANAGEMENT, BACHELOR OF SCIENCE (TECHNOLOGY) 180 ECTS

Basic and intermediate studies (120 ECTS)

Modules preparing for the options (at least 40 ECTS)

The modules include the technical engineering studies of the Bachelor's degree programme. A student must choose the the module of Engineering.

Elective studies (10 ECTS)

Bachelor's thesis and the studies included (10 ECTS)

Basic and Intermediate Studies (vähintään 120 op)

- Choose the language in which you have a long high school course curriculum.
- You can choose which of the two courses of 521141P Elementary Programming or 811192P Introduction to Programming in C you take. If you are going to study Electrical or Information Engineering, take the course 521141P Elementary Programming.
- Choose the option 4,5 ECTS of the Course 555220P Basic Course in Industrial Engineering and Management.

A440120: Basic and Intermediate Studies, Industrial Engineering and Management, 119,5 - 120 op
Compulsory to all
555212P: Orientation Course for New Students, 1 op
030005P: Information Skills, 1 op
031010P: Calculus I, 5 op
031011P: Calculus II, 6 op
031017P: Differential Equations, 4 op
031019P: Matrix Algebra, 3,5 op
031021P: Probability and Mathematical Statistics, 5 op
900062P: Communicative Oral Skills for Production Engineering and Management, 2 op
761121P: Laboratory Exercises in Physics 1, 3 op
761101P: Basic Mechanics, 4 op
761103P: Electricity and Magnetism, 4 op
761104P: Wave Motion, 3 op
724105P: Management Accounting, 5 op
724110P: Introductory Economics, 5 op
724106P: Principles of Marketing, 5 op
555260P: Basic Course in Occupational Safety and Wellbeing at Work, 3 op
555220P: Basic Course in Industrial Engineering and Management, 3 op
555280P: Basic Course of Project Management, 2 op
555221P: Introduction to Production, 2 op
555222A: Demonstration in Industrial Engineering and Management, 2 op
555286A: Process and quality management, 5 op

555282A: Project Management, 4 op
555261A: Basic Course in Occupational Psychology, 3 op
555262A: Usability and Safety in Product Development, 3 op
555263A: Technology, Society and Work, 2 op
555240A: Basic Course in Product Development, 3 op
555223A: Introduction to Production Control, 3 op
555224A: Methods of Production Management and Logistics, 4 op
721704A: Business Logistics, 5 op
555210A: Practice, 3 op
555284A: Problem Solving in Business Cases, 3 op

Choose one of these

902011P: Technical English 3, 6 op
903012P: Technical German 3, 6 op

Choose one of them

901008P: Second Official Language (Swedish), 2 op
900009P: Second Official Language (Finnish), 2 op

Choose here 521141P Elementary Programming or 811192PIntroduction to Programming in C

521141P: Elementary Programming, 5 op
811192P: Introduction to Programming in C, 5 op

Modules preparing for the options, Mechanical Engineering (vähintään 40 op)

The studies in Mechanical Engineering

- The module of compulsory studies (21 ECTS credits)
- The module of elective studies (at least 19 ECTS credits)

Students are required to design their elective studies to support them to complete their compulsory studies in Mechanical Engineering and/or to deepen their acquired skills as well as to prepare them for the DI-phase studies in Mechanical Engineering.

Compulsory Studies of Mechanical Engineering

A440121: Module Preparing for the Option, Mechanical Engineering (obligatory studies), 20 - 21 op

Optional Studies of Mechanical Engineering

A440122: Module Preparing for the Option, Mechanical Engineering (optional studies), 19 - 20 op

Electives

461011A: Strength of Materials II, 7 op
464055A: Machine Design I, 8 op
464051A: Machine Drawing, 3,5 op
463053A: Manufacturing Technology I, 3,5 op
465061A: Materials Engineering I, 5 op
555361A: Machine Safety and Usability, 3,5 op
461033A: Finite Element Methods I, 3,5 op
462021A: Machine Automation I, 5 op
465077A: Welding Technology, 3,5 op
464056A: Machine Design II, 6 op
464061A: Techniques of Creative Working, 3 op
465071A: Introduction to Materials Science, 3,5 op
465095A: Sheet Metal Forming, 3,5 op
463058A: Foundry Technology, 3,5 op
464052A: CAD, 3,5 op
464087A: Maintenancy Technology, 5 op

Modules preparing for the options, Civil Engineering (vähintään 40 op)

The studies in Civil Engineering

- The module of compulsory studies (24 ECTS)

- The module of elective studies (16 ECTS)

Students are required to design their elective studies to support them to complete their compulsory studies in Civil Engineering and/or to deepen their acquired skills as well as to prepare them for the DI-phase studies in Civil Engineering.

Compulsory studies of Civil Engineering

A440123: Module Preparing for the Option, Civil Engineering (obligatory studies), 22,5 - 24 op

Optional Studies of Civil Engineering

A440124: Module Preparing for the Option, Civil Engineering (optional studies), 16 - 17,5 op

Modules preparing for the options, Process and Environmental Engineering (vähintään 40 op)

The studies in Process and Environmental Engineering

- The module of compulsory studies in Process and Environmental Engineering (20 ECTS credits) and
- The module of elective studies in Process Engineering (20 ECTS credits) or
- The module of elective studies in Environmental Engineering (20 ECTS credits).

Students are required to design their elective studies to support them to complete their compulsory studies in Process and Environmental Engineering and/or to deepen their acquired skills as well as to prepare them for the DI-phase studies in Process Engineering or in Environmental Engineering.

Compulsory Studies of Process and Environmental Science

A440135: Module Preparing for the Option, Process and Environmental Engineering (obligatory studies), 20 op

Optional Studies of Process Engineering

A440136: Module Preparing for the Option/Process and Environmental Engineering (optional studies), Process Engineering (optional studies), 20 op

Optional Studies of Environmental Engineering

A440138: Module Preparing for the Option/Process and Environmental Engineering (optional studies), Environmental Engineering (optional studies), 20 op

Modules preparing for the options, Electrical and Information Engineering (vähintään 40 op)

The studies in Electrical and Information Engineering

- The module of compulsory studies in Electrical and Information Engineering (20 ECTS credits) and
- The module of elective studies in Electrical Engineering (20 ECTS credits) or
- The module of elective studies in Information Engineering (20 ECTS credits).

Students are required to design their elective studies to support them to complete their compulsory studies in Electrical and Information Engineering, and/or to deepen their acquired skills as well as to prepare them for the DI-phase studies in Electrical Engineering or in Information Engineering.

Compulsory Studies of Electrical and Information Engineering

A440139: Module Preparing for the Option/Electrical and Information Engineering, 20 op

Compulsory

521109A: Electrical Measurement Principles, 5 op
521412A: Digital Techniques 1, 6 op
521142A: Embedded Systems Programming, 5 op

521267A: Computer Engineering, 4 op

Optional Studies of Electrical Engineering

A440129: Module Preparing for the Option, Electrical Engineering (optional studies), 16 op

Optional Studies of Information Engineering

A440134: Module Preparing for the Option, Information Engineering (optional studies), 20 op

A400072: Module Preparing for the Option, 20 - 40 op

Bachelor's thesis and the studies included (vähintään 10 op)

555200A: Bachelor's Thesis / Industrial Engineering and Management, 8 op
555211A: Maturity Test / Industrial Engineering and Management, 0 op
900061A: Scientific Communication for Production Engineering and Management, 2 op

Optional Studies (enintään 10 op)

Optional Studies.

Choose the courses to get total of 180 ECTS to your degree.

A440171: Optional Studies, Bachelor of Science (Industrial Engineering and Management), 0 - 20 op

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

721704P: Business Logistics, 5 op
470460A: Controls and Systems Engineering Fundamentals, 5 op
555325S: Human Resources Management, 3 op
521319A: Introduction to Telecommunication Engineering, 2,5 op
521481P: Introduction to the Use of Workstation, 1 op
721409P: Principles of Marketing, 5 op
521024A: Programmable Electronics, 5 op
555283A: Project Communication, 3 op

Opintojaksojen kuvaukset

Tutkintorakenteisiin kuuluvien opintokohteiden kuvaukset

A440140: Orientation studies, Product Management, 28 op

Voimassaolo: 01.08.2014 -
Opiskelumuoto: Module of the Option
Laji: Study module

Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Obligatory

555212P: Orientation Course for New Students, 1 op

Voimassaolo: 01.08.2013 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Eija Forsberg
Opintokohteen kielet: Finnish
Leikkaavuudet:

555203P Study Skills 2.0 op

ECTS Credits:

1 cr

Language of instruction:

Finnish

Timing:

Periods 1-6.

Learning outcomes:

After completing the course, a student is familiar with his / her new Oulu studying environment (e.g. classrooms, libraries and their services, City of Oulu in essence), University studying information systems (e.g. e-mail, OODI, Lukkari), University student organizations and their role in learning as well as in society, and the services offered to the students.
A student is familiar with the field of study and the course structure of the degree programme of his / her own. A student is able to draw up a timetable for his / her studying by using the information systems of University. A student is able to design his / her own studies, as well manage the use of time bearing in mind the curriculum. A student is able to create a study plan (eHOPS) of his /her own.

Contents:

How to start the studying? University of Oulu and administration of it, Faculty of Technology, Department of IEM, and City of Oulu. The services offered by society, student organizations and the University. Degree programmes and the studies on the faculty of technology. The profession and the working situation of MSc (Techn) in IEM. Study design and study techniques. The services of Uni library, Oula -database teaching. Study planning.

Mode of delivery:

Face-to-face learning, blended learning.

Learning activities and teaching methods:

Briefings organized by University, Faculty of Technology and Department of Industrial Engineering and Management. Tutorials and tutoring. Libraries presentations. Planning a study plan for Bachelor’s Degree in Industrial Engineering and Management.

Target group:

Industrial Engineering and Management students.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Opinto-opas 2013-2014. 2013. Oulun yliopisto. Teknillinen tiedekunta.

Assessment methods and criteria:

A student must attend a certain number of tutorials and plan his / her own study plan for BSc (Tech, eHOPS).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Approved/not approved.

Person responsible:

Student Advisor.

Working life cooperation:

No.

Other information:

The course is registered completed after the eHOPS of a student has been accepted.

555280P: Basic Course of Project Management, 2 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: Finnish
Leikkaavuudet:

555288A	Project Management	5.0 op
555285A	Project management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Upon completion the student can explain the essential concepts related to project management. He/she can present the main features of a project plan and can use different methods of partitioning a project. The student can also schedule a project and estimate its costs. The student can explain the terms related to Earned value method and can apply the method on simple tasks. Upon completion the student recognizes the essential tasks of project risk management.

Contents:

Defining project management, project planning, organising and scope management, schedule management, cost management, earned value calculation and project risk management.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, weekly assignments and exercise book. The final grade is derived from the course exam.

Target group:

-

Prerequisites and co-requisites:

None.

Recommended optional programme components:

-

Recommended or required reading:

Lecture material, exercise book. Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X (applicable sections), available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/.

Assessment methods and criteria:

Week assignments and final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala.

Working life cooperation:

No

555224A: Methods of Production Management and Logistics, 4 op

Voimassaolo: 01.06.2007 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English.

Timing:

periods 1-3.

Learning outcomes:

The aim of the course is to familiarize a student with mathematical methods in production and logistics management. After completing the course, a student knows the most important mathematical methods for production and logistics management. A student will be able to apply these methods and solve the production and logistics problems of a company.

Contents:

Forecasting methods, simulation, queuing models, transportation algorithms and LP methods.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

The course includes lectures, exercises, and group work (/exam).

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555223A Introduction to production control, knowledge of MS Excel or similar software.

Recommended optional programme components:

-

Recommended or required reading:

Applicable parts of Krajewski, L. et al. 2007. Operations Management – Processes and Value Chains. 8th edition. Pearson, Upper Saddle River. Additional material will be announced during the lectures.

Assessment methods and criteria:

Exercises and group work (/exam).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess

Working life cooperation:

No

Other information:

-

555240A: Basic Course in Product Development, 3 op

Voimassaolo: 01.06.2007 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Haapasalo, Harri Jouni Olavi
Opintokohteen kielet: Finnish
Leikkaavuudet:

555242A Product development 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits **.**

Language of instruction:

Finnish.

Timing:

Periods 1-3.

Learning outcomes:

Objective: This study module introduces product development and innovations management in a company environment. Basic course in product development provides fundamental understanding over tools and frameworks that can be used for analysing and managing products, innovations, and technology development. The aim is to create a connection between product development and other company functions.
Learning outcomes: After this study module, a student is capable of explaining the role of product development as a company function. The student understands the difference between innovation activities and systematic product development, and knows the difference between different phases of product development process and its activities. Additionally, the student is able to define the meaning of other company functions to product development activities.

Contents:

Meaning of products for the operations of an industrial enterprise. Product development paradigm and defining relevant concepts. Realising product development methodologically (U&E model, Cooper's stage-gate model, QFD), managing innovations, and product development success factors.

Mode of delivery:

Face-to-face teaching and distance teaching.

Learning activities and teaching methods:

The course includes lectures and compulsory course work.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555223A Introduction to production control.

Recommended optional programme components:

-

Recommended or required reading:

Handouts, course work, and a collection of articles. Ulrich, K. & Eppinger, S. (2008) Product Design and Development. McGraw-Hill. 358 p.

Assessment methods and criteria:

Final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No.

Other information:

-

555320S: Strategic Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jukka Majava
Opintokohteen kielet: English
Leikkaavuudet:

555370S	Strategic Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English.

Timing:

Periods 1-3.

Learning outcomes:

The aim of the course is to familiarize a student with strategic thinking as well as develop students' understanding of the complexity of global business operations, in both theory and practice. After completing the course student is familiar with strategic thinking, strategic management and strategic planning. The student has under-standing of the complexity of global business operations, and can participate in strategic planning in organizations. The student is familiar with strategy analysis frameworks and can analyze the implementation of chosen strategy.

Contents:

Strategic thinking, creation of strategic plan, strategy analysis frameworks and the basic types of strategy orientation for an enterprise, implementation of a business strategy in a dynamic, competitive environment with an on-line strategy simulation tool, analyzing the implementation of chosen strategy.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, final report and seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555322S Production management, 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, Department of Indus-trial 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:

Group work or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

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555321S: Risk Management, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Hanna Kropsu-Vehkaperä
Opintokohteen kielet: English
Leikkaavuudet:

555377S Risk Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

The course familiarizes a student with the overall concept of risk management. After completing the course student can explain the key concepts of risk management. The student can describe risk classifications and can explain the importance of the risk management to organisations. The student can analyse business risks from new points of view and can produce improvement proposals based on the risk analysis.

Contents:

Theoretical definition of risks, risks in entrepreneurship and their classifications, methods of risk management, tools for corporate risk management.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures, individual work or group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Bernstein P.L. (1996) Against the Gods - The Remarkable Story of Risk. JohnWiley & Sons Inc., ISBN: 0-471-29563-9 (nid.), 0-471-12104-5 (sid.); Lecture materials.

Assessment methods and criteria:

Group work (/exam).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555340S: Technology Management, 4 op

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:

555350S	Technology Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

After finishing the course, the student will able to differentiate product development and technology management in a company. The student will be able to piece together the development needs and cycles of technologies in an organization. In addition, the student will know how to combine technology development and technology management with strategic planning of a company.

Contents:

The course consists of defining technology and its role within an enterprise and within society. During the course we study the meaning of innovation in technological competition. The lifecycles of technology including development, acquirement, and movement are also covered.

Mode of delivery:

Face-to-face teaching, exercises and group work done as homework.

Learning activities and teaching methods:

Lectures, exercises and group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555240A Basic course in product development.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and selected articles, will be defined at the beginning of the course.

Assessment methods and criteria:

Exam
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No.

Other information:

-

555345S: Advanced Course in Product Development, 6 op

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:

555351S Advanced Course in Product Development 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

6 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

The student understands the objectives of requirements engineering in order to develop sustainable products. The course familiarizes the student to requirements engineering process and its key activities. After finishing the course, the student will able to analyze requirements engineering in product

development processes. The student knows Design for Excellence (DfX) practice. The student can recognize different stakeholder specific requirements and their diversity.

Contents:

The concepts of requirements management, requirements engineer process, requirement prioritization and valuation, Design for Excellence (DfX), different stakeholders and their requirements for product development.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures and group work.

Target group:

Industrial engineering and management students

Prerequisites and co-requisites:

555240A Basic course in product development, 555340S Technology management.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Group work, exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

A440258: Major subject studies, Product Management, 62 op

Voimassaolo: 01.08.2014 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Compulsory

555311S: Advanced Internship, 3 op

Voimassaolo: 01.01.2008 -
Opiskelumuoto: Advanced Studies
Laji: Practical training
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Eija Forsberg

Opintokohteen kielet: Finnish

Leikkaavuudet:

555304S Advanced Internship 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish, the report can be written in English.

Timing:

Periods 1-6.

Learning outcomes:

During the course students learn to observe his/her working environment from the theoretical viewpoints of Industrial Engineering and Management (IEM). From the working environment, the student is able to specify a research problem related to IEM themes. The student is able to describe the problem or its solution by building a model, a process description, chart, etc. The student is able to critically use different kind of references related to the topic. The student is able to draw up a report based on given instructions.

Contents:

To be defined by each student.

Mode of delivery:

Students will write a report concerning summer job. The length of the summer job has to be 2 months minimum.

Learning activities and teaching methods:

Students will write a report concerning summer job. Student adviser will review and grade the report.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555210A Internship, 555200A Bachelor's Thesis.

Recommended optional programme components:

-

Recommended or required reading:

To be defined by each student.

Assessment methods and criteria:

Written report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Approved/not approved.

Person responsible:

Student adviser

Working life cooperation:

Yes

Other information:

-

555322S: Production Management, 3 op

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:

555333S Production Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English.

Timing:

Periods 4-6.

Learning outcomes:

After finishing this course, the student will be able to analyze production processes and to define the cornerstones of managing different production modes. In addition the student will know how to analyze the bottlenecks in different production processes. Understanding the content of lean production. By combining this and previous courses, the student will be able to define the most important development areas in production processes.

Contents:

Analysing and developing manufacturing environment. Lean production. Change management. Management and operation information methods.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555223A Introduction to production control & 555224A Methods of production management and logistics.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Exam and group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555341S: Productivity and Performance Management, 3 op

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

ECTS Credits:

3 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

After finishing the course, the student will able to analyse the efficiency of activities in an organization, from both internal and external viewpoints. The internal analysis is based on Balanced Score Card or other equivalent performance measurement. External measurement of efficiency in based on analysing productivity development and the factors affecting it.

Contents:

The concepts of productivity and performance and the levels to their examination. Productivity and its significance to an enterprise’s processes and profitability. Measuring productivity and performance. The metrics of productivity and operative steering tools. An enterprise’s internal and external productivity. The analysis and the tools for analysis of productivity and the approaches for measuring productivity in industry.

Mode of delivery:

Face-to-face teaching and group work.

Learning activities and teaching methods:

Lectures, group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials. Sumanth, D.J. 1998. Total productivity management, A systematic and quantitative approach to compete in quality, price and time. CRC Press LLC. 407 p.

Assessment methods and criteria:

Exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555343S: Product Data management, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Arto Tolonen

Opintokohteen kielet: English

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTC credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

The course familiarizes a student with the product processes of an enterprise and specifically the meaning of product data in different stages of product process. After finishing the course, a student knows what product data is and how it can be used for business purpose. A student is familiar with the basic concepts of product data management (PDM) and is aware of the basic tools used for PDM. After finishing the course, a student will able to analyze existing and future products from product structure viewpoint. Students will be able to analyze the company's product data management as a whole and to give suggestions based their analysis.

Contents:

Product information management concepts, its history and challenges, PDM-processes: managing product models, managing documents and configurations as well as tracing information, PDM-system and its functions, PDM-project and implementation of the system.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures, group work, exam.

Target group:

Industrial engineering and management students

Prerequisites and co-requisites:

555240S Basic course in product development.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and selected articles. Saaksvuori A & Immonen A. (2008) Product lifecycle management, 8 ed. pages 1-65 and 91-176.

Assessment methods and criteria:

Group work report and exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

555344S: Management Information Systems, 5 op

Voimassaolo: - 31.07.2015

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: English

Leikkaavuudet:

555314S Management Information Systems 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

The aim of the course is to provide readiness for enterprise information system designing, purchasing, and development tasks. The aim is to familiarize a student with the significance of information and its management when controlling processes. After completing the course student can explain the key concepts of management information systems (MIS). The student can define the information needs of management processes and how information systems can meet these needs. The student can describe the key features of the following types of systems: DSS, GDSS, EIS, BI, and ERP. The student can analyse the state of the management in an organisation, and can suggest a suitable type of information system to support the management. After the course the student can take part in the organisational development from MIS viewpoints.

Contents:

Management information systems (MIS), information systems in decision making and leadership, Decision Support Systems (DSS), Group Support Systems (GSS), Executive Information Systems (EIS), the effects of information technology in operations, examining the effects of information and communication technology on productivity, financial growth, and the formation of national competitiveness.

Mode of delivery:

multiple methods available. The principal way to conduct the course is participate face-to-face teaching (that is held mainly in Finnish). Course is also given in English based on distance learning and closing session where the group work is represented.

Learning activities and teaching methods:

Lectures and independent work, or group work and seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and given set of journal articles. Laudon, K.C. & Laudon, J.P. 2004. Management Information systems. Prentice Hall. ISBN: 0-13-120681-8.

Assessment methods and criteria:

Learning diary (recommended when participating to the lectures), or group work report and seminar representation (recommended for exchange students), or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

Compensatory course from 1.8.2015 is 555314S Management Information Systems.

555346S: Product portfolio management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Arto Tolonen
Opintokohteen kielet: English
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6

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. Student knows the basics of product portfolio management and understands the ways to analyse products business case. A student learns to see product management as an organizational lifecycle function that focus managing all products and related actions in all product lifecycle phases. The student can apply the learned things and methods in different industries in order to develop systematic product management.

Contents:

Basic issues in product management, sub-processes that are included in product management, methods and tools for product management, product portfolio management, product business case.

Mode of delivery:

Face-to-face learning.

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:

555240A Basic course in product development, 555340S Technology management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

555347S: Seminar in product development management, 5 op

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:

555378S Seminar in industrial engineering and management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

After finishing the course, the student will able to present research areas related to product development management. The student will also able to assess related research and to critically discuss it.

Contents:

Each seminar session discusses a certain topic in product development management in great detail. The topic area is specified according to students' wishes. On top of lectures the course includes completion of a personal research report.

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. Students may also propose topics for the seminar. Lectures and seminar sessions are compulsory in order to complete the course.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management, 555321S Risk management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

555348S: Research project in product development management, 5 op

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:

555379S Research Project in Industrial Engineering and Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits. It is also possible to complete the course as a broader work piece of more than 5 ECTS credits if agreed so with the instructor.

Language of instruction:

English

Timing:

Periods 1-6.

Learning outcomes:

After finishing the course, the student will able to analyze and develop company activities using product development management methods.

Contents:

Completion of the course is agreed on one-to-one with the instructor. An accepted completion of the work requires planning of a research plan, familiarization with related literature, presented a solution to the researched question, and a written report.

Mode of delivery:

Will be defined at the beginning of the course.

Learning activities and teaching methods:

Will be agreed together with the student and the professor.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management, 555321S Risk management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Will be defined at the beginning of the course.

Person responsible:

professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

555360S: Administration, Organization and Education in Working Life, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Kisko, Kari Juhani

Opintokohteen kielet: English

Leikkaavuudet:

555371S	Human Resource Management	5.0 op
555376S	Organisational development	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish, English

Product Management and exchange students can register to the " **Lectures held in english".** Lectures in english will start about one week later. Dates will appear in Weboodi on Monday 12th of January.

Timing:

Pperiods 4-6.

Learning outcomes:

The student can recognize factors influencing the actions of an individual within an organization and analyze the observed modes of acting. He/she is able to recognize new improvement areas and provide improvement suggestions according to the model of learning organization. The student is able to present his/her learnings to others and to evaluate the presentations of others. He/she is able to observe, analyze and make improvement suggestions regarding the complex interactions of organizations and their personnel.

Contents:

To provide information on organizations, human resource matters and the planning and development of an organization.
The mission and functions of an organization. Classical and modern organizational theories, esp. learning organization. Organizational culture. Management, especially HR management. Managing change of organizations and human resource matters in an organization. Organizational development.

Mode of delivery:

Contact teaching.

Learning activities and teaching methods:

Lectures, exercises, seminars and examination or only examination.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Sarala, U. & Sarala, A. Oppiva organisaatio - oppimisen, laadun ja tuottavuuden yhdistäminen. 8. painos. Palmenia-kustannus, 2003. Hatch, M. J. Organization Theory. Oxford University Press, New York, USA,

2006 ja muu opintojaksolla ilmoitettava kirjallisuus. Täydentävä materiaali: Haatanen: Työsuhde-politiikka. Julk. 895, Otatieto, Helsinki 2001.

Assessment methods and criteria:

continuous assessments; lectures, exercises, seminars and examination or only examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail.

Person responsible:

Lecturer Kari Kisko.

Working life cooperation:

No.

Other information:

-

555380S: Quality Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: English
Leikkaavuudet:

555390S	Process Analytics	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 5-6.

Learning outcomes:

Having completed the course, the student can analyse the central principles and contents of quality management and related management approaches. The student can apply the learned things and methods in different kinds of situations and industries.

Contents:

Quality management and its basic assumptions, the methods of TQM in different environments, process management, quality systems, quality award competitions, Six Sigma, performance measurement, Lean, organisational capability models.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, a personal exercise, a group study and an exam.

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

-

Recommended optional programme components:

555281A Basic course in quality management

Recommended or required reading:

Lecture materials and selected articles.

Assessment methods and criteria:

The course grade is derived from the exam score, group work grade and the personal exercise grade. Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Osmo Kauppila

Working life cooperation:

No

Other information:

The course gives the student a broad conception of contents of total quality management and applying it in different environments.

555382S: Project Business, 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:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Objective: The course provides the student with the basic skills to manage a company practicing project business.
Learning outcomes: Upon completion the student can explain the management areas of project business and their essential contents. The student can compare the specific features of project business in different working environments and analyse their effect on the business model of the company. The student can evaluate the significance of a single projects and its management in reaching business goals.

Contents:

The specific features of project business, business models of a project company, sales and marketing of projects, project portfolio management, management of project networks.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and related exercises, group exercise. A learning diary, report of the group study and a presentation of the group study are required to pass the course.

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

555280P Basic course in project management and 555282A Project management or equivalent knowledge.

Recommended optional programme components:

-

Recommended or required reading:

Lecture material and course readings, Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X (nid.), available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/

Assessment methods and criteria:

Learning diary, team work report and its presentation in the closing seminar.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

No

Other information:

-

555387S: Project Work in Quality Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Haapasalo, Harri Jouni Olavi
Opintokohteen kielet: Finnish
Leikkaavuudet:

555379S	Research Project in Industrial Engineering and Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: Applying the methods of quality management in a company's activities and development. On the course the student can combine and apply earlier gained knowledge in the form of a wide study. The student familiarises with research work and reporting of the results.
Learning outcomes: Upon completion the student can analyse and develop the activities of a company using the methods of quality management.

Contents:

Subject and type of work changes by the case. Mostly the subjects come from the industry and relate to actual problems.

Mode of delivery:

Blended learning.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Changes by the case.

Assessment methods and criteria:

Research report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Osmo Kauppila

Working life cooperation:

-

Other information:

-

555388S: Project Work in Project Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

555379S	Research Project in Industrial Engineering and Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: Applying the methods of project and project business management in a company's activities and development. On the course the student can combine and apply earlier gained knowledge in the form of a wide study. The student familiarises with research work and reporting of the results.
Learning outcomes: Upon completion the student can analyse and develop the activities of a project company.

Contents:

Subject and type of work changes by the case. Mostly the subjects come from the industry and relate to actual problems.

Mode of delivery:

Blended learning.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Changes by the case.

Assessment methods and criteria:

Research report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala.

Working life cooperation:

-

Other information:

-

470099S: Master's Thesis in Industrial Engineering and Management, 30 op

Voimassaolo: - 19.09.2018

Opiskelumuoto: Advanced Studies

Laji: Diploma thesis

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

555300S	Master's Thesis	30.0 op

ECTS Credits:
30 ECTS credits.
Language of instruction:
Finnish, thesis can be done in English.
Timing:
Periods 1-6.
Learning outcomes:
The objective is to deepen students' competence in selected area(s) of IEM and in research work. After the course, the students will be able to solve problems of organizations by himself/herself. The student is able to prepare a study plan, including defining research problem and research questions, and follow the plan. Student is able to specify scientific viewpoint suitable for the problem, and based on it, define suitable process for studying the problem and criteria to analyse the process. The student is able to critically use different kind of references. The student is able to draw up a report based on given instructions.
Contents:
Defined by the student and the supervisor.
Mode of delivery:
Individually conducted thesis.
Learning activities and teaching methods:
Individually conducted thesis and a maturity test.
Target group:
Industrial engineering and Management students.
Prerequisites and co-requisites:
555210A Internship, 555311S Advanced internship, 555200A Bachelor's thesis.
Recommended optional programme components:

-
Recommended or required reading:
Kauranen, Ilkka; Mustakallio, Mikko; Palmgren, Virpi. Tutkimusraportin kirjoittamisen opas opinnäytetyön tekijöille - 2. korj. p. 2007 Teknillinen korkeakoulu; Kirjasto Espoo, 2006. - 109 s. Kustantaja: Teknillinen korkeakoulu ISBN 951-22-8359-X UDK: 001.818; Hirsjärvi, Sirkka, Remes, Pirkko & Sajavaara, Paula: Tutki ja kirjoita. Tammi 2003, Helsinki; Uusitalo, Hannu: Tiede, tutkimus ja tutkielma. Johdatus tutkielman maailmaan. WSOY 1999, Helsinki.
Assessment methods and criteria:
Master's Thesis.
Read more about assessment criteria at the University of Oulu webpage.
Grading:
1-5
Person responsible:
Professors at the department
Working life cooperation:
Yes.
Other information:
-

555312S: Maturity Test / Industrial Engineering and Management, 0 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

555302S	Maturity Test / Master of Science in Industrial Engineering and Management	0.0 op

Ei opintojaksokuvauksia.

A440257: Supplementary studies, Industrial Engineering and Management, 0 - 60 op

Voimassaolo: 01.08.2014 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

'Bridge studies'

555221P: Introduction to Production, 2 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Auvinen, Aila Irmeli
Opintokohteen kielet: Finnish
Leikkaavuudet:

555225P	Basics of industrial engineering and management	5.0 op

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Period 4.

Learning outcomes:

The objective of the course is to familiarise a student to the concepts and theories that aim to explain and predict the design and operation of production systems. After the course a student should be able to explain the basic concepts of the production and view the decisions related to production systems in different situations, explain the stages of the investment process, solve some basic calculations, make design tasks and evaluate them, and describe the economic and administrative instruments of environmental law related to an enterprise.

Contents:

Operations strategy, service operations, process design and improvement, process choices and production layout, capacity management, facility location.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and exercises.

Target group:

Industrial Engineering and Management students.

Prerequisites and co-requisites:

555220P Basic course in industrial engineering and management, 555280P Basic course of project management.

Recommended optional programme components:

-

Recommended or required reading:

Krajewski, L. J., Ritzman L. P. & Malhotra M.K. 2007. Operations management: processes and value chains. 8. p. Upper Saddle River (NJ), Pearson Prentice Hall. Chapters: 1. Operations as a Competitive Weapon, 2. Operations Strategy, 4. Process Strategy, 5. Process Analysis, 7. Constraint Management, 8. Process Layout, 11. Location, and Supplements A: Decision Making and J: Financial Analysis.

Assessment methods and criteria:

Exam and the homework.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Lecturer Aila Auvinen

Working life cooperation:

No.

Other information:

The lectures and weekly exercises are held in Finnish. The English exam is based only on the written material mentioned in study materials. Please, contact the person responsible for the course.

555223A: Introduction to Production Control, 3 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Auvinen, Aila Irmeli

Opintokohteen kielet: Finnish

Leikkaavuudet:

555226A Operations and Production 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 3-4.

Learning outcomes:

The objective of the course is to provide students basic capabilities to work in the field of production planning and control. After passing the course the student should be able to: explain the basic concepts of production control, describe the objectives of production control and make some calculations related to production control, describe the production management system in different situations and explain the decisions at various levels, explain some basic production control and management tools and methods and solve some basic problems and also assess their relation to the success of an enterprise.

Contents:

Production management principles and production planning and control system, sales and operations planning, master planning of resources, material and capacity planning, and scheduling.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and exercises, homework.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555220P Basic course in industrial engineering and management, 555280P Basic course in project management.

Recommended optional programme components:

Recommended prerequisite: 555221P Introduction to production

Recommended or required reading:

Krajewski, L. J., Ritzman L. P. & Malhotra M.K., 2007. Operations management: processes and value chains. 8. p. Upper Saddle River (NJ), Pearson Prentice Hall. The Chapters: 1. Operations as a Competitive Weapon, 2. Operations Strategy, 4. Process Strategy, 5. Process Analysis, 6. Process Performance and Quality, 9. Lean Systems, 10. Supply Chain Strategy, 12. Inventory Management, 13. Forecasting, 14. Sales and Operations Planning, 15. Resource Planning, 17. Scheduling.

Assessment methods and criteria:

Homework and / or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Lecturer Aila Auvinen.

Working life cooperation:

No.

Other information:

The weekly lectures and exercises are held in Finnish. The English exam is based only on the chapters mentioned in the study material. Please, contact the person responsible for the course.

555224A: Methods of Production Management and Logistics, 4 op

Voimassaolo: 01.06.2007 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English.

Timing:

periods 1-3.

Learning outcomes:

The aim of the course is to familiarize a student with mathematical methods in production and logistics management. After completing the course, a student knows the most important mathematical methods for production and logistics management. A student will be able to apply these methods and solve the production and logistics problems of a company.

Contents:

Forecasting methods, simulation, queuing models, transportation algorithms and LP methods.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

The course includes lectures, exercises, and group work (/exam).

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555223A Introduction to production control, knowledge of MS Excel or similar software.

Recommended optional programme components:

-

Recommended or required reading:

Applicable parts of Krajewski, L. et al. 2007. Operations Management – Processes and Value Chains. 8th edition. Pearson, Upper Saddle River. Additional material will be announced during the lectures.

Assessment methods and criteria:

Exercises and group work (/exam).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess

Working life cooperation:

No

Other information:

-

555240A: Basic Course in Product Development, 3 op

Voimassaolo: 01.06.2007 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Haapasalo, Harri Jouni Olavi

Opintokohteen kielet: Finnish

Leikkaavuudet:

555242A Product development 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits **.**

Language of instruction:

Finnish.

Timing:

Periods 1-3.

Learning outcomes:

Objective: This study module introduces product development and innovations management in a company environment. Basic course in product development provides fundamental understanding over tools and frameworks that can be used for analysing and managing products, innovations, and technology development. The aim is to create a connection between product development and other company functions.
Learning outcomes: After this study module, a student is capable of explaining the role of product development as a company function. The student understands the difference between innovation activities and systematic product development, and knows the difference between different phases of product development process and its activities. Additionally, the student is able to define the meaning of other company functions to product development activities.

Contents:

Meaning of products for the operations of an industrial enterprise. Product development paradigm and defining relevant concepts. Realising product development methodologically (U&E model, Cooper's stage-gate model, QFD), managing innovations, and product development success factors.

Mode of delivery:

Face-to-face teaching and distance teaching.

Learning activities and teaching methods:

The course includes lectures and compulsory course work.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555223A Introduction to production control.

Recommended optional programme components:

-

Recommended or required reading:

Handouts, course work, and a collection of articles. Ulrich, K. & Eppinger, S. (2008) Product Design and Development. McGraw-Hill. 358 p.

Assessment methods and criteria:

Final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No.

Other information:

-

555280P: Basic Course of Project Management, 2 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: Finnish
Leikkaavuudet:

555288A	Project Management	5.0 op
555285A	Project management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Upon completion the student can explain the essential concepts related to project management. He/she can present the main features of a project plan and can use different methods of partitioning a project. The student can also schedule a project and estimate its costs. The student can explain the terms related to Earned value method and can apply the method on simple tasks. Upon completion the student recognizes the essential tasks of project risk management.

Contents:

Defining project management, project planning, organising and scope management, schedule management, cost management, earned value calculation and project risk management.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, weekly assignments and exercise book. The final grade is derived from the course exam.

Target group:

-

Prerequisites and co-requisites:

None.

Recommended optional programme components:

-

Recommended or required reading:

Lecture material, exercise book. Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X (applicable sections), available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/.

Assessment methods and criteria:

Week assignments and final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala.

Working life cooperation:

No

555282A: Project Management, 4 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala, Jokinen, Tauno Jaakko
Opintokohteen kielet: Finnish
Leikkaavuudet:

555288A	Project Management	5.0 op
555285A	Project management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 4-6.

Learning outcomes:

Objective: Upon completion the student should be able to apply the advanced concepts of project management.
Learning outcomes: Upon completion the student has a good understanding of central concepts of project management. The student is able to apply knowledge to execution and evaluation of different kinds of projects. The student can utilize articles published in scientific journals in the learning process.

Contents:

Managing project's objectives. Stakeholder management. Project risk management. Managing project's schedule and dependencies. Design Structure Matrix (DSM). Characteristics of different kinds of projects and managing them.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, group work and learning report. Active participation to lectures required.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

555280P Basic course of project management or equivalent knowledge recommended.

Recommended or required reading:

Lecture materials and supplementary readings announced in the course. Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X, available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/

Assessment methods and criteria:

Pre-examination to ensure required level of knowledge in the beginning of the course, group work, learning report
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

No

Other information:

-

555286A: Process and quality management, 5 op

Voimassaolo: 01.01.2014 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Osmo Kauppila
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay555286A	Process and quality management (OPEN UNI)	5.0 op
555281A	Basic Course of Quality Management	5.0 op

Ei opintojaksokuvauksia.

555260P: Basic Course in Occupational Safety and Wellbeing at Work, 3 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Henri Jounila, Seppo Väyrynen
Opintokohteen kielet: Finnish
Leikkaavuudet:

555265P	Occupational Safety and Health Management	5.0 op
ay555260P	Basic Course in Occupational Safety and Wellbeing at Work (OPEN UNI)	3.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the spring semester, during Periods 5 and 6.

Learning outcomes:

After the course the student is capable of explaining basic terms of work envi-ronment. He is able to assess the importance of occupational safety, health and well-being at work. In addition, he is able to assess the significance of occupational safety in the improving of productivity and quality.

Contents:

Students will acquire knowledge and practical skills which they will be able to utilize and integrate on ordinary engineering practice. Work accidents and occupational diseases, safety promo-tion, occupational health, ergonomics development, and organising principles in modern production systems and in other work environments.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 20 h. The exercises are completed as group work.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Työsuojelun perusteet. Työterveyslaitos 2009, ISBN: 978-951-802-916-1. Other literature reported at the beginning of the course. As an exercise material: Pienyrityksen työympäristö tuloksen tekijänä 2012, Työsuojeluoppaita ja -ohjeita 5, Työsuojeluhallinto, ISBN 978-952-479-049-9.

Assessment methods and criteria:

Exam and exercises.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Henri Jounila

Working life cooperation:

No

Other information:

-

555262A: Usability and Safety in Product Development, 3 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Väyrynen
Opintokohteen kielet: Finnish
Leikkaavuudet:

555264P	Managing well-being and quality of working life	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 3-4

Learning outcomes:

After the course the student is able to analyze the usability of artefacts and design products that have good characteristics in usability. Students are able to compare the usability of artefacts using different methods.

Contents:

Requirement specification, user research, usability research, creation and evaluation of alternatives and the main course the standards are discussed. Examples and special topics are mostly related to information and communication technology or process technology areas. The course emphasizes these factors, management options and the emphasis on the specific product, product development and design, and the role of usability and security goals.

Mode of delivery:

Multiform learning.

Learning activities and teaching methods:

Lectures, exercises

Target group:

-

Prerequisites and co-requisites:

555240A Basic course in product development

Recommended optional programme components:

-

Recommended or required reading:

S. Väyrynen, N. Nevala & M. Päivinen (2004), Ergonomia ja käytettävyys suunnittelussa 336p., ISBN: 951-817-848-8; Kletz T. & Amyotte P. (2010), Process Plants: A Handbook for Inherently Safer Design, Second Edition. CRC Press; Other literature reported at the beginning of the course.

Assessment methods and criteria:

Exercises, exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail.

Person responsible:

Seppo Väyrynen, lecturer Arto Reiman

Working life cooperation:

-

Other information:

-

A440221: Module of the Option, obligatory, 30 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Usability Design and Management of Well-being at Work, choose 555363S Crativity at work and in product development, in other specialization options choose 555342S Operations research

555363S: Creativity at Work and in Product Development, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Kisko, Kari Juhani

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay555363S Creativity at Work and in Product Development (OPEN UNI) 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-2.

Learning outcomes:

Upon completion the student is able to observe his/her surroundings and recognize development targets. He/she is able to analyze these observations and apply previous knowledge and skills to create new solutions. He/she is able to produce new product ideas and ways of work and to recognize their linkages and effects. He/she learns to present his finding using field specific terms. The student is able to apply the principles of learning organization and continuous development.

Contents:

Creation interest in seeing development ideas related to work communities. To give methods for the realization of these ideas. Introduction to creativity, application of creative work techniques in groupwork cases, a large scale development initiative groupwork and a results seminar. The subjects are mostly linked to practical working life.

Mode of delivery:

Contact teaching.

Learning activities and teaching methods:

Lectures, exercises, group works and seminars.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Luova työote - tuottava työ- Työhallinnon julkaisu 345. Työministeriö 2005.; Rajala, H-K. ja Kisko, K. 2005. Yhdessä paja paremmaksi. Teknologiateollisuus ry. 86 s. Langford, J. ja McDonagh, D. (Toim.) 2003. Focus Groups - Supporting Effective Product Development. London: Taylor & Francis. 230 s. Other literature is announced during the course.

Assessment methods and criteria:

Continuous assessment; lectures, exercises, group works and seminars.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail

Person responsible:

Lecturer Kari Kisko.

Working life cooperation:

No.

Other information:

-

555342S: Operations Research, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Osmo Kauppila, Kess, Pekka Antero

Opintokohteen kielet: Finnish

Leikkaavuudet:

555332S Operations and supply network analytics 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 4-6.

Learning outcomes:

After this study module, a student is capable of applying quantitative methods typical to the field of industrial engineering and management. The student will also be capable of defining development plans for production processes by using these methods.

Contents:

Mathematical methods typical for operations research. These methods include multivariate analysis for decision making and simulation.

Mode of delivery:

Lectures and compulsory course work.

Learning activities and teaching methods:

Lectures and compulsory course work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

Bachelor in industrial engineering and management

Recommended optional programme components:

-

Recommended or required reading:

handouts, course work, and a collection of articles

Assessment methods and criteria:

Final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

Compulsory

555321S: Risk Management, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Hanna Kropsu-Vehkaperä
Opintokohteen kielet: English
Leikkaavuudet:

555377S Risk Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

The course familiarizes a student with the overall concept of risk management. After completing the course student can explain the key concepts of risk management. The student can describe risk classifications and can explain the importance of the risk management to organisations. The student can analyse business risks from new points of view and can produce improvement proposals based on the risk analysis.

Contents:

Theoretical definition of risks, risks in entrepreneurship and their classifications, methods of risk management, tools for corporate risk management.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures, individual work or group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Bernstein P.L. (1996) Against the Gods - The Remarkable Story of Risk. JohnWiley & Sons Inc., ISBN: 0-471-29563-9 (nid.), 0-471-12104-5 (sid.); Lecture materials.

Assessment methods and criteria:

Group work (/exam).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555320S: Strategic Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jukka Majava
Opintokohteen kielet: English
Leikkaavuudet:

555370S Strategic Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English.

Timing:

Periods 1-3.

Learning outcomes:

The aim of the course is to familiarize a student with strategic thinking as well as develop students' understanding of the complexity of global business operations, in both theory and practice. After completing the course student is familiar with strategic thinking, strategic management and strategic planning. The student has under-standing of the complexity of global business operations, and can participate in strategic planning in organizations. The student is familiar with strategy analysis frameworks and can analyze the implementation of chosen strategy.

Contents:

Strategic thinking, creation of strategic plan, strategy analysis frameworks and the basic types of strategy orientation for an enterprise, implementation of a business strategy in a dynamic, competitive environment with an on-line strategy simulation tool, analyzing the implementation of chosen strategy.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, final report and seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555322S Production management, B.Sc. in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Isoherranen, V. (2012) Strategy analysis frameworks for strategy orientation and focus, University of Oulu, Faculty of Technology, Department of Indus-trial 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:

Group work or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555340S: Technology Management, 4 op

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:

555350S Technology Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

After finishing the course, the student will able to differentiate product development and technology management in a company. The student will be able to piece together the development needs and cycles of technologies in an organization. In addition, the student will know how to combine technology development and technology management with strategic planning of a company.

Contents:

The course consists of defining technology and its role within an enterprise and within society. During the course we study the meaning of innovation in technological competition. The lifecycles of technology including development, acquirement, and movement are also covered.

Mode of delivery:

Face-to-face teaching, exercises and group work done as homework.

Learning activities and teaching methods:

Lectures, exercises and group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555240A Basic course in product development.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and selected articles, will be defined at the beginning of the course.

Assessment methods and criteria:

Exam
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No.

Other information:

-

555360S: Administration, Organization and Education in Working Life, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Kisko, Kari Juhani

Opintokohteen kielet: English

Leikkaavuudet:

555371S	Human Resource Management	5.0 op
555376S	Organisational development	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish, English

Product Management and exchange students can register to the " **Lectures held in english".** Lectures in english will start about one week later. Dates will appear in Weboodi on Monday 12th of January.

Timing:

Pperiods 4-6.

Learning outcomes:

The student can recognize factors influencing the actions of an individual within an organization and analyze the observed modes of acting. He/she is able to recognize new improvement areas and provide improvement suggestions according to the model of learning organization. The student is able to present his/her learnings to others and to evaluate the presentations of others. He/she is able to observe, analyze and make improvement suggestions regarding the complex interactions of organizations and their personnel.

Contents:

To provide information on organizations, human resource matters and the planning and development of an organization.
The mission and functions of an organization. Classical and modern organizational theories, esp. learning organization. Organizational culture. Management, especially HR management. Managing change of organizations and human resource matters in an organization. Organizational development.

Mode of delivery:

Contact teaching.

Learning activities and teaching methods:

Lectures, exercises, seminars and examination or only examination.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Sarala, U. & Sarala, A. Oppiva organisaatio - oppimisen, laadun ja tuottavuuden yhdistäminen. 8. painos. Palmenia-kustannus, 2003. Hatch, M. J. Organization Theory. Oxford University Press, New York, USA, 2006 ja muu opintojaksolla ilmoitettava kirjallisuus. Täydentävä materiaali: Haatanen: Työsuhde-politiikka. Julk. 895, Otatieto, Helsinki 2001.

Assessment methods and criteria:

continuous assessments; lectures, exercises, seminars and examination or only examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail.

Person responsible:

Lecturer Kari Kisko.

Working life cooperation:

No.

Other information:

-

555380S: Quality Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: English
Leikkaavuudet:

555390S Process Analytics 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 5-6.

Learning outcomes:

Having completed the course, the student can analyse the central principles and contents of quality management and related management approaches. The student can apply the learned things and methods in different kinds of situations and industries.

Contents:

Quality management and its basic assumptions, the methods of TQM in different environments, process management, quality systems, quality award competitions, Six Sigma, performance measurement, Lean, organisational capability models.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, a personal exercise, a group study and an exam.

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

-

Recommended optional programme components:

555281A Basic course in quality management

Recommended or required reading:

Lecture materials and selected articles.

Assessment methods and criteria:

The course grade is derived from the exam score, group work grade and the personal exercise grade. Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Osmo Kauppila

Working life cooperation:

No

Other information:

The course gives the student a broad conception of contents of total quality management and applying it in different environments.

555311S: Advanced Internship, 3 op

Voimassaolo: 01.01.2008 -

Opiskelumuoto: Advanced Studies

Laji: Practical training

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Eija Forsberg

Opintokohteen kielet: Finnish

Leikkaavuudet:

555304S Advanced Internship 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish, the report can be written in English.

Timing:

Periods 1-6.

Learning outcomes:

During the course students learn to observe his/her working environment from the theoretical viewpoints of Industrial Engineering and Management (IEM). From the working environment, the student is able to specify a research problem related to IEM themes. The student is able to describe the problem or its solution by building a model, a process description, chart, etc. The student is able to critically use different kind of references related to the topic. The student is able to draw up a report based on given instructions.

Contents:

To be defined by each student.

Mode of delivery:

Students will write a report concerning summer job. The length of the summer job has to be 2 months minimum.

Learning activities and teaching methods:

Students will write a report concerning summer job. Student adviser will review and grade the report.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555210A Internship, 555200A Bachelor's Thesis.

Recommended optional programme components:

-

Recommended or required reading:

To be defined by each student.

Assessment methods and criteria:

Written report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Approved/not approved.

Person responsible:

Student adviser

Working life cooperation:

Yes

Other information:

-

A440222: Usability Design and Management of Well-Being at Work, Advanced Module, 30 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Electives

555361A: Machine Safety and Usability, 3,5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Väyrynen
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3,5 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the spring semester, during Periods 5 and 6.

Learning outcomes:

After the course the student is able to choose the design and management methods that enable the organization to remove risks especially on machines and products, and secondly to increase the usability of machines and products and user-friendliness of the work stations. He is able to apply the course's contribution to the company fulfilling the EU´s obligations under the newest regulation. The student knows the responsibilities for risk control and opportunities of high quality well-being and usability in design and management.

Contents:

The course makes students familiar with the design of machinery, product or plant, which is characterized by proper usability and safety features. The course also develops the abilities to analyse, enhance and maintain a high level of safety and productivity by means of modern management and leadership. Additionally, the new EU and global standardization and harmonization of machine safety. Safety analysis. Work accidents related to machines. Ergonomics and usability in design which, in addition to safety, promote user experience as a part of usability of products and well-being at work.

Mode of delivery:

Face-to-face teaching, blended teaching.

Learning activities and teaching methods:

Lectures 20 h. The rest of learning comprises teaching without guidance either privately or in a group. The exercises are mainly completed as group work.

Target group:

Mainly for students from the Department of Mechanical Engineering.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Väyrynen, Nevala & Päivinen (2004) Ergonomia ja käytettävyys suunnittelussa, Teknologiateollisuus ry. 336 s. ISBN: 951-817-848-8 (soveltuvin osin); MetSta-verkkojulkaisu: http://www.metsta.fi/koneturvallisuus/ ; Väyrynen, S. (2011) Johdanto koneturvallisuus ja käytettävyys –kurssiin. Pdf-moniste; Käyttöasetuksen soveltamissuosituksia, Työsuojelujulkaisuja 91. Työsuojeluhallinto 2009; Koneturvallisuus. Koneiden tekniset vaatimukset ja vaatimustenmukaisuus. Työsuojeluoppaita ja -ohjeita 16. Työsuojeluhallinto 2008; Kone-, tuotanto- ja materiaalitekniikka. Koneiden turvallisuus. SFS-käsikirja 403. Suomen Standardisoimisliitto 2009; www.sfsedu.fi ja www.metsta.fi (kts. tietoja koneturvallisuus ja ergonomiastandardeista); http://www.finlex.fi (kts. laki 738/2002, asetus 400/2008, asetus 403/2008); TSO-5: Pienyrityksen työympäristö tuloksen tekijänä. Aluehallintovirasto 2012; Dul, J & Weerdmeester, B (2008): Ergonomics for beginners: a quick reference guide. 3rd ed. CRC Press; www.vtt.fi/proj /riskianalyysit/.

Assessment methods and criteria:

Exam and exercises from which only main ones are compulsory.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

proProfessor Seppo Väyrynen and Tatu Prykäri

Working life cooperation:

No.

Other information:

-

555362S: Safety in Process Industry, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Väyrynen

Opintokohteen kielet: Finnish

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5,0 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the autumn and spring semester, during Periods 2-4.

Learning outcomes:

After the course the student is capable of identifying various hazards at the process plant. He is able to perform various safety analyses. He is also able to explain the impacts of technology, organization and person for risks and accidents. In addition, the student is able to make conception of the risk management as a part of safety management.

Contents:

The course makes the student familiar with the design of process plant, which is characterised by proper ergonomic and safety features. The course also develops the abilities to analyse, enhance and maintain a high level of safety and productivity by means of modern management and leadership. Additionally, safety management, safety culture, standards and legislation, methods of safety analysis, industrial maintenance.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures and exercises 85 h. Exercises are completed as group work.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

555260P Introduction to occupational safety and well-being at work.

Recommended or required reading:

Laitinen, H, Vuorinen, M & Simola, A: Työturvallisuuden ja -terveyden johtaminen. Tietosanoma, 2009. 494 s., ISBN: 978-951-885-275-2. Kletz T. & Amyotte P. (2010) Process Plants: A Handbook for Inherently Safer Design, Second Edition. CRC Press (suitable chapters only). Documentation about the issues from lectures and exercises, among others the material from TUKES, STM and TVL. www.vtt.fi/proj /riskianalyysit/ and http://virtual.vtt.fi/virtual/proj3/alarp.Other literature reported at the beginning of the course.

Assessment methods and criteria:

Exam, exercises and seminars.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Henri Jounila and Professor Seppo Väyrynen.

Working life cooperation:

No.

Other information:

-

555364S: Ergonomics, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Väyrynen

Opintokohteen kielet: Finnish

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the autumn semester, during Periods 1-3.

Learning outcomes:

After the completion of the course students are able to design artefacts in human-centred way, further they can analyze and evaluate human factors and the interaction of humans and production system. They can choose and apply the methods which will enhance the users' / employees' productivity, safety, health, and well-being. They can innovate, develop and design products and production system according to physical, cognitive and organizational ergonomics. They know the basics of international standards of this field.

Contents:

The fundamental principles of ergonomics and its applications. The anthropometrics, biomechanics, work physiology, cognitive psychology, organisational and participative approaches, gerontechnology, design for all, inclusive design. The principles of human-centred design and measurements, CAD, simulation, user study, usability study, industrial cases. Usability of products and usability within work system are the main goal of ergonomic design.

Mode of delivery:

Face-to-face teaching, blended teaching.

Learning activities and teaching methods:

Lectures 26 h. The rest of learning comprises teaching without guidance either privately or in a group. The exercises, including a seminar, are mainly completed as group work.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

555260P Introduction to occupational safety and well-being at work; 555262A Usability and Safety in Product Development.

Recommended or required reading:

Väyrynen, S., Nevala, N. & Päivinen, M. (2004) Ergonomia ja käytettävyys suunnittelussa, Teknologiateollisuus ry. 336 S. ISBN: 978-0-8493-7306-0 (sid.), 0-8493-7306-9-(sid.); SFS-ergonomiastandardit (EN-ISO, www.sfs.fi); www.ttl.fi/fi/ergonomia; SFS-Käsikirja 48-1: Esteettömyys. Osa 1: Johdanto ja periaatteet tuotteiden, palveluiden ja ympäristöjen suunnitteluun. 2010; Bridger, R. (2009). Introduction to ergonomics. 3rd edition. CRC Press.

Assessment methods and criteria:

Exam and exercises from which only the main ones are compulsory.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Seppo Väyrynen and Tatu Prykäri.

Working life cooperation:

-

Other information:

-

555366S: Chemical and Physical Hazards in Industrial Environments, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Väyrynen
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3,0 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the autumn semester, during Periods 1-3.

Learning outcomes:

After the course the student is capable of identifying chemical, physical and biological hazards of working environment. He has the basic skills to plan measurements as well as document and analyze results of measurements. In addition, the student is able to use the most common sound level meters and photometer.

Contents:

Theoretical background of the chemical and physical hazards in industrial environments. The main emphasis is on learning measurement, monitoring and control principles and practices. Noise and lighting. Occupational diseases. Safety management.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures and exercises 50 h.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

555260P Introduction to occupational safety and well-being at work.

Recommended or required reading:

Työhygieeniset mittaukset, Työterveyslaitos 2007, ISBN: 978-951-802-754-9 (nid.); Starck, J. ym.: Työhygienia, Työterveyslaitos 2008, ISBN: 978-951-802-604-7 (sid.). Other literature reported at the beginning of the course.

Assessment methods and criteria:

Exams, exercise and seminar.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Henri Jounila and Professor Seppo Väyrynen

Working life cooperation:

No

Other information:

-

555367S: Exercises in Work Science, 6 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Väyrynen

Opintokohteen kielet: Finnish

Leikkaavuudet:

555379S Research Project in Industrial Engineering and Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

6 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 2-5

Learning outcomes:

After the course the student is able to apply human-centred know-how and methods to the product, working environment and system development or innovation. He knows how to utilize the principles of theoretical knowledge in design and management situations. Students are able to respond to contemporary work system or product development challenges. The students can also take advantage of research-based approach to solve a real problem in a company, research organization, or in a R & D project.

Contents:

The various previous courses on safety, ergonomics, human factors, industrial hygiene, usability, psychology, creativity and organizational development will give the knowledge and skills which will be instructed to apply to real industrial problems.
The participants are familiarized with systematic methods typical to projects. Well-known textbooks and research reports are utilized. Computer-aided systems, e.g. for data analysis, are presented.

Mode of delivery:

Partly face-to-face teaching, supported by blended teaching. Though, predominantly independent work.

Learning activities and teaching methods:

Lectures or corresponding instruction 6 h. The rest of course comprises learning research-style independent work supported by guidance in seminars or in a small group. The report of the exercise will be communicated in seminar.

Target group:

Advanced students being well familiar with work sciences, mainly from departments of industrial engineering and management or process engineering. Doctoral students can participate in the course, too.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Presented at the beginning of the course.

Assessment methods and criteria:

Short part with lectures, instructed exercise project, including presentation of literature, methods, and results both in a seminar and in a form of written study report.

Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Seppo Väyrynen.

Working life cooperation:

No

Other information:

-

721614A: Labour Law, 7 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Oulu Business School
Arvostelu: 1 - 5, pass, fail
Opettajat: Pulkkinen Markku
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay724612P	Labour law (OPEN UNI)	5.0 op
ay721614A	Labour Law (OPEN UNI)	7.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

7 ects.

Language of instruction:

Finnish.

Timing:

Period C.

Learning outcomes:

After completing the course, student is familiar with Finnish labour law. The student knows the principles of industrial safety legislation, protection of privacy, Working Hours Act and Annual Holidays Act. The student will have knowledge of the law relating industrial relations and labour law.

Contents:

The course is intended to introduce students to basic legal structures, concepts in individual and collective labour law. The course is also intended to give a practical knowledge of the law relating to procedure in solving disputes of labour relations and basic knowledge in international and EU labour legislation.

Mode of delivery:

-

Learning activities and teaching methods:

30 hours of lectures (including exercises) and independent studying of the textbooks.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Kari-Pekka Tiitinen, Tarja Kröger: Työsopimusoikeus, Talentum Media Oy (2008).

Check availability from here.

Assessment methods and criteria:

Lectures and literature examination.

Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Senior lecturer Markku Pulkkinen.

Working life cooperation:

-

Other information:

The number of students is limited.

A440223: Module of the Option/ Usability Design and Management of Well-Being at Work, Optional, 3 - 13 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Electives

555322S: Production Management, 3 op

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:

555333S Production Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English.

Timing:

Periods 4-6.

Learning outcomes:

After finishing this course, the student will be able to analyze production processes and to define the cornerstones of managing different production modes. In addition the student will know how to analyze the bottlenecks in different production processes. Understanding the content of lean production. By combining this and previous courses, the student will be able to define the most important development areas in production processes.

Contents:

Analysing and developing manufacturing environment. Lean production. Change management. Management and operation information methods.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555223A Introduction to production control & 555224A Methods of production management and logistics.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Exam and group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555385S: Advanced Course in Quality Management, 5 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: Finnish
Leikkaavuudet:

555378S	Seminar in industrial engineering and management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5-10 ECTS credits.

Language of instruction:

Finnish/English

Timing:

periods 1-6.

Learning outcomes:

Objective: To learn to apply different methods in decision making related to a company's strategy or operations.
Learning outcomes: Upon completion the student can systematically analyse the challenges related to a company's business and develop alternative solutions to them.

Contents:

Changing content on topical subjects.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Depending on the topic.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Depending on the topic.

Assessment methods and criteria:

Will be defined at the beginning of the course.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala, Osmo Kauppila

Working life cooperation:

No

Other information:

-

555386S: Advanced Course in Project Management, 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
Leikkaavuudet:

555378S	Seminar in industrial engineering and management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: To familiarise with research focus areas of project management and project business.
Learning outcomes: Upon completion the student can present research areas related to project management and project business. He can evaluate research of the areas and discuss it critically.

Contents:

Research themes of project management and project business.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Student must attend six seminaries of his choice and act as a chair in one of them. The course goes on continuously and the student can choose the seminars he attends. The student must write a literary report of one of the research themes discussed.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Seminary readings.

Assessment methods and criteria:

Will be defined at the beginning of the course
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

-

Other information:

-

555387S: Project Work in Quality Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Haapasalo, Harri Jouni Olavi
Opintokohteen kielet: Finnish
Leikkaavuudet:

555379S Research Project in Industrial Engineering and Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: Applying the methods of quality management in a company's activities and development. On the course the student can combine and apply earlier gained knowledge in the form of a wide study. The student familiarises with research work and reporting of the results.
Learning outcomes: Upon completion the student can analyse and develop the activities of a company using the methods of quality management.

Contents:

Subject and type of work changes by the case. Mostly the subjects come from the industry and relate to actual problems.

Mode of delivery:

Blended learning.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Changes by the case.

Assessment methods and criteria:

Research report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Osmo Kauppila

Working life cooperation:

-

Other information:

-

555388S: Project Work in Project Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

555379S	Research Project in Industrial Engineering and Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: Applying the methods of project and project business management in a company's activities and development. On the course the student can combine and apply earlier gained knowledge in the form of a wide study. The student familiarises with research work and reporting of the results.
Learning outcomes: Upon completion the student can analyse and develop the activities of a project company.

Contents:

Subject and type of work changes by the case. Mostly the subjects come from the industry and relate to actual problems.

Mode of delivery:

Blended learning.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Changes by the case.

Assessment methods and criteria:

Research report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala.

Working life cooperation:

-

Other information:

-

813352A: Usability Testing, 5 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Information Processing Science
Arvostelu: 1 - 5, pass, fail
Opettajat: Mikko Rajanen
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

555368S: Contemporary Ergonomics, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Väyrynen
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

A440224: Module of the Option/Quality and Project Management, Advanced Module, 30 - 40 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Electives

555382S: Project Business, 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:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Objective: The course provides the student with the basic skills to manage a company practicing project business.
Learning outcomes: Upon completion the student can explain the management areas of project business and their essential contents. The student can compare the specific features of project business in different working environments and analyse their effect on the business model of the company. The student can evaluate the significance of a single projects and its management in reaching business goals.

Contents:

The specific features of project business, business models of a project company, sales and marketing of projects, project portfolio management, management of project networks.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and related exercises, group exercise. A learning diary, report of the group study and a presentation of the group study are required to pass the course.

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

555280P Basic course in project management and 555282A Project management or equivalent knowledge.

Recommended optional programme components:

-

Recommended or required reading:

Lecture material and course readings, Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X (nid.), available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/

Assessment methods and criteria:

Learning diary, team work report and its presentation in the closing seminar.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

No

Other information:

-

555381S: Project Leadership, 5 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jokinen, Tauno Jaakko
Opintokohteen kielet: Finnish
Leikkaavuudet:

555391S	Advanced Course in Project Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Objective: To develop understanding of theoretical leadership frameworks and abilities to develop personal leadership skills.
Learning outcomes: Upon completion the student should be able to describe and apply essential theories of leadership.

Contents:

Essential theoretical leadership frameworks and their historical perspective. Psychodynamic and Morenoan approaches to developing personal leadership skills.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Essay, intensive lecture day and learning report

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

-

Recommended optional programme components:

555282A Project Management or equivalent knowledge recommended

Recommended or required reading:

Northouse PG (2001) Leadership: Theory and Practice; Second Edition. Sage Publications, Thousand Oaks. ISBN: 0-7619-1926-0 (nid.), 0-7619-1925-2 (sid.)

Assessment methods and criteria:

The assessment is based on the essay and the learning report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Mirja Väänänen

Working life cooperation:

No.

Other information:

-

555322S: Production Management, 3 op

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:

555333S Production Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English.

Timing:

Periods 4-6.

Learning outcomes:

After finishing this course, the student will be able to analyze production processes and to define the cornerstones of managing different production modes. In addition the student will know how to analyze the bottlenecks in different production processes. Understanding the content of lean production. By combining this and previous courses, the student will be able to define the most important development areas in production processes.

Contents:

Analysing and developing manufacturing environment. Lean production. Change management. Management and operation information methods.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555223A Introduction to production control & 555224A Methods of production management and logistics.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Exam and group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555323S: Sourcing Management, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Kess, Pekka Antero
Opintokohteen kielet: Finnish
Leikkaavuudet:

555330S	Sourcing Management	5.0 op

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 1-3.

Learning outcomes:

The course familiarizes a student with the overall concept of sourcing management. After completing the course student knows the key concepts of sourcing and purchase management and can explain these. The student can describe the structures of sourcing and purchasing organizations and can explain the meaning of management in the performance of operations. The student can analyse the purchasing activities in a company and can produce improvement proposals based on the analysis. After the course the student can take part in the purchasing operations development in the role of an expert.

Contents:

Purchasing operations in a manufacturing company, the principles of the sourcing and purchasing strategy and practices, suppliers and products, IT systems for sourcing and purchase.

Mode of delivery:

Multiple methods.

Learning activities and teaching methods:

Lectures and group work.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

555324S Advanced supply chain management.

Recommended or required reading:

Lecture notes. Other material will be informed during the lectures.

Assessment methods and criteria:

Group work report / exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555324S: Advanced Supply Chain Management, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Kess, Pekka Antero
Opintokohteen kielet: Finnish
Leikkaavuudet:

555331S Supply Network Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 4-6.

Learning outcomes:

The aim of the course is to familiarize a student with the latest theories and practices in supply chain management. After completing the course the student can explain the principles of supply chain

management. The student can describe the supply chain structures and communicate the importance of effective supply chain. The student can analyze supply chain, propose improvements based on the analysis, and work in supply chain development related tasks.

Contents:

Supply chain management, analysis, and development.

Mode of delivery:

face-to-face teaching and group homework

Learning activities and teaching methods:

Lectures, group work, final report and seminar

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555320S Strategic Management, B.Sc. in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials, Sakki, J. (2009) Tilaus-toimitusketjun hallinta, Vantaa, Jouni Sakki Oy.

Assessment methods and criteria:

Group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555385S: Advanced Course in Quality Management, 5 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: Finnish
Leikkaavuudet:

555378S	Seminar in industrial engineering and management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5-10 ECTS credits.

Language of instruction:

Finnish/English

Timing:

periods 1-6.

Learning outcomes:

Objective: To learn to apply different methods in decision making related to a company's strategy or operations.
Learning outcomes: Upon completion the student can systematically analyse the challenges related to a company's business and develop alternative solutions to them.

Contents:

Changing content on topical subjects.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Depending on the topic.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Depending on the topic.

Assessment methods and criteria:

Will be defined at the beginning of the course.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala, Osmo Kauppila

Working life cooperation:

No

Other information:

-

555386S: Advanced Course in Project Management, 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
Leikkaavuudet:

555378S	Seminar in industrial engineering and management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: To familiarise with research focus areas of project management and project business.

Learning outcomes: Upon completion the student can present research areas related to project management and project business. He can evaluate research of the areas and discuss it critically.

Contents:

Research themes of project management and project business.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Student must attend six seminaries of his choice and act as a chair in one of them. The course goes on continuously and the student can choose the seminars he attends. The student must write a literary report of one of the research themes discussed.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Seminary readings.

Assessment methods and criteria:

Will be defined at the beginning of the course
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

-

Other information:

-

555387S: Project Work in Quality Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Haapasalo, Harri Jouni Olavi
Opintokohteen kielet: Finnish
Leikkaavuudet:

555379S	Research Project in Industrial Engineering and Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: Applying the methods of quality management in a company's activities and development. On the course the student can combine and apply earlier gained knowledge in the form of a wide study. The student familiarises with research work and reporting of the results.
Learning outcomes: Upon completion the student can analyse and develop the activities of a company using the methods of quality management.

Contents:

Subject and type of work changes by the case. Mostly the subjects come from the industry and relate to actual problems.

Mode of delivery:

Blended learning.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Changes by the case.

Assessment methods and criteria:

Research report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Osmo Kauppila

Working life cooperation:

-

Other information:

-

555388S: Project Work in Project Management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

555379S	Research Project in Industrial Engineering and Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish/English.

Timing:

Periods 1-6.

Learning outcomes:

Objective: Applying the methods of project and project business management in a company's activities and development. On the course the student can combine and apply earlier gained knowledge in the form of a wide study. The student familiarises with research work and reporting of the results.
Learning outcomes: Upon completion the student can analyse and develop the activities of a project company.

Contents:

Subject and type of work changes by the case. Mostly the subjects come from the industry and relate to actual problems.

Mode of delivery:

Blended learning.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Undergraduate students of IEM

Prerequisites and co-requisites:

Bachelor in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Changes by the case.

Assessment methods and criteria:

Research report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala.

Working life cooperation:

-

Other information:

-

555345S: Advanced Course in Product Development, 6 op

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:

555351S Advanced Course in Product Development 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

6 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

The student understands the objectives of requirements engineering in order to develop sustainable products. The course familiarizes the student to requirements engineering process and its key activities. After finishing the course, the student will able to analyze requirements engineering in product development processes. The student knows Design for Excellence (DfX) practice. The student can recognize different stakeholder specific requirements and their diversity.

Contents:

The concepts of requirements management, requirements engineer process, requirement prioritization and valuation, Design for Excellence (DfX), different stakeholders and their requirements for product development.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures and group work.

Target group:

Industrial engineering and management students

Prerequisites and co-requisites:

555240A Basic course in product development, 555340S Technology management.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Group work, exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

A440226: Module of the Option/ Production Management, Advanced Module, 30 - 40 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Choose 555326S Research project in production management or 555327S Seminar in production management.

555326S: Research Project in Production Management, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

555379S Research Project in Industrial Engineering and Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS. The course is also possible to carry out more extensive than 5 ECTS, but this must be agreed with the course supervisor.

Language of instruction:

Finnish, can be also made in English.

Timing:

Periods 1-6.

Learning outcomes:

Applying the methods of production management in a company's activities and development. On the course, the student can combine and apply earlier gained knowledge in the form of a wide study. After finishing the course, the student will able to systematically analyze and develop operations of a company by utilizing methods of production management. The student can also present research areas related to production management and can evaluate research of the area and discuss it critically. The student familiarizes with research work and reporting of the results.

Contents:

Changing content on topical subjects.

Mode of delivery:

The methods are agreed with the instructor of the work.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Depending on the topic.

Assessment methods and criteria:

Documented work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5 or approved/not approved.

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No.

Other information:

-

555327S: Seminar in Production Management : Lab to Market, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Kess, Pekka Antero

Opintokohteen kielet: Finnish

Leikkaavuudet:

555375S Lab to Market 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits

Language of instruction:

Finnish, a student can write the report also in English.

Timing:

Periods 1-3.

Learning outcomes:

The aim of the course is to learn to apply different production management methods in decision making related to a company's strategy or operations. After finishing the course, the student will able to analyze and develop operations of a company by utilizing methods of production management.

Contents:

Changing content on topical subjects.

Mode of delivery:

Depending on the topic.

Learning activities and teaching methods:

The methods are agreed with the instructor of the work. Research plan, familiarizing with related literature, solving the problem and a literary report are required to pass. The work can be done individually or in a group.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Depending on the topic.

Assessment methods and criteria:

Will be defined at the beginning of the course.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5 or approved/not approved

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No.

Other information:

-

Electives

555322S: Production Management, 3 op

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:

555333S Production Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English.

Timing:

Periods 4-6.

Learning outcomes:

After finishing this course, the student will be able to analyze production processes and to define the cornerstones of managing different production modes. In addition the student will know how to analyze the bottlenecks in different production processes. Understanding the content of lean production. By combining this and previous courses, the student will be able to define the most important development areas in production processes.

Contents:

Analysing and developing manufacturing environment. Lean production. Change management. Management and operation information methods.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555223A Introduction to production control & 555224A Methods of production management and logistics.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Exam and group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555323S: Sourcing Management, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Kess, Pekka Antero
Opintokohteen kielet: Finnish
Leikkaavuudet:

555330S Sourcing Management 5.0 op

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 1-3.

Learning outcomes:

The course familiarizes a student with the overall concept of sourcing management. After completing the course student knows the key concepts of sourcing and purchase management and can explain these. The student can describe the structures of sourcing and purchasing organizations and can explain the meaning of management in the performance of operations. The student can analyse the purchasing activities in a company and can produce improvement proposals based on the analysis. After the course the student can take part in the purchasing operations development in the role of an expert.

Contents:

Purchasing operations in a manufacturing company, the principles of the sourcing and purchasing strategy and practices, suppliers and products, IT systems for sourcing and purchase.

Mode of delivery:

Multiple methods.

Learning activities and teaching methods:

Lectures and group work.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

555324S Advanced supply chain management.

Recommended or required reading:

Lecture notes. Other material will be informed during the lectures.

Assessment methods and criteria:

Group work report / exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555324S: Advanced Supply Chain Management, 3 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Kess, Pekka Antero
Opintokohteen kielet: Finnish
Leikkaavuudet:

555331S Supply Network Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 4-6.

Learning outcomes:

The aim of the course is to familiarize a student with the latest theories and practices in supply chain management. After completing the course the student can explain the principles of supply chain management. The student can describe the supply chain structures and communicate the importance of effective supply chain. The student can analyze supply chain, propose improvements based on the analysis, and work in supply chain development related tasks.

Contents:

Supply chain management, analysis, and development.

Mode of delivery:

face-to-face teaching and group homework

Learning activities and teaching methods:

Lectures, group work, final report and seminar

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555320S Strategic Management, B.Sc. in Industrial Engineering and Management or equivalent.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials, Sakki, J. (2009) Tilaus-toimitusketjun hallinta, Vantaa, Jouni Sakki Oy.

Assessment methods and criteria:

Group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

-

555344S: Management Information Systems, 5 op

Voimassaolo: - 31.07.2015

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: English

Leikkaavuudet:

555314S Management Information Systems 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

The aim of the course is to provide readiness for enterprise information system designing, purchasing, and development tasks. The aim is to familiarize a student with the significance of information and its management when controlling processes. After completing the course student can explain the key concepts of management information systems (MIS). The student can define the information needs of management processes and how information systems can meet these needs. The student can describe the key features of the following types of systems: DSS, GDSS, EIS, BI, and ERP. The student can analyse the state of the management in an organisation, and can suggest a suitable type of information system to support the management. After the course the student can take part in the organisational development from MIS viewpoints.

Contents:

Management information systems (MIS), information systems in decision making and leadership, Decision Support Systems (DSS), Group Support Systems (GSS), Executive Information Systems (EIS), the effects of information technology in operations, examining the effects of information and communication technology on productivity, financial growth, and the formation of national competitiveness.

Mode of delivery:

multiple methods available. The principal way to conduct the course is participate face-to-face teaching (that is held mainly in Finnish). Course is also given in English based on distance learning and closing session where the group work is represented.

Learning activities and teaching methods:

Lectures and independent work, or group work and seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and given set of journal articles. Laudon, K.C. & Laudon, J.P. 2004. Management Information systems. Prentice Hall. ISBN: 0-13-120681-8.

Assessment methods and criteria:

Learning diary (recommended when participating to the lectures), or group work report and seminar representation (recommended for exchange students), or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

Compensatory course from 1.8.2015 is 555314S Management Information Systems.

555341S: Productivity and Performance Management, 3 op

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

ECTS Credits:

3 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

After finishing the course, the student will able to analyse the efficiency of activities in an organization, from both internal and external viewpoints. The internal analysis is based on Balanced Score Card or other equivalent performance measurement. External measurement of efficiency in based on analysing productivity development and the factors affecting it.

Contents:

The concepts of productivity and performance and the levels to their examination. Productivity and its significance to an enterprise’s processes and profitability. Measuring productivity and performance. The metrics of productivity and operative steering tools. An enterprise’s internal and external productivity. The analysis and the tools for analysis of productivity and the approaches for measuring productivity in industry.

Mode of delivery:

Face-to-face teaching and group work.

Learning activities and teaching methods:

Lectures, group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management.

Recommended optional programme components:

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Recommended or required reading:

Lecture materials. Sumanth, D.J. 1998. Total productivity management, A systematic and quantitative approach to compete in quality, price and time. CRC Press LLC. 407 p.

Assessment methods and criteria:

Exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555381S: Project Leadership, 5 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jokinen, Tauno Jaakko
Opintokohteen kielet: Finnish
Leikkaavuudet:

555391S Advanced Course in Project Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Objective: To develop understanding of theoretical leadership frameworks and abilities to develop personal leadership skills.
Learning outcomes: Upon completion the student should be able to describe and apply essential theories of leadership.

Contents:

Essential theoretical leadership frameworks and their historical perspective. Psychodynamic and Morenoan approaches to developing personal leadership skills.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Essay, intensive lecture day and learning report

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

-

Recommended optional programme components:

555282A Project Management or equivalent knowledge recommended

Recommended or required reading:

Northouse PG (2001) Leadership: Theory and Practice; Second Edition. Sage Publications, Thousand Oaks. ISBN: 0-7619-1926-0 (nid.), 0-7619-1925-2 (sid.)

Assessment methods and criteria:

The assessment is based on the essay and the learning report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Mirja Väänänen

Working life cooperation:

No.

Other information:

-

555346S: Product portfolio management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Arto Tolonen
Opintokohteen kielet: English
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6

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. Student knows the basics of product portfolio management and understands the ways to analyse products business case. A student learns to see product management as an organizational lifecycle function that focus managing all products and related actions in all product lifecycle phases. The student can apply the learned things and methods in different industries in order to develop systematic product management.

Contents:

Basic issues in product management, sub-processes that are included in product management, methods and tools for product management, product portfolio management, product business case.

Mode of delivery:

Face-to-face learning.

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:

555240A Basic course in product development, 555340S Technology management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

A440225: Module of the Option/ Management of Product Development, Advanced Module, 30 - 40 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module of the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Alternative

555347S: Seminar in product development management, 5 op

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:

555378S Seminar in industrial engineering and management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

After finishing the course, the student will able to present research areas related to product development management. The student will also able to assess related research and to critically discuss it.

Contents:

Each seminar session discusses a certain topic in product development management in great detail. The topic area is specified according to students' wishes. On top of lectures the course includes completion of a personal research report.

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. Students may also propose topics for the seminar. Lectures and seminar sessions are compulsory in order to complete the course.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management, 555321S Risk management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

555348S: Research project in product development management, 5 op

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:

555379S	Research Project in Industrial Engineering and Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits. It is also possible to complete the course as a broader work piece of more than 5 ECTS credits if agreed so with the instructor.

Language of instruction:

English

Timing:

Periods 1-6.

Learning outcomes:

After finishing the course, the student will able to analyze and develop company activities using product development management methods.

Contents:

Completion of the course is agreed on one-to-one with the instructor. An accepted completion of the work requires planning of a research plan, familiarization with related literature, presented a solution to the researched question, and a written report.

Mode of delivery:

Will be defined at the beginning of the course.

Learning activities and teaching methods:

Will be agreed together with the student and the professor.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management, 555321S Risk management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Will be defined at the beginning of the course.

Person responsible:

professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

Electives

555341S: Productivity and Performance Management, 3 op

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

ECTS Credits:

3 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

After finishing the course, the student will able to analyse the efficiency of activities in an organization, from both internal and external viewpoints. The internal analysis is based on Balanced Score Card or other equivalent performance measurement. External measurement of efficiency in based on analysing productivity development and the factors affecting it.

Contents:

The concepts of productivity and performance and the levels to their examination. Productivity and its significance to an enterprise's processes and profitability. Measuring productivity and performance. The metrics of productivity and operative steering tools. An enterprise's internal and external productivity. The analysis and the tools for analysis of productivity and the approaches for measuring productivity in industry.

Mode of delivery:

Face-to-face teaching and group work.

Learning activities and teaching methods:

Lectures, group work.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555340S Technology management.

Recommended optional programme components:

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Recommended or required reading:

Lecture materials. Sumanth, D.J. 1998. Total productivity management, A systematic and quantitative approach to compete in quality, price and time. CRC Press LLC. 407 p.

Assessment methods and criteria:

Exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555343S: Product Data management, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Arto Tolonen
Opintokohteen kielet: English
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTC credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

The course familiarizes a student with the product processes of an enterprise and specifically the meaning of product data in different stages of product process. After finishing the course, a student knows what product data is and how it can be used for business purpose. A student is familiar with the basic concepts of product data management (PDM) and is aware of the basic tools used for PDM. After finishing the course, a student will able to analyze existing and future products from product structure viewpoint.

Students will be able to analyze the company's product data management as a whole and to give suggestions based their analysis.

Contents:

Product information management concepts, its history and challenges, PDM-processes: managing product models, managing documents and configurations as well as tracing information, PDM-system and its functions, PDM-project and implementation of the system.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures, group work, exam.

Target group:

Industrial engineering and management students

Prerequisites and co-requisites:

555240S Basic course in product development.

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and selected articles. Saaksvuori A & Immonen A. (2008) Product lifecycle management, 8 ed. pages 1-65 and 91-176.

Assessment methods and criteria:

Group work report and exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

555344S: Management Information Systems, 5 op

Voimassaolo: - 31.07.2015
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: English
Leikkaavuudet:

555314S Management Information Systems 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6.

Learning outcomes:

The aim of the course is to provide readiness for enterprise information system designing, purchasing, and development tasks. The aim is to familiarize a student with the significance of information and its management when controlling processes. After completing the course student can explain the key concepts of management information systems (MIS). The student can define the information needs of management processes and how information systems can meet these needs. The student can describe the key features of the following types of systems: DSS, GDSS, EIS, BI, and ERP. The student can analyse the state of the management in an organisation, and can suggest a suitable type of information system to support the management. After the course the student can take part in the organisational development from MIS viewpoints.

Contents:

Management information systems (MIS), information systems in decision making and leadership, Decision Support Systems (DSS), Group Support Systems (GSS), Executive Information Systems (EIS), the effects of information technology in operations, examining the effects of information and communication technology on productivity, financial growth, and the formation of national competitiveness.

Mode of delivery:

multiple methods available. The principal way to conduct the course is participate face-to-face teaching (that is held mainly in Finnish). Course is also given in English based on distance learning and closing session where the group work is represented.

Learning activities and teaching methods:

Lectures and independent work, or group work and seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

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

Recommended optional programme components:

-

Recommended or required reading:

Lecture materials and given set of journal articles. Laudon, K.C. & Laudon, J.P. 2004. Management Information systems. Prentice Hall. ISBN: 0-13-120681-8.

Assessment methods and criteria:

Learning diary (recommended when participating to the lectures), or group work report and seminar representation (recommended for exchange students), or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess.

Working life cooperation:

No

Other information:

Compensatory course from 1.8.2015 is 555314S Management Information Systems.

555322S: Production Management, 3 op

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:

555333S	Production Management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

English.

Timing:

Periods 4-6.

Learning outcomes:

After finishing this course, the student will be able to analyze production processes and to define the cornerstones of managing different production modes. In addition the student will know how to analyze the bottlenecks in different production processes. Understanding the content of lean production. By combining this and previous courses, the student will be able to define the most important development areas in production processes.

Contents:

Analysing and developing manufacturing environment. Lean production. Change management. Management and operation information methods.

Mode of delivery:

Face-to-face teaching and group homework.

Learning activities and teaching methods:

Lectures, group work, seminar.

Target group:

Industrial engineering and management students.

Prerequisites and co-requisites:

555223A Introduction to production control & 555224A Methods of production management and logistics.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Exam and group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555381S: Project Leadership, 5 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Jokinen, Tauno Jaakko

Opintokohteen kielet: Finnish

Leikkaavuudet:

555391S Advanced Course in Project Management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Objective: To develop understanding of theoretical leadership frameworks and abilities to develop personal leadership skills.
Learning outcomes: Upon completion the student should be able to describe and apply essential theories of leadership.

Contents:

Essential theoretical leadership frameworks and their historical perspective. Psychodynamic and Morenoan approaches to developing personal leadership skills.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Essay, intensive lecture day and learning report

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

-

Recommended optional programme components:

555282A Project Management or equivalent knowledge recommended

Recommended or required reading:

Northouse PG (2001) Leadership: Theory and Practice; Second Edition. Sage Publications, Thousand Oaks. ISBN: 0-7619-1926-0 (nid.), 0-7619-1925-2 (sid.)

Assessment methods and criteria:

The assessment is based on the essay and the learning report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Mirja Väänänen

Working life cooperation:

No.

Other information:

-

555345S: Advanced Course in Product Development, 6 op

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:

555351S Advanced Course in Product Development 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

6 ECTS credits.

Language of instruction:

English

Timing:

Periods 1-3.

Learning outcomes:

The student understands the objectives of requirements engineering in order to develop sustainable products. The course familiarizes the student to requirements engineering process and its key activities. After finishing the course, the student will able to analyze requirements engineering in product development processes. The student knows Design for Excellence (DfX) practice. The student can recognize different stakeholder specific requirements and their diversity.

Contents:

The concepts of requirements management, requirements engineer process, requirement prioritization and valuation, Design for Excellence (DfX), different stakeholders and their requirements for product development.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures and group work.

Target group:

Industrial engineering and management students

Prerequisites and co-requisites:

555240A Basic course in product development, 555340S Technology management.

Recommended optional programme components:

-

Recommended or required reading:

Will be defined at the beginning of the course.

Assessment methods and criteria:

Group work, exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No

Other information:

-

555346S: Product portfolio management, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Arto Tolonen

Opintokohteen kielet: English

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS credits.

Language of instruction:

English

Timing:

Periods 4-6

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. Student knows the basics of product portfolio management and understands the ways to analyse products business case. A student learns to see product management as an organizational lifecycle function that focus managing all products and related actions in all product lifecycle phases. The student can apply the learned things and methods in different industries in order to develop systematic product management.

Contents:

Basic issues in product management, sub-processes that are included in product management, methods and tools for product management, product portfolio management, product business case.

Mode of delivery:

Face-to-face learning.

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:

555240A Basic course in product development, 555340S Technology management, 555320S Strategic management.

Recommended optional programme components:

-

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.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo

Working life cooperation:

No

Other information:

-

A440255: Supplementary Module, Mechanical Engineering, 20 - 30 op

Voimassaolo: 01.08.2013 -

Opiskelumuoto: Supplementary Module

Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440248: Supplementary Module, Structural Engineering and Construction Technology, 20 - 30 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Supplementary Module
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440249: Supplementary Module, Process Engineering, 20 - 30 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Supplementary Module
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440256: Supplementary Module, Environmental Engineering, 20 - 30 op

Voimassaolo: 01.08.2013 -
Opiskelumuoto: Supplementary Module
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440253: Supplementary Module, Electrical Engineering, 20 - 30 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Supplementary Module
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440254: Supplementary Module, Information, 20 - 30 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Supplementary Module
Laji: Study module
Vastuuyksikkö: Department of Computer Science and Engineering
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A400072: Module Preparing for the Option, 20 - 40 op

Voimassaolo: 01.08.2007 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Faculty of Technology
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

A440273: Special Module, 10 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Special Module
Laji: Study module
Vastuuyksikkö: Department of Computer Science and Engineering
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

470099S: Master's Thesis in Industrial Engineering and Management, 30 op

Voimassaolo: - 19.09.2018
Opiskelumuoto: Advanced Studies
Laji: Diploma thesis
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

555300S Master's Thesis 30.0 op

ECTS Credits:
30 ECTS credits.
Language of instruction:
Finnish, thesis can be done in English.
Timing:
Periods 1-6.
Learning outcomes:
The objective is to deepen students' competence in selected area(s) of IEM and in research work. After the course, the students will be able to solve problems of organizations by himself/herself. The student is able to prepare a study

plan, including defining research problem and research questions, and follow the plan. Student is able to specify scientific viewpoint suitable for the problem, and based on it, define suitable process for studying the problem and criteria to analyse the process. The student is able to critically use different kind of references. The student is able to draw up a report based on given instructions.
Contents:
Defined by the student and the supervisor.
Mode of delivery:
Individually conducted thesis.
Learning activities and teaching methods:
Individually conducted thesis and a maturity test.
Target group:
Industrial engineering and Management students.
Prerequisites and co-requisites:
555210A Internship, 555311S Advanced internship, 555200A Bachelor's thesis.
Recommended optional programme components:
-
Recommended or required reading:
Kauranen, Ilkka; Mustakallio, Mikko; Palmgren, Virpi. Tutkimusraportin kirjoittamisen opas opinnäytetyön tekijöille - 2. korj. p. 2007 Teknillinen korkeakoulu; Kirjasto Espoo, 2006. - 109 s. Kustantaja: Teknillinen korkeakoulu ISBN 951-22-8359-X UDK: 001.818; Hirsjärvi, Sirkka, Remes, Pirkko & Sajavaara, Paula: Tutki ja kirjoita. Tammi 2003, Helsinki; Uusitalo, Hannu: Tiede, tutkimus ja tutkielma. Johdatus tutkielman maailmaan. WSOY 1999, Helsinki.
Assessment methods and criteria:
Master's Thesis.
Read more about assessment criteria at the University of Oulu webpage.
Grading:
1-5
Person responsible:
Professors at the department
Working life cooperation:
Yes.
Other information:
-

555312S: Maturity Test / Industrial Engineering and Management, 0 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

555302S Maturity Test / Master of Science in Industrial Engineering and Management 0.0 op

Ei opintojaksokuvauksia.

A440120: Basic and Intermediate Studies, Industrial Engineering and Management, 119,5 - 120 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Basic and Intermediate Studies

Laji: Study module

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Compulsory to all

555212P: Orientation Course for New Students, 1 op

Voimassaolo: 01.08.2013 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Eija Forsberg

Opintokohteen kielet: Finnish

Leikkaavuudet:

555203P Study Skills 2.0 op

ECTS Credits:

1 cr

Language of instruction:

Finnish

Timing:

Periods 1-6.

Learning outcomes:

After completing the course, a student is familiar with his / her new Oulu studying environment (e.g. classrooms, libraries and their services, City of Oulu in essence), University studying information systems (e.g. e-mail, OODI, Lukkari), University student organizations and their role in learning as well as in society, and the services offered to the students.
A student is familiar with the field of study and the course structure of the degree programme of his / her own. A student is able to draw up a timetable for his / her studying by using the information systems of University. A student is able to design his / her own studies, as well manage the use of time bearing in mind the curriculum. A student is able to create a study plan (eHOPS) of his /her own.

Contents:

How to start the studying? University of Oulu and administration of it, Faculty of Technology, Department of IEM, and City of Oulu. The services offered by society, student organizations and the University. Degree programmes and the studies on the faculty of technology. The profession and the working situation of MSc (Techn) in IEM. Study design and study techniques. The services of Uni library, Oula -database teaching. Study planning.

Mode of delivery:

Face-to-face learning, blended learning.

Learning activities and teaching methods:

Briefings organized by University, Faculty of Technology and Department of Industrial Engineering and Management. Tutorials and tutoring. Libraries presentations. Planning a study plan for Bachelor’s Degree in Industrial Engineering and Management.

Target group:

Industrial Engineering and Management students.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Opinto-opas 2013-2014. 2013. Oulun yliopisto. Teknillinen tiedekunta.

Assessment methods and criteria:

A student must attend a certain number of tutorials and plan his / her own study plan for BSc (Tech, eHOPS).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Approved/not approved.

Person responsible:

Student Advisor.

Working life cooperation:

No.

Other information:

The course is registered completed after the eHOPS of a student has been accepted.

030005P: Information Skills, 1 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Faculty of Technology
Arvostelu: 1 - 5, pass, fail
Opettajat: Koivuniemi, Mirja-Liisa, Sassali, Jani Henrik
Opintokohteen kielet: Finnish
Leikkaavuudet:

030004P	Introduction to Information Retrieval	0.0 op

ECTS Credits:

1 ECTS credit

Language of instruction:

Finnish

Timing:

2nd or 3rd year

Learning outcomes:

Students know the different phases of information retrieval process and basic techniques of scientific information retrieval. They will find the most important reference databases of their discipline and know how to evaluate information sources and retrieval results.

Contents:

Retrieval of scientific information, the retrieval process, key databases of the discipline, and evaluation of information retrieval and information sources.

Mode of delivery:

Blended teaching: classroom training, web-based learning material and exercises in Optima environment, a final assignment on a topic of the student’s own choice

Learning activities and teaching methods:

Training sessions 8h, group working 7h, self-study 12h

Target group:

Compulsory for all students of the Faculty of Technology, the Faculty of Information Technology and Electrical Engineering and the Faculty of Architecture. In the Faculty of Science compulsory for students of biology, physics, geosciences, chemistry and geography. Optional for students of biochemistry and mathematics.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Web learning material https://wiki.oulu.fi/display/030005P.

Assessment methods and criteria:

Passing the course requires participation in the training sessions and successful completion of the course assignments.

Read more about assessment criteria at the University of Oulu webpage.

Grading:

pass/fail

Person responsible:

Science and Technology Library Tellus, tellustieto (at) oulu.fi

Working life cooperation:

-

Other information:

-

031010P: Calculus I, 5 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opettajat: Ilkka Lusikka
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay031010P	Calculus I (OPEN UNI)	5.0 op

ECTS Credits:

5

Language of instruction:

Finnish

Timing:

Autumn semester, periods 1-3.

Learning outcomes:

After completing the course the student identifies concepts of vector algebra and can use vector algebra for solving problems of analytic geometry. The student can also explain basic characteristics of elementary functions and is able to analyse the limit and the continuity of real valued functions of one variable. Furthermore, the student can solve problems associated with differential and integral calculus of real valued functions of one variable.

Contents:

Vector algebra and analytic geometry. Limit, continuity, differential and integral calculus and applications of real valued functions of one variable. Complex numbers.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures 55 h / Group work 22 h.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Grossmann, S.I.: Calculus of One Variable; Grossmann, S.I.: Multivariable Calculus, Linear Algebra and Differential Equations (partly); Adams, R.A.: A Complete Course Calculus (partly).

Assessment methods and criteria:

Intermediate exams or a final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Ilkka Lusikka

Working life cooperation:

-

Other information:

-

031011P: Calculus II, 6 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opettajat: Ilkka Lusikka
Opintokohteen kielet: Finnish
Leikkaavuudet:

031075P	Calculus II	5.0 op
ay031011P	Calculus II (OPEN UNI)	6.0 op

ECTS Credits:

6

Language of instruction:

Finnish

Timing:

Spring semester, periods 4-6.

Learning outcomes:

After completing the course the student is able to examine the convergence of series and power series of real terms and estimate the truncation error. Furthermore, the student can explain the use of power series e.g. in calculating limits and approximations for definite integrals and is able to solve problems related to differential and integral calculus of real and vector valued functions of several variables.

Contents:

Sequences, series and power series of real terms. Differential and integral calculus of real and vector valued functions of several variables.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures 62 h / Group work 26 h.

Target group:

-

Prerequisites and co-requisites:

The recommended prerequisite is the completion of the course 031010P Calculus I.

Recommended optional programme components:

-

Recommended or required reading:

Kreyszig, E.: Advanced Engineering Mathematics; Grossmann, S.I.: Multivariable Calculus, Linear Algebra and Differential Equations.

Assessment methods and criteria:

Intermediate exams or a final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Ilkka Lusikka

Working life cooperation:

-

Other information:

-

031017P: Differential Equations, 4 op

Opiskelumuoto: Basic Studies

Laji: Course

Arvostelu: 1 - 5, pass, fail

Opettajat: Ruotsalainen Keijo

Opintokohteen kielet: Finnish

Leikkaavuudet:

800320A	Differential equations	5.0 op
031076P	Differential Equations	5.0 op

ECTS Credits:

4

Language of instruction:

Finnish

Timing:

Spring, period 4-6

Learning outcomes:

The students can apply differential equations as a mathematical model. They can identify and solve various differential equations and they have knowledge on basic solvability of differential equations. The student can use the Laplace transform as a solution method.

Contents:

Ordinary differential equations of first and higher order. Laplace transform with applications to differential equations.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures 44 h / Group work 28 h.

Target group:

-

Prerequisites and co-requisites:

The recommended prerequisite is the completion of the course 031010P Calculus I.

Recommended optional programme components:

-

Recommended or required reading:

Kreyszig, E.: Advanced Engineering Mathematics

Assessment methods and criteria:

Intermediate exams or a final exam.

Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Martti hamina

Working life cooperation:

-

Other information:

-

031019P: Matrix Algebra, 3,5 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opettajat: Matti Peltola
Opintokohteen kielet: Finnish
Leikkaavuudet:

031078P	Matrix Algebra	5.0 op

ECTS Credits:

3,5

Language of instruction:

Finnish

Timing:

Autumn semester, periods 1-3

Learning outcomes:

After completing the course the student is able to apply arithmetic operations of matrices. He can solve system of linear equations by matrix methods and can apply iterative methods to find the solution of the system of linear equations. The student is able to recognise the vector space and can relate the consepts of linear transform and matrix. He can analyse matrices by the parameters, vectors and vector spaces of matrices. The student is able to diagonalize matrices and apply diagonalization to the simple applications.

Contents:

Vectors and matrices. Systems of linear equations. Vector spaces and linear transformations. The rank, nullity, row space and the column space of a matrix. The determinant of a matrix. Eigenvalues and eigenvectors of a matrix. The diagonalization with applications. The iterative methods of solving linear system of equations. The theorems of Gershgorin and Cayley- Hamilton.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 40 h / Group work 20 h.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Grossman, S.I. : Elementary Linear Algebra, David C. Lay: Linear Algebra and Its Applications.

Assessment methods and criteria:

Intermediate exams or a final exam.

Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Matti Peltola

Working life cooperation:

-

Other information:

-

031021P: Probability and Mathematical Statistics, 5 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opettajat: Jukka Kemppainen
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay031021P	Probability and Mathematical Statistics (OPEN UNI)	5.0 op

ECTS Credits:

5

Language of instruction:

Finnish

Timing:

Spring semester, periods 4-6

Learning outcomes:

After completing the course the student knows the key concepts of probability and the most important random variables and is able to use them in calculating probabilities and parameters of probability distributions. In addition, the student is able to analyze statistical data by calculating interval and point estimates for the parameters. The student is also able to formulate statistical hypotheses and test them.

Contents:

The key concepts of probability, random variable, parameters of probability distributions, estimation of parameters, hypothesis testing.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 44 h/Exercises 22 h/Self-study 68 h.

Target group:

-

Prerequisites and co-requisites:

The recommended prerequisites are the course 031010P Calculus I and some parts of the course 031011P Calculus II.

Recommended optional programme components:

-

Recommended or required reading:

Milton, J.S., Arnold, J.C. (1992): Introduction to Probability and Statistics.

Assessment methods and criteria:

Intermediate exams or a final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Jukka Kemppainen

Working life cooperation:

-

Other information:

-

900062P: Communicative Oral Skills for Production Engineering and Management, 2 op

Voimassaolo: 01.08.2008 -

Opiskelumuoto: Basic Studies

Laji: Course

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Proficiency level:

-

Status:

This course is obligatory for the Students of Industrial Engineering and Management and it is integrated to the Case course 555284A.

Required proficiency level:

-

ECTS Credits:

2 ECTS

Language of instruction:

Finnish

Timing:

the Autumn term of the 3rd year of studies

Learning outcomes:

Upon completion of the course the student should be familiar with the central principles of work and study-related communication, both oral and written, and be able to apply this knowledge in his/her own communication. The student should be able to analyse and assess his/her own writing and the writing of his /her peers. He/she should be able to act in group communication situations in a target-oriented manner. The student should also be able to give and receive constructive criticism. The student knows how to act efficiently in situations of group communication.

Contents:

Presentations, preparing a presentation, presenting techniques, argumentation, non-verbal communication, negotiating skills and conventions, observation and analysis of speech communication situations.

Mode of delivery:

multi-modal teaching

Learning activities and teaching methods:

Contact teaching and independent work

Target group:

Students of Industrial Engineering and Management

Prerequisites and co-requisites:

-

Recommended optional programme components:

This course is integrated to the Case course 555284A.

Recommended or required reading:

the material in the Optima learning environment

Assessment methods and criteria:

Active participation in contact teaching, independent study and completion of given assignments. Read more about assessment criteria at the University of Oulu webpage.

Grading:

1 - 5

Person responsible:

Mikkola, Outi

Working life cooperation:

-

Other information:

-

761121P: Laboratory Exercises in Physics 1, 3 op

Opiskelumuoto: Basic Studies

Laji: Course

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

761115P	Laboratory Exercises in Physics 1	5.0 op
761118P-01	Mechanics 1, lectures and exam	0.0 op
761115P-02	Laboratory Exercises in Physics 1, laboratory exercises	0.0 op
761115P-01	Laboratory Exercises in Physics 1, lecture and exam	0.0 op
761114P-01	Wave motion and optics, lectures and exam	0.0 op
761113P-01	Electricity and magnetism, lectures and exam	0.0 op

ECTS Credits:

3 credits

Language of instruction:

The lectures and the instruction material will be in Finnish. The laboratory experiments will be made in groups guided either in Finnish or in English.

Timing:

Autumn, spring.

Learning outcomes:

The student can safely make physical measurements, use different measurement tools, read different scales, handle the data, calculate the error estimations and make a sensible report of his laboratopy measurements.

Contents:

The skill to make laboratory measurements is important for physicists. This is an introductory course how to make physical measurements and how to treat the measured data. Laboratory works are made in groups. The laboratory security is an essential part also in physics. Measurements are made with different instruments. As a result the most probable value is determined as well as its error. The skills obtained during this course can be applied in the other laboratory courses Laboratory exercises in physics 2 and 3.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 12 h, exercises 20 h (5 x 4 h). Five different works will be made during the course in groups. Self-study 48 h.

Target group:

No specific target qroup

Prerequisites and co-requisites:

No specific prerequisites

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously

Recommended or required reading:

A booklet: Fysiikan laboratoriotyöt I, laboratoriotöiden työohje. Course material is in Finnish. A few English material is available in teaching laboratory.

Assessment methods and criteria:

Written reports of the experiments and one written examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Kari Kaila

Working life cooperation:

No work placement period

Other information:

https://wiki.oulu.fi/display/761121P/
Registration for the course and exams will be found by using the code 761121P-01

761101P: Basic Mechanics, 4 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

761118P	Mechanics 1	5.0 op
761118P-01	Mechanics 1, lectures and exam	0.0 op
761118P-02	Mechanics 1, lab. exercises	0.0 op
761111P-01	Basic mechanics, lectures and exam	0.0 op
761111P-02	Basic mechanics, lab. exercises	0.0 op
761111P	Basic mechanics	5.0 op
761101P2	Basic Mechanics	4.0 op

ECTS Credits:

4 credits

Language of instruction:

The lectures will be in Finnish. The textbook is in English and exercises are selected from the textbook. For further information, contact the responsible person of the course.

Timing:

Autumn

Learning outcomes:

The student is able to describe the basic concepts of mechanics and to apply those when solving the problems related to mechanics.

Contents:

We encounter many phenomena related to mechanics in our everyday life. Most engineering sciences are based on mechanics and mechanics forms the basis of many other fields of physics, including modern physics.

Contents in brief: Short summary of vector calculus. Kinematics, projectile motion and circular motion. Newton's laws of motion. Work and different forms of energy. Momentum, impulse and collisions. Rotational motion and moment of inertia. Torque and angular momentum. Rigid body equilibrium problems. Gravitation. Periodic motion. Fluid mechanics.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 32 h, 8 exercises (16 h), self-study 59 h

Target group:

For the students of the University of Oulu

Prerequisites and co-requisites:

Knowledge of vector calculus and basics of differential and integral calculus

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously

Recommended or required reading:

Text book: H.D. Young and R.A. Freedman: University physics, Addison-Wesley, 13th edition, 2012, chapters 1-14. Also older editions can be used.
Lecture material: Finnish lecture material will be available on the web page of the course.
Course material availability can be checked here.

Assessment methods and criteria:

Four mini examinations and end examination or final examination
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Anita Aikio

Working life cooperation:

No work placement period

Other information:

https://noppa.oulu.fi/noppa/kurssi/761101P/etusivu

761103P: Electricity and Magnetism, 4 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

761119P	Electromagnetism 1	5.0 op
761119P-01	Electromagnetism 1, lectures and exam	0.0 op
761119P-02	Electromagnetism 1, lab. exercises	0.0 op
761113P-01	Electricity and magnetism, lectures and exam	0.0 op
761113P-02	Electricity and magnetism, lab. exercises	0.0 op
761113P	Electricity and magnetism	5.0 op
766319A	Electromagnetism	7.0 op

ECTS Credits:

4 credits

Language of instruction:

The lectures will be in Finnish. The textbook is in English and exercises are selected from the textbook. For further information, contact the responsible person of the course.

Timing:

Spring

Learning outcomes:

The student is able to describe the basic concepts of electricity and magnetism and to apply those when solving the problems related to electromagnetism.

Contents:

Electromagnetic interaction is one of the four fundamental interactions in physics and many phenomena like light, radio waves, electric current, magnetism and formation of solid matter are based on electromagnetism. The current technological development is largely based on applications of electromagnetism in energy production and transfer, telecommunications and information technology. Contents in brief: Coulomb's law. Electric field and potential. Gauss's law. Capacitors and dielectrics. Electric current, resistors, electromotive force and DC circuits. Magnetic field, motion of a charged particle in electric and magnetic fields, and applications. Ampère's law and Biot-Savart law. Electromagnetic induction and Faraday's law. Inductance and inductors. R-L-C circuits, alternating current and AC circuits.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 32 h, 6 exercises (12 h), self-study 63 h

Target group:

For the students of the University of Oulu.

Prerequisites and co-requisites:

Knowledge of vector calculus and basics of differential and integral calculus are needed.

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously

Recommended or required reading:

Text book: H.D. Young and R.A. Freedman: University physics, Addison-Wesley, 13th edition, 2012, chapters 21-31. Also older editions can be used.
Lecture material: Finnish lecture material will be available on the web page of the course.
Course material availability can be checked here.

Assessment methods and criteria:

Four mini examinations and end examination or final examination
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Anita Aikio

Working life cooperation:

No work placement period

Other information:

https://wiki.oulu.fi/display/761103P/

761104P: Wave Motion, 3 op

Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

761310A	Wave motion and optics	5.0 op
761310A-01	Wave motion and optics, lectures and exam	0.0 op
761310A-02	Wave motion and optics, lab. exercises	0.0 op

761114P-01 Wave motion and optics, lectures and exam 0.0 op
761114P-02 Wave motion and optics, lab. exercises 0.0 op
761114P Wave motion and optics 5.0 op

ECTS Credits:

3 credits

Language of instruction:

Lectures and exercises in Finnish. Material in English.

Timing:

Spring

Learning outcomes:

The student can classify different types of wave motions and can name the characterizing quantities (wavelength, period, wave speed), can apply geometrical optics to simple mirror and lens systems, can explain the meaning of interference and diffraction and their applications, like using interference to determine wavelength of radiation.

Contents:

Basic course on wave motion, and geometric and wave optics.
Wave motion and propagation. Acoustics. Geometric optics: basic principles, mirrors and lenses. Electromagnetic waves. Wave optics: interference, diffraction, and polarization. Optical instruments. Photometry. Laser.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 32 h, exercises 10 h, self-study 38 h

Target group:

The students of the University of Oulu

Prerequisites and co-requisites:

No specific prerequisites

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously

Recommended or required reading:

Text book: H.D. Young and R.A. Freedman: University physics, Addison-Wesley, 13th edition, 2008. Also earlier editions can be used.
Course material availability can be checked here.

Assessment methods and criteria:

Four mini examinations and one end examination or a final examination
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Saana-Maija Huttula

Working life cooperation:

No work placement period

Other information:

https://noppa.oulu.fi/noppa/kurssi/761104p/etusivu

724105P: Management Accounting, 5 op

Voimassaolo: 01.08.2014 -
Opiskelumuoto: Basic Studies
Laji: Course

Vastuuyksikkö: Oulu Business School

Arvostelu: 1 - 5, pass, fail

Opettajat: Janne Järvinen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay724105P Management Accounting (OPEN UNI) 5.0 op

721172P Management Accounting 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 credits / 133 hours of work

Language of instruction:

Finnish

Timing:

Period C

Learning outcomes:

After passing the course, the student knows the basic cost concepts and the elements of cost accounting systems. Students are also able to apply the basic cost information in the company’s decision making and explain which costs should be included in these calculations under different circumstances.

Contents:

Theoretical framework for understanding cost accounting, cost concepts, cost recording, different product costing methods, cost-volume-profit analysis, using cost accounting information in decision making.

Learning activities and teaching methods:

20 h lectures, 16 h exercises and independent reading of study materials (97 hours).

Target group:

Major students in economics and business administration

Prerequisites and co-requisites:

Earlier module (introduction to business studies)

Recommended optional programme components:

This course is part of "Business Processes" -module

Recommended or required reading:

Drury, C.: Management and cost accounting. Thomson Business Press, 5th ed. 2000 or newer. Chapters 1-13 Supplementary material: Järvenpää. M.-Länsiluoto, A.-Partanen, V. –Pellinen, J.: Talousohjaus ja kustannuslaskenta, WSOYpro, chapters 1-8.

Assessment methods and criteria:

Lectures and literature examination.

Grading:

1-5.

Person responsible:

Professor in Management Accounting.

Working life cooperation:

-

Other information:

The number of students is limited.

724110P: Introductory Economics, 5 op

Voimassaolo: 01.08.2014 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Oulu Business School

Arvostelu: 1 - 5, pass, fail

Opettajat: Puhakka Mikko

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay724110P	Introductory Economics (OPEN UNI)	5.0 op
721211P	Principles of Economics	10.0 op
721210P	Principles of Economics	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 credits / 133 hours of work

Language of instruction:

Finnish

Timing:

Period A. It is recommended that students complete the course during the first autumn semester.

Learning outcomes:

After completing the course students (i) understand the basic concepts of economics and the rudiments of economic theory, (ii) can explain the determination of resource allocation and prices in a market economy, (iii) know how the aggregate economy operates in the short and long run, and (iv) how economic policy affects the Finnish economy and also the European economy.

Contents:

The course introduces students to the tools and ideas economics uses to describe and explain economic phenomena. The topics include:

- the long-term development of the Finnish and World economy
- basic ideas and principles of economics
- opportunity cost and comparative advantage
- market equilibrium: demand and supply
- how well does market economy work?
- firms and competition in market economy
- aggregate economic activity and its measurement
- business cycles
- monetary and fiscal policy
- economic growth

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

36 lectures including problem sets. Students are expected to do the problem sets on their own and familiarize themselves with the required and recommended materials (93 h). Exam (4 h).

Target group:

Major students in economics and business administration

Prerequisites and co-requisites:

-

Recommended optional programme components:

This course is part of “Introduction to business studies” -module

Recommended or required reading:

Material posted at the webpage. Textbook: N. Gregory Mankiw ja Mark P. Taylor, Economics. 2014. 3. ed. Cengage Learning and extra readings: Timothy Taylor, The Instant Economist. Everything You Need to Know About How the Economy Works. 2012. A Plume Book (Penguin), New York NY. Robert P. Murphy, Lessons for the Young Economist. Ludvig von Mises Institute 2010; http://mises.org/books/lessons_for_the_young_economist_murphy.pdf

Assessment methods and criteria:

Final Exam.

Grading:

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

Person responsible:

Professor Mikko Puhakka

Working life cooperation:

-

Other information:

The number of students is limited.

724106P: Principles of Marketing, 5 op

Voimassaolo: 01.08.2014 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Oulu Business School
Arvostelu: 1 - 5, pass, fail
Opettajat: Salo, Jari Tapani
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay724106P	Principles of Marketing (OPEN UNI)	5.0 op
ay721409P	Principles of Marketing (OPEN UNI)	5.0 op
721409P	Principles of Marketing	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 credits / 133 hours of work

Language of instruction:

Finnish

Timing:

Period C (1st year).

Learning outcomes:

Upon completion of this course, students are able to understand the basic concepts of marketing as part of the business system and society. The student is able to describe the role of marketing in any organization (company, non-profit organization, charity institution etc.) and its linkages to other organizational activities (units, strategy and other processes). Basic concepts of marketing and their linkages become familiar for the student (customer value, value based market analysis and strategy, segmenting, targeting, positioning and marketing mix). After completing this course the student is able to use different types of methods such as (market analysis) and concepts of marketing to aid decision making and evaluate the suitability of these decisions (effectiveness of the decisions) and is able to alter the decision making to yield better value from the customers. The student also realizes the role that marketing partakes in everyday actions in one’s personal life and professional development.

Contents:

During the course, following themes will be discussed: 1) marketing as science and practice, 2) definitions of marketing 3) marketing strategy and analysis, 4) marketing mix, 5) segmenting, targeting and positioning, 6) marketing in different contexts, 7) market analysis and new product/service/idea/solution development, 8) distribution, 9) planning, implementation and control value based marketing processes

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

36 hours of lectures, exam (4h), independent reading of the textbook and articles (43 h), exercises (50 h) **or** learning assignments (50 h).

Target group:

Major students in economics and business administration

Prerequisites and co-requisites:

-

Recommended optional programme components:

This course is part of “Introduction to business studies” -module

Recommended or required reading:

Kotler, P & Armstrong, G. (2013). Principles of marketing, 15th ed.

Assessment methods and criteria:

Examination and exercise.

Grading:

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

Person responsible:

Professor of Marketing Jari Salo.

Working life cooperation:

-

Other information:

The number of students is limited.

555260P: Basic Course in Occupational Safety and Wellbeing at Work, 3 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Henri Jounila, Seppo Väyrynen
Opintokohteen kielet: Finnish
Leikkaavuudet:

555265P	Occupational Safety and Health Management	5.0 op
ay555260P	Basic Course in Occupational Safety and Wellbeing at Work (OPEN UNI)	3.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the spring semester, during Periods 5 and 6.

Learning outcomes:

After the course the student is capable of explaining basic terms of work envi-ronment. He is able to assess the importance of occupational safety, health and well-being at work. In addition, he is able to assess the significance of occupational safety in the improving of productivity and quality.

Contents:

Students will acquire knowledge and practical skills which they will be able to utilize and integrate on ordinary engineering practice. Work accidents and occupational diseases, safety promo-tion, occupational health, ergonomics development, and organising principles in modern production systems and in other work environments.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 20 h. The exercises are completed as group work.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Työsuojelun perusteet. Työterveyslaitos 2009, ISBN: 978-951-802-916-1. Other literature reported at the beginning of the course. As an exercise material: Pienyrityksen työympäristö tuloksen tekijänä 2012, Työsuojeluoppaita ja -ohjeita 5, Työsuojeluhallinto, ISBN 978-952-479-049-9.

Assessment methods and criteria:

Exam and exercises.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Henri Jounila

Working life cooperation:

No

Other information:

-

555220P: Basic Course in Industrial Engineering and Management, 3 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Auvinen, Aila Irmeli
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3,0 - 4,5 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 1-4.

Learning outcomes:

The objective of the course is to familiarise a student to industrial activities, to operations of an enterprise as well as to the factors affecting the success of an enterprise. Upon completion the student should be able to describe IEM as a science and a profession, describe basic systemic models of an enterprise, describe basic concepts of microeconometrics, and calculate basic calculations of microeconometrics.

Contents:

Production and operations, systemic models of an organization, basic calculations of microeconometrics.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and exercises are held during the periods 1 - 3.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Applicable parts of the book Uusi-Rauva, E., Haverila, M., Kouri, I. & Miettinen, A. 2005. Teollisuustalous. 5. p. Ylöjärvi. Infacs Johtamistekniikka. Some other material in Business Economics is defined by a student and the person responsible for the course.

Assessment methods and criteria:

Exam and the homework.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Lecturer Aila Auvinen

Working life cooperation:

No.

Other information:

The lectures and weekly exercises are held in Finnish. The English examination is based only on written material **.** Please, contact the person responsible for the course and ask the study material and the exam for you.

555280P: Basic Course of Project Management, 2 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: Finnish
Leikkaavuudet:

555288A	Project Management	5.0 op
555285A	Project management	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Upon completion the student can explain the essential concepts related to project management. He/she can present the main features of a project plan and can use different methods of partitioning a project. The student can also schedule a project and estimate its costs. The student can explain the terms related to Earned value method and can apply the method on simple tasks. Upon completion the student recognizes the essential tasks of project risk management.

Contents:

Defining project management, project planning, organising and scope management, schedule management, cost management, earned value calculation and project risk management.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, weekly assignments and exercise book. The final grade is derived from the course exam.

Target group:

-

Prerequisites and co-requisites:

None.

Recommended optional programme components:

-

Recommended or required reading:

Lecture material, exercise book. Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X (applicable sections), available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/.

Assessment methods and criteria:

Week assignments and final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala.

Working life cooperation:

No

555221P: Introduction to Production, 2 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Auvinen, Aila Irmeli

Opintokohteen kielet: Finnish

Leikkaavuudet:

555225P	Basics of industrial engineering and management	5.0 op

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Period 4.

Learning outcomes:

The objective of the course is to familiarise a student to the concepts and theories that aim to explain and predict the design and operation of production systems. After the course a student should be able to explain the basic concepts of the production and view the decisions related to production systems in different situations, explain the stages of the investment process, solve some basic calculations, make design tasks and evaluate them, and describe the economic and administrative instruments of environmental law related to an enterprise.

Contents:

Operations strategy, service operations, process design and improvement, process choices and production layout, capacity management, facility location.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and exercises.

Target group:

Industrial Engineering and Management students.

Prerequisites and co-requisites:

555220P Basic course in industrial engineering and management, 555280P Basic course of project management.

Recommended optional programme components:

-

Recommended or required reading:

Krajewski, L. J., Ritzman L. P. & Malhotra M.K. 2007. Operations management: processes and value chains. 8. p. Upper Saddle River (NJ), Pearson Prentice Hall. Chapters: 1. Operations as a Competitive Weapon, 2. Operations Strategy, 4. Process Strategy, 5. Process Analysis, 7. Constraint Management, 8. Process Layout, 11. Location, and Supplements A: Decision Making and J: Financial Analysis.

Assessment methods and criteria:

Exam and the homework.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Lecturer Aila Auvinen

Working life cooperation:

No.

Other information:

The lectures and weekly exercises are held in Finnish. The English exam is based only on the written material mentioned in study materials. Please, contact the person responsible for the course.

555222A: Demonstration in Industrial Engineering and Management, 2 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Susan McAnsh
Opintokohteen kielet: Finnish
Leikkaavuudet:

555226A	Operations and Production	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Apply the basic concepts and calculations of microeconometria in an indusrial case.

Contents:

Business plan.

Mode of delivery:

Face-to-face teaching, group work.

Learning activities and teaching methods:

Lectures, group work.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555220P Basic course in industrial engineering and management.

Recommended optional programme components:

-

Recommended or required reading:

The study materials of the prerequisites.

Assessment methods and criteria:

Documented group work.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Mirja Väänänen

Working life cooperation:

No.

Other information:

-

555286A: Process and quality management, 5 op

Voimassaolo: 01.01.2014 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Osmo Kauppila
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay555286A	Process and quality management (OPEN UNI)	5.0 op
555281A	Basic Course of Quality Management	5.0 op

Ei opintojaksokuvauksia.

555282A: Project Management, 4 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala, Jokinen, Tauno Jaakko
Opintokohteen kielet: Finnish
Leikkaavuudet:

555288A	Project Management	5.0 op

555285A Project management 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 4-6.

Learning outcomes:

Objective: Upon completion the student should be able to apply the advanced concepts of project management.
Learning outcomes: Upon completion the student has a good understanding of central concepts of project management. The student is able to apply knowledge to execution and evaluation of different kinds of projects. The student can utilize articles published in scientific journals in the learning process.

Contents:

Managing project's objectives. Stakeholder management. Project risk management. Managing project's schedule and dependencies. Design Structure Matrix (DSM). Characteristics of different kinds of projects and managing them.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures, group work and learning report. Active participation to lectures required.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

555280P Basic course of project management or equivalent knowledge recommended.

Recommended or required reading:

Lecture materials and supplementary readings announced in the course. Artto, Martinsuo & Kujala 2006. Projektiliiketoiminta. WSOY, ISBN: 951-0-31482-X, available at http://pbgroup.aalto.fi/en/the_book_and_the_glossary/

Assessment methods and criteria:

Pre-examination to ensure required level of knowledge in the beginning of the course, group work, learning report
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

No

Other information:

-

555261A: Basic Course in Occupational Psychology, 3 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Kisko, Kari Juhani

Opintokohteen kielet: Finnish

Leikkaavuudet:

555264P Managing well-being and quality of working life 5.0 op

ay555261A Basic Course in Occupational Psychology (OPEN UNI) 3.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 3-4.

Learning outcomes:

Upon completion the student understands the role of a human being as a member of the work community and as a worker. The student can explain the effects that differences between people, work motivation, work based stress, work groups and work teams cause on the work community.

Contents:

Occupational psychologic research, evaluation and development. Human views in psychology. The scope, aims and point of view of occupational psychology in an organization. The psychological structures of the work process and an organization. The structure and moderation of work activity, learning, motivation, interaction, well-being at work, quality of work, change skills. Introduction to evaluating and developing work processes, organizations and products from a occupational psychology viewpoint.

Mode of delivery:

Contact teaching.

Learning activities and teaching methods:

Lectures, exercises and seminars.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Arnold, J. (2005) Work Psychology; Understanding Human Behavior in the Workplace. Prentice Hall, ISBN: 978-0-273-71121-6.

Assessment methods and criteria:

Lectures, exercises, seminars or alternatively an exam based on the course book.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail.

Person responsible:

Lecturer Kari Kisko.

Working life cooperation:

No.

Other information:

-

555262A: Usability and Safety in Product Development, 3 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Väyrynen

Opintokohteen kielet: Finnish

Leikkaavuudet:

555264P Managing well-being and quality of working life 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 3-4

Learning outcomes:

After the course the student is able to analyze the usability of artefacts and design products that have good characteristics in usability. Students are able to compare the usability of artefacts using different methods.

Contents:

Requirement specification, user research, usability research, creation and evaluation of alternatives and the main course the standards are discussed. Examples and special topics are mostly related to information and communication technology or process technology areas. The course emphasizes these factors, management options and the emphasis on the specific product, product development and design, and the role of usability and security goals.

Mode of delivery:

Multiform learning.

Learning activities and teaching methods:

Lectures, exercises

Target group:

-

Prerequisites and co-requisites:

555240A Basic course in product development

Recommended optional programme components:

-

Recommended or required reading:

S. Väyrynen, N. Nevala & M. Päivinen (2004), Ergonomia ja käytettävyys suunnittelussa 336p., ISBN: 951-817-848-8; Kletz T. & Amyotte P. (2010), Process Plants: A Handbook for Inherently Safer Design, Second Edition. CRC Press; Other literature reported at the beginning of the course.

Assessment methods and criteria:

Exercises, exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail.

Person responsible:

Seppo Väyrynen, lecturer Arto Reiman

Working life cooperation:

-

Other information:

-

555263A: Technology, Society and Work, 2 op

Voimassaolo: 01.08.2006 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Kisko, Kari Juhani

Opintokohteen kielet: Finnish

Leikkaavuudet:

555265P Occupational Safety and Health Management 5.0 op

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 1-3.

Learning outcomes:

Upon completion the student can explain the combined effect of technology, society and work on the lives of people. The students are able to make a literary report according to given guidelines and to evaluate an oral presentation.

Contents:

To familiarize with the meaning and role of technology and work in the development of society. To familiarize with the professional image of technology people as workers or an entrepreneurs and its development. In summary: the societal meaning and effects of technology looking from science, technology, society and internationality points of view.

Mode of delivery:

Contact teaching

Learning activities and teaching methods:

Lectures, group works and seminars.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Announced at the beginning of course.

Assessment methods and criteria:

Continuous assessment; lectures, group works and seminars.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical 1-5/fail.

Person responsible:

Lecturer Kari Kisko.

Working life cooperation:

No

Other information:

-

555240A: Basic Course in Product Development, 3 op

Voimassaolo: 01.06.2007 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Haapasalo, Harri Jouni Olavi

Opintokohteen kielet: Finnish

Leikkaavuudet:

555242A Product development 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits **.**

Language of instruction:

Finnish.

Timing:

Periods 1-3.

Learning outcomes:

Objective: This study module introduces product development and innovations management in a company environment. Basic course in product development provides fundamental understanding over tools and frameworks that can be used for analysing and managing products, innovations, and technology development. The aim is to create a connection between product development and other company functions.
Learning outcomes: After this study module, a student is capable of explaining the role of product development as a company function. The student understands the difference between innovation activities and systematic product development, and knows the difference between different phases of product development process and its activities. Additionally, the student is able to define the meaning of other company functions to product development activities.

Contents:

Meaning of products for the operations of an industrial enterprise. Product development paradigm and defining relevant concepts. Realising product development methodologically (U&E model, Cooper's stage-gate model, QFD), managing innovations, and product development success factors.

Mode of delivery:

Face-to-face teaching and distance teaching.

Learning activities and teaching methods:

The course includes lectures and compulsory course work.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555223A Introduction to production control.

Recommended optional programme components:

-

Recommended or required reading:

Handouts, course work, and a collection of articles. Ulrich, K. & Eppinger, S. (2008) Product Design and Development. McGraw-Hill. 358 p.

Assessment methods and criteria:

Final exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Harri Haapasalo.

Working life cooperation:

No.

Other information:

-

555223A: Introduction to Production Control, 3 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opettajat: Auvinen, Aila Irmeli

Opintokohteen kielet: Finnish

Leikkaavuudet:

555226A Operations and Production 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 3-4.

Learning outcomes:

The objective of the course is to provide students basic capabilities to work in the field of production planning and control. After passing the course the student should be able to: explain the basic concepts of production control, describe the objectives of production control and make some calculations related to production control, describe the production management system in different situations and explain the decisions at various levels, explain some basic production control and management tools and methods and solve some basic problems and also assess their relation to the success of an enterprise.

Contents:

Production management principles and production planning and control system, sales and operations planning, master planning of resources, material and capacity planning, and scheduling.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Lectures and exercises, homework.

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555220P Basic course in industrial engineering and management, 555280P Basic course in project management.

Recommended optional programme components:

Recommended prerequisite: 555221P Introduction to production

Recommended or required reading:

Krajewski, L. J., Ritzman L. P. & Malhotra M.K., 2007. Operations management: processes and value chains. 8. p. Upper Saddle River (NJ), Pearson Prentice Hall. The Chapters: 1. Operations as a Competitive Weapon, 2. Operations Strategy, 4. Process Strategy, 5. Process Analysis, 6. Process

Performance and Quality, 9. Lean Systems, 10. Supply Chain Strategy, 12. Inventory Management, 13. Forecasting, 14. Sales and Operations Planning, 15. Resource Planning, 17. Scheduling.

Assessment methods and criteria:

Homework and / or exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Lecturer Aila Auvinen.

Working life cooperation:

No.

Other information:

The weekly lectures and exercises are held in Finnish. The English exam is based only on the chapters mentioned in the study material. Please, contact the person responsible for the course.

555224A: Methods of Production Management and Logistics, 4 op

Voimassaolo: 01.06.2007 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

4 ECTS credits.

Language of instruction:

English.

Timing:

periods 1-3.

Learning outcomes:

The aim of the course is to familiarize a student with mathematical methods in production and logistics management. After completing the course, a student knows the most important mathematical methods for production and logistics management. A student will be able to apply these methods and solve the production and logistics problems of a company.

Contents:

Forecasting methods, simulation, queuing models, transportation algorithms and LP methods.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

The course includes lectures, exercises, and group work (/exam).

Target group:

Industrial engineering and Management students.

Prerequisites and co-requisites:

555223A Introduction to production control, knowledge of MS Excel or similar software.

Recommended optional programme components:

-

Recommended or required reading:

Applicable parts of Krajewski, L. et al. 2007. Operations Management – Processes and Value Chains. 8th edition. Pearson, Upper Saddle River. Additional material will be announced during the lectures.

Assessment methods and criteria:

Exercises and group work (/exam).
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Pekka Kess

Working life cooperation:

No

Other information:

-

721704A: Business Logistics, 5 op

Voimassaolo: - 31.07.2005
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Oulu Business School
Arvostelu: 1 - 5, pass, fail
Opettajat: Jari Juga
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

555210A: Practice, 3 op

Opiskelumuoto: Intermediate Studies
Laji: Practical training
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Eija Forsberg
Opintokohteen kielet: Finnish
Leikkaavuudet:

555204A Internship 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3 ECTS credits.

Language of instruction:

Finnish.

Timing:

Periods 1-6.

Learning outcomes:

The objective is to familiarise students to industrial engineering and management in practical work life. During the course, students learn to observe his/her working environment from theoretical viewpoints of Industrial Engineering and Management (IEM). From the working environment, the student is able to identify IEM themes and classify them. The student is able to select theoretical references relevant for the topic and is able to evaluate the working environment based on the theoretical references. The student is able to draw up a report based on given instructions.

Contents:

To be defined by the student.

Mode of delivery:

Students will write a report concerning summer job. The length of the summer job has to be 2 months minimum.

Learning activities and teaching methods:

Students will write a report concerning summer job. Student's personal Teacher Tutor will review and grade the report.

Target group:

Industrial Engineering and Management students.

Prerequisites and co-requisites:

-

Recommended optional programme components:

Writing the written report is integrated with the course 900061A Scientific Communication for Production Engineering and Management.

Recommended or required reading:

-

Assessment methods and criteria:

The Report.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Approved/not approved.

Person responsible:

Eija Vieri

Working life cooperation:

Yes

Other information:

-

555284A: Problem Solving in Business Cases, 3 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jaakko Kujala
Opintokohteen kielet: Finnish
Leikkaavuudet:

555287A	Problem Solving in Business Cases	5.0 op

ECTS Credits:

2 ECTS credits.

Language of instruction:

Finnish

Timing:

Periods 1-3.

Learning outcomes:

Objective: To learn to apply different problem solving methods in decision making related to a company's strategy or operations.
Learning outcomes: Upon completion the student can systematically analyse the challenges related to a company's business as a part of a group. He is able to develop and present alternative solutions to business challenges. He/she is able to analyse and develop the functioning of a group. Student is able to evaluate and improve his/her presentation skills.

Contents:

Changing content on topical subjects.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

Case solving in groups, learning diary.

Target group:

Undergraduate students of IEM.

Prerequisites and co-requisites:

555220P Basic course in industrial engineering and management, 721172P Management accounting.

Recommended optional programme components:

-

Recommended or required reading:

Depending on the topic.

Assessment methods and criteria:

Learning diary.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Professor Jaakko Kujala

Working life cooperation:

No

Other information:

-

Choose one of these

902011P: Technical English 3, 6 op

Voimassaolo: 01.08.1995 -
Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: English

Proficiency level:

CEFR B2 - C1

Status:

This course is compulsory for the students who have chosen English as their foreign language. (See the foreign language requirements for your own degree programme.)

Required proficiency level:

English must have been the A1 or A2 language at school or equivalent English skills acquired otherwise. If you need to take English, but lack this background, please get in touch with the Languages and Communication contact teacher for your department to discuss individual solutions.

ECTS Credits:

6 ECTS credits (The workload is 160 hours.)
STUDENTS OF ENGINEERING: The course consists of 3 x 2-ECTS modules.
STUDENTS OF ARCHITECTURE: The course consists of 2 x 3-ECTS modules.
Students with the matriculation exam grade *Laudatur* or *Eximia cum laude approbatur* will be exempted from part of the course (2 ECTS credits).

Language of instruction:

English

Timing:

STUDENTS OF ENGINEERING:
PYO, KO, TuTa: *1st & 2nd* years of studies, beginning 1st year autumn.
SO & CSE: 2nd & 3rd years of studies, beginning 2nd year autumn.
STUDENTS OF ARCHITECTURE:
1st & 2nd years of studies, beginning 1st year spring and continuing 2nd year autumn.

Learning outcomes:

By the end of the course, you will be able to

- demonstrate efficient strategies and methods for developing and maintaining your English proficiency
- communicate using the core vocabulary required for professional language use in your field
- apply language skills, intercultural awareness and presentation techniques necessary for working in a multicultural environment
- use language, culture and communication skills at a B2-C1 CEFR level in accordance with your own professional needs.

Contents:

In this course, you will focus on developing oral and written English language skills which enable you to follow developments in your own professional field and manage successfully in an international, intercultural working environment.

STUDENTS OF ENGINEERING:
The course consists of three modules:

1. first, **Professional English for Technology** (PET, 2 ECTS credits),
2. then **two modules** (2 ECTS credits each) from a free-choice module menu, in which each module has its own content. These modules allow you to develop further skills in specific core areas. Read the module descriptions with care so that you choose modules which match your own needs, interests and level.

   TuTa students, however, take ONE module from the free-choice menu and then, in second year autumn, the Business Plan module, which is integrated with a course in their own department (*555222A Tuotantotalouden harjoitustyöt*) .

STUDENTS OF ARCHITECTURE:
The course consists of two modules:
See the course description of each module (902011P-38 module A and 902011P-39 module B for a detailed explanation of the course content.

Mode of delivery:

STUDENTS OF ENGINEERING: The mode of delivery varies according to the modules you take. See the course descriptions for the individual modules.
STUDENTS OF ARCHITECTURE: face-to-face teaching in the premises of your own department and independent study

Learning activities and teaching methods:

STUDENTS OF ENGINEERING: The teaching methods and learning activities depend on which free-choice modules you choose. See the course descriptions for the individual modules.
STUDENTS OF ARCHITECTURE:
The classroom teaching comprises about 50% of the total student workload for the course and includes mini-lectures, group and teamwork, student presentations. The independent work component comprises online work and independent study in preparation for classroom activities.

Target group:

Students of the Faculty of Technology
- all Engineering Departments
- the Department of Architecture

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Materials will be provided by the teacher.

Assessment methods and criteria:

Assessment methods vary according to the individual modules taken. The assessment criteria are based on the learning outcomes of the module.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

pass / fail.

Person responsible:

Each department in the Technical Faculty has its own Languages and Communication contact teacher for questions about English studies.

Working life cooperation:

-

Other information:

See the Languages and Communication Study Guide, English, TTK.

903012P: Technical German 3, 6 op

Voimassaolo: 01.08.1995 -
Opiskelumuoto: Basic Studies
Laji: Course
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: German

Ei opintojaksokuvauksia.

Choose one of them

901008P: Second Official Language (Swedish), 2 op

Voimassaolo: 01.08.1995 -
Opiskelumuoto: Basic Studies
Laji: Course
Opintokohteen kielet: Swedish
Leikkaavuudet:

ay901008P Second Official Language (Swedish) (OPEN UNI) 2.0 op

Proficiency level:

B1/B2/C1 (Common European Framework of Reference)

Status:

This course is compulsory to all students except those who have at least 60 ECTS credits of Swedish studies in their degrees. The language proficiency provided by the course unit is equivalent to the language proficiency required of a state official with an academic degree working in a bilingual municipality area (Act 424/03 and Decree 481/03).
According to the requirements of the law, the student must be able to use Swedish both orally and in writing in various professional situations. Achieving this kind of proficiency during a course unit that lasts for only one semester requires that the student has already achieved the necessary starting proficiency level prior to taking the course.

Required proficiency level:

The required starting proficiency level for students of all faculties is a grade of 7 or higher from the Swedish studies at secondary school (B-syllabus) or equivalent knowledge AND a passing grade from the proficiency test held at the beginning of the course unit. Based on this proficiency test the students are directed to brush up on their language skills if it is deemed necessary; mastering basic vocabulary and grammar is a prerequisite to achieving the necessary language proficiency for the various communication situations one faces in professional life.

If a student has not completed Swedish studies (B-language) at secondary school with a grade of 7 or higher, or his/her language skills are otherwise lacking, he/she must achieve the required proficiency level BEFORE taking this compulsory Swedish course.

ECTS Credits:

2 ECTS credits

Language of instruction:

Swedish

Timing:

Students of the School of Architecture: autumn term of 1st year of studies
Studenst of Students of Industrial Engineering and Management : autumn semester of the 2nd year of studies
Students of Process Engineering and Environmental Engineering: autumn or spring semester of the second year of studies
Mechanical Engineering: autumn or spring semester of the third year of studies
The Faculty of Information Technology and Electrical Engineering: Students of Electrical Engineering and Computer Science Engineering: Autumn or spring term of 1st year of studies.

Learning outcomes:

Upon completion of the course unit the student should be able to read and understand texts from his/her academic field and make conclusions based on them. The student should be able to write typical professional emails and short reports. He/she should be able to carry himself/herself according to Swedish etiquette when acting as host or guest. The student should also be able to discuss current events and special field-specific matters, use the vocabulary of education and plan and give short oral presentations relating to his/her own field.

Contents:

Communicative oral and written exercises, which aim to develop the student's Swedish proficiency in areas relevant to his/her academic field and future professional tasks. The student practises oral presentation and pronunciation. Situational exercises done individually and in pairs and groups. Discussions in small groups. Current texts about the student's special field. Written exercises relating to the student's professional field. Practising presentation skills.

Mode of delivery:

Contact teaching

Learning activities and teaching methods:

1 x 90 minutes of contact teaching per week and self-directed study, 53 hours per course.

Target group:

See Timing

Prerequisites and co-requisites:

See Required Proficiency Level

Recommended optional programme components:

-

Recommended or required reading:

Study material will be provided by the teacher.

Assessment methods and criteria:

The course unit focuses on improving both oral and written language skills and requires active attendance and participation in exercises, which also require preparation time. 100% attendance is required. The course unit tests both oral and written language skills.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Oral and written language proficiencies are tested separately and assessed using the so called KORU-criteria (publication of HAMK University of Applied Sciences, 2006). Separate grades will be awarded for the successful completions of both oral and written portions of the course unit: the possible passing grades are **satisfactory skills and good skills** (see language decree 481/03). The grades are based on continuous assessment and testing.

Person responsible:

See contact teachers on the Language and Communication home page http://www.oulu.fi/languagesandcommunication/student_counselling

Working life cooperation:

-

Other information:

Students sign up for teaching in WebOodi. A student can only sign up for one teaching group. When signing up , it is imperative that the student fills in his/her university email address (paju.oulu.fi), major subject and Swedish grades attained during secondary education in the Further Information field. Information in sign-up periods and course unit timetables can be found in WebOodi.

900009P: Second Official Language (Finnish), 2 op

Voimassaolo: 01.08.1995 -

Opiskelumuoto: Basic Studies

Laji: Course

Opintokohteen kielet: Finnish

Proficiency level:

B1/B2/C2

Status:

This course is compulsory to students who received their schooling in Swedish.
The language proficiency provided by the course unit is equivalent to the language proficiency required of a state official with an academic degree working in a bilingual municipality area (Act 424/03 and Decree 481/03).

Required proficiency level:

Successful completion of the A-syllabus in Finnish (A-finska) during secondary education or equivalent knowledge.

ECTS Credits:

3 credits

Language of instruction:

-

Timing:

Second year of studies

Learning outcomes:

Upon completion of the course the student should have attained the required proficiency level in Finnish to be able to function in his/her studies and professional work tasks. The student should be able to manage in various oral communication situations, read literature from his/her academic field and write fluent texts about his/her special field. The student should also be able to understand standard spoken Finnish as well as Finnish of his/her own special field.
The language proficiency provided by the course unit is equivalent to the language proficiency required of a state official with an academic degree working in a bilingual municipality area (Act 424/03 and Decree 481/03).

Contents:

Taking the course exam and participating in the teaching, if necessary.

Mode of delivery:

Contact teaching

Learning activities and teaching methods:

The course exam consists of a written section (4 hours) and an oral section (1 hour). 60 hours of contact teaching is arranged for students who fail the exam. Active and regular participation in the teaching is required.

Target group:

Students in the Faculty of Technology who received their schooling in Swedish.

Prerequisites and co-requisites:

Successful completion of the A-syllabus in Finnish (A-finska) during secondary education or equivalent knowledge.

Recommended optional programme components:

-

Recommended or required reading:

To be agreed on.

Assessment methods and criteria:

This course is usually completed by taking the course exam held by the Language Centre. The exam tests the student's Finnish language skills: written and oral text production, reading and listening comprehension and special field-specific language skills. Students who fail the exam may attend Finnish language teaching, after which they must retake and pass the exam.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Separate grades are given for written and oral language skills: the possible passing grades are satisfactory skills and good skills. Satisfactory skills equal B1 proficiency and good skills equal B2 proficiency or higher in the Common European Framework of Reference for Languages (CEFR).

Person responsible:

Anne Koskela

Working life cooperation:

-

Other information:

The written exam is held during the autumn semester. Students sign up for the exam in WebOodi. The date of the oral exam is agreed upon separately. Students must bring a copy of their matriculation examination certificate with them when they come to the exam. If they have completed the Central Government's language proficiency exam, they must bring a copy of that certificate with them as well.

Choose here 521141P Elementary Programming or 811192PIntroduction to Programming in C

521141P: Elementary Programming, 5 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Department of Computer Science and Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Mika Rautiainen

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay521141P	Elementary Programming (OPEN UNI)	5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5

Language of instruction:

Finnish, the course can be completed in English by answering the lecture questions and doing the programming exercises and the final exercise.

Timing:

Fall, periods 1-3.

Learning outcomes:

Upon completing the required coursework, the student is able to explain the basic programming concepts and structures and to solve problems using these concepts and structures. Moreover, the student is able to implement small programs independently.

Contents:

Basic concepts of programming, basic structures of programming languages, solving problems by programming.

Mode of delivery:

Web-based teaching + face-to-face teaching

Learning activities and teaching methods:

Study materials web. 20 h lectures with intergrated exercises; in addition, appr. 10 h voluntary guided practising, the rest as independent work.

Target group:

1 st year students of computer science and engineering and electrical engineering and other Students of the University of Oulu.

Prerequisites and co-requisites:

None.

Recommended optional programme components:

The course provides a basis for subsequent programming courses.

Recommended or required reading:

Will be announced at the beginning of the course.

Assessment methods and criteria:

Students answer questions after each lecture and do the programming exercises and the final exercise. Assessment is based on these three elements; passing the course requires points from each element. More detailed information on assessment can be found from http://www.oulu.fi/cse/studying/courses. Read more about assessment criteria at the University of Oulu webpage.

Grading:

pass7fail.

Person responsible:

Mika Rautiainen

Working life cooperation:

-

811192P: Introduction to Programming in C, 5 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Information Processing Science
Arvostelu: 1 - 5, pass, fail
Opettajat: Ilkka Räsänen
Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS credits/134 hours of work

Language of instruction:

Finnish

Timing:

1st year, autumn semester, period 2+3

Learning outcomes:

After completing the course the student is able to design a programme by splitting main problem into solvable sub problems. The outcome of design process is modules which she/he is able to write by using chosen programming language. Student is able to use selection and loop structures to control execution of a module and control execution between modules. Student is able to use basic data types for saving and processing data and she/he is able to use right operations to this data. Student is able to use arrays to handle large amounts of same type of data and is able to use control structures to flexibly manipulate the

data of arrays. Student is able to use pointers for example to enhance passing large amount of data between modules and at the same time taking care of the risks of using pointers. Student is able to use structured data types that contain fields of different data types and is able to manipulate the fields of these data structures. Student is able to programmatically use files to save permanently large amount of data she /he is able programmatically read data from files for further processing.

Contents:

1. Software design method (waterfall)
2. Problem solving
3. Stepwise refinement
4. Control structures
5. Modular programming, calling modules, communication between modules
6. Data types
7. Arrays
8. Pointers
9. Character strings
10. Data structures
11. File processing

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures 40h, exercises 24h, self-study 70h.

Recommended or required reading:

Deitel, Deitel: C HOW TO PROGRAM; Pearson Education Inc. 2007

Assessment methods and criteria:

1. Final exam and exercise points; and 2. Weekly exams and exercise points.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

Ilkka Räsänen

Working life cooperation:

No

A440121: Module Preparing for the Option, Mechanical Engineering (obligatory studies), 20 - 21 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440122: Module Preparing for the Option, Mechanical Engineering (optional studies), 19 - 20 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Electives

461011A: Strength of Materials II, 7 op

Voimassaolo: - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Laukkanen, Jari Jussi
Opintokohteen kielet: Finnish
Leikkaavuudet:

461104A Strength of materials II 5.0 op

Ei opintojaksokuvauksia.

464055A: Machine Design I, 8 op

Voimassaolo: 01.08.2005 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Louhisalmi, Yrjö Aulis
Opintokohteen kielet: Finnish
Leikkaavuudet:

464102A Design of machine elements 10.0 op
462033A Machine Design 7.0 op

Ei opintojaksokuvauksia.

464051A: Machine Drawing, 3,5 op

Voimassaolo: 01.08.2005 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Tapio Korpela
Opintokohteen kielet: Finnish
Leikkaavuudet:

464101A Machine drawing and CAD 5.0 op

Ei opintojaksokuvauksia.

463053A: Manufacturing Technology I, 3,5 op

Voimassaolo: - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course

Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Lappalainen, Kauko Tapio
Opintokohteen kielet: Finnish
Leikkaavuudet:

463102A Manufacturing technology I 5.0 op
463053A2 Manufacturing Technology I 5.0 op

Ei opintojaksokuvauksia.

465061A: Materials Engineering I, 5 op

Voimassaolo: 01.01.2006 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Leinonen, Jouko Iivari
Opintokohteen kielet: Finnish
Leikkaavuudet:

465101A Introduction to materials for mechanical engineering 5.0 op

Ei opintojaksokuvauksia.

555361A: Machine Safety and Usability, 3,5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Väyrynen
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

3,5 ECTS credits.

Language of instruction:

Finnish.

Timing:

The course unit is held in the spring semester, during Periods 5 and 6.

Learning outcomes:

After the course the student is able to choose the design and management methods that enable the organization to remove risks especially on machines and products, and secondly to increase the usability of machines and products and user-friendliness of the work stations. He is able to apply the course's contribution to the company fulfilling the EU´s obligations under the newest regulation. The student knows the responsibilities for risk control and opportunities of high quality well-being and usability in design and management.

Contents:

The course makes students familiar with the design of machinery, product or plant, which is characterized by proper usability and safety features. The course also develops the abilities to analyse, enhance and maintain a high level of safety and productivity by means of modern management and leadership.

Additionally, the new EU and global standardization and harmonization of machine safety. Safety analysis. Work accidents related to machines. Ergonomics and usability in design which, in addition to safety, promote user experience as a part of usability of products and well-being at work.

Mode of delivery:

Face-to-face teaching, blended teaching.

Learning activities and teaching methods:

Lectures 20 h. The rest of learning comprises teaching without guidance either privately or in a group. The exercises are mainly completed as group work.

Target group:

Mainly for students from the Department of Mechanical Engineering.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Väyrynen, Nevala & Päivinen (2004) Ergonomia ja käytettävyys suunnittelussa, Teknologiateollisuus ry. 336 s. ISBN: 951-817-848-8 (soveltuvin osin); MetSta-verkkojulkaisu: http://www.metsta.fi/koneturvallisuus/ ; Väyrynen, S. (2011) Johdanto koneturvallisuus ja käytettävyys –kurssiin. Pdf-moniste; Käyttöasetuksen soveltamissuosituksia, Työsuojelujulkaisuja 91. Työsuojeluhallinto 2009; Koneturvallisuus. Koneiden tekniset vaatimukset ja vaatimustenmukaisuus. Työsuojeluoppaita ja -ohjeita 16. Työsuojeluhallinto 2008; Kone-, tuotanto- ja materiaalitekniikka. Koneiden turvallisuus. SFS-käsikirja 403. Suomen Standardisoimisliitto 2009; www.sfsedu.fi ja www.metsta.fi (kts. tietoja koneturvallisuus ja ergonomiastandardeista); http://www.finlex.fi (kts. laki 738/2002, asetus 400/2008, asetus 403/2008); TSO-5: Pienyrityksen työympäristö tuloksen tekijänä. Aluehallintovirasto 2012; Dul, J & Weerdmeester, B (2008): Ergonomics for beginners: a quick reference guide. 3rd ed. CRC Press; www.vtt.fi/proj /riskianalyysit/.

Assessment methods and criteria:

Exam and exercises from which only main ones are compulsory.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

1-5

Person responsible:

proProfessor Seppo Väyrynen and Tatu Prykäri

Working life cooperation:

No.

Other information:

-

461033A: Finite Element Methods I, 3,5 op

Voimassaolo: 01.08.2007 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Lumijärvi, Jouko Veikko Juhani
Opintokohteen kielet: Finnish
Leikkaavuudet:

461107A	Finite Element Methods I	5.0 op
461014S	Finite Element Methods	5.0 op

Ei opintojaksokuvauksia.

462021A: Machine Automation I, 5 op

Voimassaolo: 01.08.2005 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

462102A Machine automation actuators 5.0 op

Ei opintojaksokuvauksia.

465077A: Welding Technology, 3,5 op

Voimassaolo: - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Leinonen, Jouko Iivari
Opintokohteen kielet: Finnish
Leikkaavuudet:

465104A Heat treatment and welding of metals 5.0 op

Ei opintojaksokuvauksia.

464056A: Machine Design II, 6 op

Voimassaolo: 01.08.2007 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Juuma, Teuvo Kalervo
Opintokohteen kielet: Finnish
Leikkaavuudet:

464103A Machine design 5.0 op

Ei opintojaksokuvauksia.

464061A: Techniques of Creative Working, 3 op

Voimassaolo: - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Niskanen, Juhani
Opintokohteen kielet: Finnish
Leikkaavuudet:

464104A Product innovations 5.0 op

Ei opintojaksokuvauksia.

465071A: Introduction to Materials Science, 3,5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Mechanical Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Leinonen, Jouko Iivari

Opintokohteen kielet: Finnish

ECTS Credits:

3,5 ects

Language of instruction:

Finnish; Laboratory exercises also in English

Timing:

Lectures will be held during period 4, and the three laboratory exercises in small groups will be during periods 5 and 6.

Learning outcomes:

The student will know the fundamental principles of materials science and the most important physical phenomena occurring in solid state of metallic structures.
Learning outcomes: After the course, the student is able to explain the fundamental characteristics of crystalline structure and special features attached. He/she is able to judge the effects of plastic deformation on metal structure and mechanical properties. In addition, he/she is able to present recovery and recrystallization of cold deformed metal and their significance in practice. Based on a phase diagram, the student is capable of estimating the microstructure of a metal alloy after solidification and phase transformations appearing in a solid state. He/she is also able to explain behavior of metal under pressure in cases of different type stresses and at different temperatures.

Contents:

Crystalline structure of metals; Plastic deformation, recovery and recrystallization; Phase diagrams; Phase transformations; Behavior of metal under pressure

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures will be held during period 4, and the three laboratory exercises in small groups will be during periods 5 and 6. The final grade is based on the points from the final exam or small exams. The laboratory exercises will be graded as pass/fail. The course is recommended to be completed during the third study year.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

Materialtechnolgy I

Recommended or required reading:

Lecture booklet (in Finnish); Exercise materials
Additional material: Lindroos, V, Sulonen, M.,Veistinen, M.: Uudistettu Miekk-ojan metallioppi. Otava: Helsinki, 1986.

Assessment methods and criteria:

The final grade is based on the points from the final exam or small exams. The laboratory exercises will be graded as pass/fail.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Jouko Leinonen

Working life cooperation:

-

Other information:

-

465095A: Sheet Metal Forming, 3,5 op

Voimassaolo: - 31.07.2021

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Mechanical Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Jari Larkiola

Opintokohteen kielet: Finnish

Leikkaavuudet:

465103A	Principles of metal shaping and forming	5.0 op

ECTS Credits:

3,5 ects

Language of instruction:

Finnish

Timing:

Lectures during period 6.

Learning outcomes:

The aim of the course is to supply the student with a basic understanding of the plasticity theory and sheet metal forming methods.
Learning outcomes: Upon completing the required coursework, the student knows different manufacturing methods and, based on this information, can make the right decisions in connection with the making of the desired product and the choice of the suitable manufacturing method. Furthermore, the student can propose suitable materials for the different applications by also paying attention to the manufacturing costs. Among others, the plasticity theory is used as a support mechanism of the decision-making.

Contents:

During the course the mechanical testing methods of metals, the plasticity theory, the effect of material properties on the forming and the forming methods of sheet metal are studied.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures will make up 24 hours of the course. Furthermore, the course includes literature work.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

Introduction to Materials Science

Recommended or required reading:

Lecture notes; R. Pierce: Sheet Metal Forming, 1991.

Assessment methods and criteria:

Final exam
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Jari Larkiola

Working life cooperation:

-

Other information:

-

463058A: Foundry Technology, 3,5 op

Voimassaolo: - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

463105A Casting techniques 8.0 op

Ei opintojaksokuvauksia.

464052A: CAD, 3,5 op

Voimassaolo: 01.08.2005 - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Tapio Korpela
Opintokohteen kielet: Finnish
Leikkaavuudet:

464101A Machine drawing and CAD 5.0 op

Ei opintojaksokuvauksia.

464087A: Maintenancy Technology, 5 op

Voimassaolo: - 31.07.2021
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Jouni Laurila
Opintokohteen kielet: Finnish
Leikkaavuudet:

462103A Introduction to Maintenance 5.0 op
462107A Maintenance of machines 5.0 op

ECTS Credits:

5 ects

Language of instruction:

Finnish

Timing:

The course consists of lectures and exercises arranged during the 6th period.

Learning outcomes:

The objective of the course is to provide an overview of targets and lines of action in the maintenance of industrial plants. In addition, the student is introduced to machine diagnostics and reliability technology. Learning outcomes: After the course, the student is able to talk about the significance and targets of the maintenance of industrial plants and use the most important terms or concepts related to maintenance and reliability. He/she will recognize the elements affecting the life-cycle costs of products or the overall effectiveness of production lines. The student also knows how to use different reliability technology models and can introduce the most common maintenance strategies and organizing methods. After the course, the student is capable of explaining the significance of machine diagnostics in maintenance and indicating the main diagnosis tools. He/she is able to identify the most typical machine faults by means of overall level and time domain measurements and frequency spectra. The student is also able to evaluate machine vibration severity and carry out single and two-plane balancing. In addition, he/she knows how to take into consideration the requirements that maintenance places on the machine design.

Contents:

The general part of the course discusses the basics of reliability technology, maintenance management and economics, and the issue of taking maintenance into consideration in machine design. The content of the diagnostics section of the course is: 1. Overall level measurements and evaluation of vibration severity; 2. Time and frequency domain analysis; 3. Dynamic balancing.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

The course consists of lectures and exercises arranged during the 6th period. The grade of the course is based on a final examination. The student must pass the exercises before taking the examination.

Target group:

-

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Lahdelma, S., Lecture notes: Diagnosis of machine condition, 2008. (In Finnish); Järviö, J., et al., Kunnossapito. Helsinki, KP-Media Oy / Kunnossapitoyhdistys ry 2007. (In Finnish); Lectures and other material will be distributed during the course. English course material is also available.
Supplementary readings: Järviö, J., Luotettavuuskeskeinen kunnossapito. Rajamäki, KP-Tieto Oy / Kunnossapitoyhdistys ry 2000. (In Finnish); Käynnissäpidon johtaminen ja talous. Loviisa, SCEMM 1996. Available also in English: Keep It Running - Industrial Asset Management. Loviisa, SCEMM 1998.

Assessment methods and criteria:

The grade of the course is based on a final examination. The student must pass the exercises before taking the examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 1-5.

Person responsible:

Prof. Sulo Lahdelma

Working life cooperation:

-

Other information:

-

A440123: Module Preparing for the Option, Civil Engineering (obligatory studies), 22,5 - 24 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440124: Module Preparing for the Option, Civil Engineering (optional studies), 16 - 17,5 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440135: Module Preparing for the Option, Process and Environmental Engineering (obligatory studies), 20 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440136: Module Preparing for the Option/Process and Environmental Engineering (optional studies), Process Engineering (optional studies), 20 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440138: Module Preparing for the Option/Process and Environmental Engineering (optional studies), Environmental Engineering (optional studies), 20 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440139: Module Preparing for the Option/Electrical and Information Engineering, 20 op

Voimassaolo: 01.08.2013 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Compulsory

521109A: Electrical Measurement Principles, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Electrical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Juha Saarela
Opintokohteen kielet: Finnish

ECTS Credits:

5

Language of instruction:

Lectures are in Finnish. Laboratory exercises and exams can be done in English.

Timing:

Periods 1-3.

Learning outcomes:

Upon completion of the course, students are be able to measure basic measurements with a ammeter, voltmeter and oscilloscope. They can operate signal and function generators. They can estimate the validity of their measurements.

Contents:

Units of measures, standards of measures, analysis of errors, most commonly used analog and digital measuring methods, equipment and safety regulations.

Mode of delivery:

Pure face-to-face teaching.

Learning activities and teaching methods:

Lectures 20h and laboratory exercises 16 h, independent work 100 h.

Target group:

Course is compulsory for electrical engineering, information engineering and wellness technology students.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Ask the person responsible for English material. (Lectures are based on some chapters of book: W.D. Cooper: Modern Electronic Instrumentation and Measurement Techniques, Prentice Hall, 1990. English labwork material is available.

Assessment methods and criteria:

Exam and passed lab exercises.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Grade is based on exam and grade is on numerical scale 1-5.

Person responsible:

Juha Saarela

Working life cooperation:

-

Other information:

-

521412A: Digital Techniques 1, 6 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Electrical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Antti Mäntyniemi
Opintokohteen kielet: Finnish
Leikkaavuudet:

521301A	Digital Techniques 1	8.0 op

ECTS Credits:

6

Language of instruction:

In Finnish.

Timing:

Period 1-3

Learning outcomes:

Learning outcomes: After the course, students are able to ably binary number system and Boolean algebra in the form of switching algebra to the design and functional analyze of simple digital circuits. In addition, they are also able to use in their designs graphical symbols specified in the dependency notation standard (SFS4612 ja IEEE/ANSI Std.91-1991) and different descriptions of function and structure of state machines. Based on this knowledge, students are able to implement and analyze digital devices consisting of ordinary simple digital components, especially FPGA circuits. After having assimilated the basic knowledge of digital technique, students are able to understand also the function and structure of micro controllers and micro processors.

Contents:

Principles of digital devices, Boolean algebra, number notations, analyze and synthesis of combinatorial circuits, flip-flops, principles of state machine behavior, CPLD- and FPGA-circuits, physical characteristics of CMOS technology.

Mode of delivery:

Classroom

Learning activities and teaching methods:

Lectures 40h/ exercises 20h (group exercises)

Target group:

1st year students.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Brown, S., Vranesic, Z. Fundamentals of Digital Logic with VHDL Design, McGraw Hill, 2005, materials in Optima.

Assessment methods and criteria:

Compulsory exercises and exam. Recommended by partial exams.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

Exercises: pass/fail. Final grading for the exam 1 – 5.

Person responsible:

Antti Mäntyniemi

Working life cooperation:

-

Other information:

-

521142A: Embedded Systems Programming, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Computer Science and Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Riekki, Jukka Pekka
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5

Language of instruction:

Finnish, the course can be completed in English by answering the lecture questions and by doing the laboratory exercise, the programming exercises and the final exercise.

Timing:

Spring, periods 4-6.

Learning outcomes:

Upon completing the required coursework, the student is able to implement small C programs both in Unix environment and for embedded systems with memory-mapped I/O. Moreover, the student is able to recognize how embedded systems programming differs from programming general-purpose computers.

Contents:

Basics of C, bitwise operations, memory management, memory-mapped I/O devices, hardware registers, interrupts, compiling and linking.

Mode of delivery:

Web-based teaching + face-to-face teaching

Learning activities and teaching methods:

20 h lectures, 3 h laboratory exercise; 10-20 h voluntary guided practising, the rest as independent work alone and in the two-person groups.

Target group:

1st year students of computer science and engineering and electrical engineering and other Students of the University of Oulu.

Prerequisites and co-requisites:

The following courses must be completed prior to applying for the course: 521141P Elementary programming.

Recommended optional programme components:

The course “521267A Computer Engineering” is recommended to be completed simultaneously.

Recommended or required reading:

Will be announced at the beginning of the course.

Assessment methods and criteria:

Students answer questions after each lecture, participate the laboratory exercise, and do the programming exercises and the final exercise. Assessment is based on these three elements; passing the course requires points from each element. More detailed information on assessment can be found from http://www.oulu.fi/cse/studying/courses.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

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

Person responsible:

Jukka Riekki

Working life cooperation:

-

521267A: Computer Engineering, 4 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Computer Science and Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Teemu Tokola, Juha Röning

Opintokohteen kielet: Finnish

Leikkaavuudet:

810122P	Computer Architecture	5.0 op

ECTS Credits:

4

Language of instruction:

Finnish.

Timing:

The course unit is held in the spring semester, during periods 4 - 6. It is recommended to complete the course at the beginning of studies.

Learning outcomes:

The aim of the course is to provide basic understanding to the operation of a digital computer, and to provide basic knowledge for programming using a symbolic programming language. After passing the course, student can explain the basic operation principle of a computer, the phases of an instruction execution, and an interrupt mechanism. The student can explain the basic organization of a computer including CPU, ALU, memory, I/O device, bus, and a register. The student can describe some basic operations of a computer using a register transfer language, and explain the role of instruction format as a part of the control logic. The student can perform conversions between number systems such as decimal, binary and hexadecimal systems. The student can use and interpret the basic data representations used in a digital computer such as integers, fixed point numbers, floating point numbers, and ASCII symbols. The student can explain the arithmetic operations performed using two's complement, the basic principles of a RISC architecture, and the connection of these principles to the performance of the computer. The student can explain a typical memory organization and terms like address space, cache memory, and virtual memory. The student can explain the principles of asynchronous communication, and the operation of the assembler. The student can create small programs using an assembly language.

Contents:

Computer organization and architecture, the operation principle of a computer, register transfer language, data types, interrupt, I/O devices, and memory organization. Assembly language and the operation of an assembler.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

Lectures 30h, exercises 18h, programming exercise 8h, and exam. The rest of the self-study.

Target group:

Computer Science and Engineering students and other Students of the University of Oulu.

Prerequisites and co-requisites:

Student must have completed the following courses are completed prior to applying for the course: 521412A Digital Techniques I.

Recommended optional programme components:

-

Recommended or required reading:

Mano M., Computer System Architecture. Prentice Hall, Eng-lewood Cliffs, New Jersey 1993.

Patterson D., Hennessy J., Computer Organization and Design. Morgan Kauffman, San Fracisco, CA, 2005.

Assessment methods and criteria:

Exam and programming exercise.
Read more about assessment criteria at the University of Oulu webpage.

Grading:

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

Person responsible:

Juha Röning, Teemu Tokola

Working life cooperation:

-

A440129: Module Preparing for the Option, Electrical Engineering (optional studies), 16 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A440134: Module Preparing for the Option, Information Engineering (optional studies), 20 op

Voimassaolo: 01.08.2005 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

A400072: Module Preparing for the Option, 20 - 40 op

Voimassaolo: 01.08.2007 -
Opiskelumuoto: Module Preparing for the Option
Laji: Study module
Vastuuyksikkö: Faculty of Technology
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

555200A: Bachelor's Thesis / Industrial Engineering and Management, 8 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jukka Majava
Opintokohteen kielet: Finnish

ECTS Credits:
8 ECTS credits.
Language of instruction:
Finnish, the report can be done in English.
Timing:
Periods 1-6.
Learning outcomes:
The objective of the course is to familiarize students to research work. After the course, the students will be able to solve small problems of organizations by himself / herself. This means that the student is able to prepare a study plan, including defining research problem and research questions, and follow the plan. The student is able to critically use different kind of references. The student is able to draw up a report based on given instructions.
Contents:
Research methods of IEM.
Mode of delivery:
Seminar in autumn/spring.
Learning activities and teaching methods:
Seminar in autumn/spring, including lectures, group work and individual work.
Target group:
Industrial engineering and Management students.
Prerequisites and co-requisites:
555210A Training.

Recommended optional programme components:
-
Recommended or required reading:
Kauranen Ilkka; Mustakallio, Mikko; Palmgren, Virpi. Tutkimusraportin kirjoittamisen opas opinnäytetyön tekijöille - 2. korj. p. 2007 Teknillinen korkeakoulu; Kirjasto Espoo, 2006. - 109 s. Kustantaja: Teknillinen korkeakoulu ISBN 951-22-8359-X UDK: 001.818; Hirsjärvi, Sirkka, Remes, Pirkko & Sajavaara, Paula: Tutki ja kirjoita. Tammi 2003, Helsinki.
Assessment methods and criteria:
Bachelor's thesis, presentation of the thesis and a maturity test.
Read more about assessment criteria at the University of Oulu webpage.
Grading:
Approved/not approved
Person responsible:
Päivi Lohikoski
Working life cooperation:
No
Other information:
-

555211A: Maturity Test / Industrial Engineering and Management, 0 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

555202A	Maturity Test / Bachelor of Science in Industrial Engineering and Management	0.0 op

Ei opintojaksokuvauksia.

900061A: Scientific Communication for Production Engineering and Management, 2 op

Voimassaolo: 01.08.2008 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Proficiency level:
-
Status:
Compulsory for the students undertaking the bachelor's degree in the Industrial Engineering and Management.
Required proficiency level:
-
ECTS Credits:
2 credits
Language of instruction:
Finnish
Timing:
The course begins in the first year of studies by introductory lessons and continues during the second or the third year of studies.
Learning outcomes:
The student should have mastered the basics of scientific communication. He/she should be able to view scientific writing as a process and prepare a scientific research report (among other scientific texts).
Contents:
Practises and distinctive features of scientific communication, writing as a process, critical and analytical reading strategies, style and language of science, essential questions of language planning.
Mode of delivery:

Multimodal teaching
Learning activities and teaching methods:
Introductory lessons 2 hrs, guiding in small gorups 3 hrs, distance teaching and independent study 49 hrs.
Target group:
Students undertaking the bachelor's degree in the Industrial Engineering and Management.
Prerequisites and co-requisites:
-
Recommended optional programme components:
The course is to be taken concurrently with the course 555210A Harjoittelu offered by the Department of Industrial Engineering and Management.
Recommended or required reading:
Material in Optima
Assessment methods and criteria:
Active participation in contact and distance teaching, independent study and completion of given assignments.
Read more about assessment criteria at the University of Oulu webpage.
Grading:
Pass / fail
Person responsible:
Outi Mikkola
Working life cooperation:
Along with the course 555210A that includes practical training.
Other information:
-

A440171: Optional Studies, Bachelor of Science (Industrial Engineering and Management), 0 - 20 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Optional Studies

Laji: Study module

Vastuuyksikkö: Field of Industrial Engineering and Management

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset

721704P: Business Logistics, 5 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Oulu Business School

Arvostelu: 1 - 5, pass, fail

Opettajat: Jari Juga

Opintokohteen kielet: English

Leikkaavuudet:

ay721704P	Business Logistics (OPEN UNI)	5.0 op
721704A	Business Logistics	5.0 op

ECTS Credits:
5 ECTS credits / 133 hours of work.

Language of instruction:
English.

Timing:
Autumn semester/ period B.

Learning outcomes:
The student recognizes how logistics contributes to business competitiveness and is able to specify central planning principles in logistics management. The student can describe interdependencies between logistics activities and solve basic problems in materials management and inventory control.

Contents:
Topics include logistics tradeoffs, logistics service level, transport and inventory management, logistics performance, basic production planning and order scheduling, just-in-time logistics, and green logistics.
Mode of delivery:
Face-to-face teaching.
Learning activities and teaching methods:
Lectures (30 h), including basic calculations and exercises in class. Independent reading of course literature (73 h) and self-study of calculation problems (30 h).
Target group:
Bachelor-level students.
Prerequisites and co-requisites:
-
Recommended optional programme components:
This study unit is also offered in the Open University (lectures in Finnish).
Recommended or required reading:
Jonsson, P. (2008), Logistics and Supply Chain Management, McGraw-Hill with supplementary study material in specified during lectures.

Check availability from here.
Assessment methods and criteria:
Exam (course book, lectures, basic calculation problems).
Read more about assessment criteria at the University of Oulu webpage.
Grading:
The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.
Person responsible:
Professor Jari Juga.

Working life cooperation:
-
Other information:
-

470460A: Controls and Systems Engineering Fundamentals, 5 op

Voimassaolo: - 31.07.2010
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Honkanen, Kortela, Urpo
Opintokohteen kielet: Finnish
Leikkaavuudet:

477602A	Control System Analysis	4.0 op

Ei opintojaksokuvauksia.

555325S: Human Resources Management, 3 op

Voimassaolo: - 31.07.2012
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Kess, Pekka Antero
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Language of instruction:
Finnish
Learning outcomes:
Learning outcomes: After completing the course student knows the key concepts of human resource management and can explain these. The student can describe the structures of human resource organizations and can explain the meaning of management in the performance of human resource management. The student can analyse the human resources activities in a company and can produce improvement proposals based on the analysis. After the course the student can take part in the human resources management development in the role of an expert.
Contents:
People Capability Maturity Model
Target group:
Main target groups are the Students of Industrial Engineering and Management as well as those students in the departments of Mechanical Engineering and Process and Environmental Engineering who have the orientation to Industrial Engineering and Management. Other engineering students are accepted.
Recommended or required reading:
Curtis B, Hefley H & Miller S. (2002) The People Capability Maturity Model. Guidelines for Improving the Workforce. SEI Series. Management of Human Resources. Garnegie Mellon. Software Engineering Institute. Pearson Education, Lecture notes, Other material will be informed during the lectures.
Assessment methods and criteria:
Course is completed and assessed by team work report and its presentation in the closing seminar .
Read more about assessment criteria at the University of Oulu webpage.

521319A: Introduction to Telecommunication Engineering, 2,5 op

Voimassaolo: 01.08.2006 - 31.07.2012
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Electrical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Juha-Pekka Mäkelä
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

521481P: Introduction to the Use of Workstation, 1 op

Voimassaolo: - 31.07.2012
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Computer Science and Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Toni Hakanen
Opintokohteen kielet: English

Ei opintojaksokuvauksia.

721409P: Principles of Marketing, 5 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Oulu Business School
Arvostelu: 1 - 5, pass, fail
Opettajat: Salo, Jari Tapani
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay721409P Principles of Marketing (OPEN UNI) 5.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:
5 ECTS credits / 138 hours of work

Language of instruction:
Finnish.

Timing:
Autumn semester/Period A.

Learning outcomes:
Upon completion of this course, students should be able to 1) understand the basic concepts of marketing, 2) identify different context for marketing and use marketing concepts for favorable outcomes 3) identify PEST and other issues influencing marketing activities and markets 4) understand marketing as a process starting from planning and ending to control / management of the process.

Contents:
During the course, following themes will be discussed: 1) marketing as science and practice, 2) definitions of marketing 3) marketing strategy and analysis, 4) marketing mix, 5) segmenting, targeting and positioning, 6) marketing in different contexts, 7) market analysis and new product/service/idea/solution development, 8) distribution, 9) planning, implementation and control of marketing process

Mode of delivery:
Face-to-face teaching
Learning activities and teaching methods:
30 hours of lectures, exam (4 h), independent reading of the textbook and articles (54 h), exercises (50 h).

Target group:
Students who are studying marketing as a major or minor subject.
Prerequisites and co-requisites:
-
Recommended optional programme components:
-
Recommended or required reading:
Kotler, P & Armstrong, G. (2013), Principles of marketing, 15 th ed.

Check availability from here.
Assessment methods and criteria:
Examination and exercise.

Read more about assessment criteria at the University of Oulu webpage.
Grading:
The course unit utilizes a numerical grading scale 1–5. In the numerical scale zero stands for a fail.

Person responsible:
Professori Jari Salo

Working life cooperation:
-

Other information:
The number of students is limited to 200 enrolled students. Marketing students are selected first and then course is filled up to 200.

521024A: Programmable Electronics, 5 op

Voimassaolo: 01.08.2005 - 31.07.2014
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Electrical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Antti Mäntyniemi
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

555283A: Project Communication, 3 op

Voimassaolo: - 31.07.2012
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Industrial Engineering and Management
Arvostelu: 1 - 5, pass, fail
Opettajat: Jokinen, Tauno Jaakko
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Language of instruction:
Finnish
Learning outcomes:
Upon completion the student should be able to:
Apply the concepts of effective communications in project environment
Learning activities and teaching methods:
Lectures, exercises learning report
Assessment methods and criteria:
The assessment is based on learning report
Read more about assessment criteria at the University of Oulu webpage.