TUOTANTOTALOUS

Perusopinnot

■ Basic Course in Quality
Tuotanto- ja palvelutoiminnan laatu

Code: TUTA1060
Credits: 5 ECTS
Prerequisites:-
Learning outcomes: student will gain an understanding on the Basics of Quality Management, the Role of Quality and Quality Management Systems, Processes and Scorecards in various Businesses and various possibilities for the Development of Quality Procedures within a company on a Yearly Cycle
Content: History of Quality Management, Quality Management Systems, Processes, Balanced Scorecards, Continuous Improvement, Self-Assessment, Audits and Reviews, Quality Standards, Quality Problem Solving Techniques and Tools, Quality Award Frameworks
Study Materials:
1.Book: Total Quality Management and Operational Excellence: Text with Cases
John S. Oakland. ISBN: 978-0-41563550-9. London – Routledge, 4th edition (June 14, 2014)
2. Other course material provided by the lecturer
Teaching methods: 30 h lectures
Modes of Study: written exam and participation in possible visitors lectures
Languages: English
Grading: Scale 1-5 or fail
Responsible person: University teacher Katariina Pukkila-Palmunen
Teacher: University teacher Katariina Pukkila-Palmunen
Responsible Unit: Department of Production
Additional information: available only to students of the B.Sc programme in Computer Siences and Industrial Management and to students who have been granted right to minor in Industrial Management

■ Kestävä energialiiketoiminta
Sustainable Energy Business

Koodi: TUTA1110
Laajuus: 5 op
Osaamistavoitteet: energiatuotannon liiketoimintamalleihin perehtyminen ja kestävän kehityksen periaatteisiin tutustuminen sekä hajautetun energiatuotannon merkitys energiantuotannossa**.** Kurssin suoritettuaan opiskelija osaa selittää kestävän kehityksen käsitteet, soveltaa niitä energiatuotannon kehittämistavoitteiden määrittämisessä sekä osaa selittää, kuinka energia-alan liiketoiminnan kehittäminen vaikuttaa ympäristöön, yritysten taloudelliseen kehitykseen ja ympäröivään yhteiskuntaan sekä kuinka ympäristö- ja energianhallintajärjestelmät liittyvät osana yrityksen johtamis- ja laatujärjestelmää sekä yrityksen operatiivista johtamista.
Sisältö: erilaiset energianlähteet ja niiden liiketoimintaedellytykset kestävän kehityksen näkökulmasta, energian tuotantoon ja kulutukseen liittyvät tekijät, hajautetun energiantuotannon ominaisuudet kestävän kehityksen näkökulmasta, energiankulutus ja erilaiset säästämiskohteet, energia-alan liiketoiminnan perusteet, ympäristö- ja energiahallintajärjestelmät sekä vastaavat

standardit yrityksen johtamis- ja laatujärjestelmän osana.
Oppimateriaali ja kirjallisuus:

1. Environmental Science, Systems and Solutions, 5th edition. Michael L. McKinney, Robert M. Schoh, Logan Yonavjak. Jones & Bartlett Learning, 2013, USA. ISBN: 978-1-4496-6139-7
2. 2. Sustainable Energy, Choosing Among Options. Jefferson W. Tester, Elisabeth M.Drake, Massachusetts Institute of Technology. 2005. ISBN: 0-262-20153-4
3. VTT, Edita (2010), Energy Visions 2050

Toteutustavat: luennot ja harjoitukset 30 h
Suoritustavat: kirjallinen tentti
Opetus- ja suorituskieli: suomi
Arvostelu: asteikolla 1-5 tai hylätty
Vastuuhenkilö: Katariina Pukkila-Palmunen
Opettaja: Katariina Pukkila-Palmunen
Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja: vain tietotekniikan ja tuotantotalouden tutkinto-ohjelman opiskelijoille

■ Projektitoiminta

Project Management

Koodi: TUTA1030
Laajuus: 3 op
Edellytykset:
Osaamistavoitteet: kurssin suoritettuaan opiskelija osaa selittää projektitoimintaan liittyvät olennaiset käsitteet, hän osaa kuvata projektinhallintaan liittyvät tietotarpeet ja miten näitä tietoja hankitaan ja hyödynnetään, kurssin jälkeen opiskelija osaa laatia projektisuunnitelman
Sisältö: projektikäsitteistö, yksittäisen projektin suunnittelu ja hallinta; projektisuunnitelman laatiminen, aikaohjaus, resurssiohjaus, projektin talous ja hinnoitus, poikkeamien taloudellinen hallinta, projektin laadunvarmistus ja riskien hallinta, projektitoiminnan konsepti, moniprojektiympäristö, monen yrityksen projektit, asiakkaan ja toimittajan projektien yhteensovittaminen, projektoivien yritysten verkko ja verkon hallinta, projektikulttuurit ja globaali organisaatio
Oppimateriaali ja kirjallisuus: Pelin, Risto (2009); Projektihallinnan käsikirja (sekä uudemmat että vanhemmat painokset käyvät) sekä opettajan materiaali (Moodlessa), ”Moodlen kurssiavain on projektisuunnitelma”
Toteutustavat: itsenäinen verkkotyöskentely, voidaan suorittaa ympäri lukuvuoden
Suoritustavat: harjoitustyö
Opetus- ja suorituskieli: suomi
Arvostelu: asteikolla 1-5 tai hylätty
Vastuuhenkilö: Päivi Haapalainen
Opettaja: Päivi Haapalainen
Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja:

■ Yrityksen reaaliprosessit

The Real Processes of a Company

Koodi: TUTA1090
Laajuus: 3 op
Edellytykset: Ei esitietovaatimuksia
Oppimistavoitteet: opiskelija osaa kurssin jälkeen selvittää yrityksen reaaliprosessin kulun ja siihen keskeisesti liittyvät käsitteet ja käsitteiden väliset yhteydet

Sisältö: hankintatoimi ja -logistiikka, sisäinen logistiikka (tuotantoprosessi), läpimenoaika ja sen vaikutus sitoutuvaan pääomaan ja laatuun, jakelulogistiikka
Oppimateriaali ja kirjallisuus:
Uusi-Rauva, Erkki; Miettinen, Asko; Kouri, Ilkka; Haverila, Matti J (2005), Teollisuustalous, Infacs Oy (tai uudempi)
luentokalvot
Toteutustavat: luennot 12 h
Suoritustavat: tentti
Opetus- ja suorituskieli: suomi
Arvostelu: asteikolla 1-5 tai hylätty
Vastuuhenkilö: Päivi Haapalainen
Opettaja: Päivi Haapalainen
Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja:

Aineopinnot

Basic Course in Logistics
Basic Course on Logistics

Code: TUTA2160
Credits: 5 ECTS
Prerequisites: TUTA2170 Introduction to Production Management andTUTA1090 The Real Processes of a Company -courses
Learning Outcomes: student will gain an understanding on the Basics and Challenges of International Logistics, Activities, Processes, Scorecards and Systems, as well as the Counterparts in Logistics
Content: Strategic and Financial Logistics, Logistics and Information Technology, SCM, Order, Inventory, Warehousing and Transportation Management, International Logistics
Study Materials:
1. book: Contemporary Logistics, 11/E. Paul R. Murphy, A. Michael Knemeyer ISBN-10:0132953463, Prentice Hall, 2015, published 01/10/2014
2. other course material provided by the lecturer
Teaching Methods: 30 h lectures
Modes of Study: written exam and participation in possible visitor lectures
Languages: English
Grading:
Responsible Person: Daniel Sahebi
Teacher(s): Daniel Sahebi
Responsible Unit: Department of Production
Additional Information: available only to students majoring in Industrial Management and to students who have been granted the right to minor in Industrial management

■ Global Sourcing and Procurement
Kansainvälinen hankinta- ja ostotoiminta

Code: TUTA2140
Credits: 5 ECTS (5 op)
Prerequisites:

Learning Outcomes: student will gain an understanding on the Strategic Roles of Sourcing, Procurement and Suppliers in Global Value Chain and Business Environment, understand various Sourcing Strategies, Processes, Organisation Models and Scorecards, able to perform Supply Research and understand the strategic difference between Outsourcing, Onshoring and Offshoring
Content: Role of Purchasing in the Value Chain, Purchasing Strategy and Management Process, Category Management, Supply Research, Performance Measurement, SCM, Outsourcing
Study Materials:
1. book: "Purchasing and Supply Chain Management: Analysis, Strategy, Planning and Practice" by Arjan J.van Weele, 5th edition, ISBN: 978-1-4080-1896-5, 2010, Cengage Learning EMEA
2. book: "Delivering Customer Value through Procurement and Strategic Sourcing – A professional Guide to Creating a Sustainable Supply Network", Walter L. Wallace, Yusen Xia Pearson Education Inc., 2015, USA. ISBN-10: 0-13-388982-3
3. other course material provided by the lecturer

Teaching Methods: lectures 30 h
Modes of Study: written exam, written group work and participation in possible visitor lectures
Languages: language(s) of instruction: English -; completion language(s) English
Grading: Scale 1–5 or fail, 65% written exam and 35% group work
Responsible Person: Katariina Pukkila-Palmunen
Teacher(s): Katariina Pukkila-Palmunen
Responsible Unit: Department of Production and Department of Marketing
Additional Information: available only to students majoring in Industrial Management and to students who have been granted the right to minor in Industrial management

■ Kandidaatintutkielma

Bachelor's Thesis

Koodi: TUTA2980
Laajuus: 10 op
Edellytykset: tuotantotalouden perus- ja aineopinnot
Osaamistavoitteet: opintojakson jälkeen opiskelija osaa valita tutkimusaiheen, laatia tutkimussuunnitelman sekä tuottaa itsenäisesti pienen tutkimuksen, hän osaa myös tunnistaa ja koota tarvittavan materiaalin työnsä tueksi
Sisältö: tutkimusaiheen valinta ja tutkimussuunnitelman laatiminen; tutkielman aiheena voi olla: yrityksen toimeksianto, laitoksen projektissa tehtävä tutkimus tai opiskelijan valitsema aihe, aiheesta on aina sovittava työn ohjaajan kanssa, tutkielman ulkoasu on teknillisen tiedekunnan kirjoitusohjeiden mukainen ja laajuus on 35-50 sivua

1. tiedonhankintataidot 2 suoritetaan pakollisena osana kandidaatintutkielman tekemistä
2. seminaareissa käydään läpi mm. aiheen valintaa ja tutkimussuunnitelman tekemistä, kunkin opiskelijan on osallistuttava seminaareihin vähintään 3 kertaa työtä tehdessään
3. tutkimussuunnitelman ja valmiin työn esittäminen ovat pakollisia jokaiselle tutkielman tekijälle
4. tutkielman arvostelu: lopullinen tutkielma jätetään 2 kappaleena laitokselle, tutkielman arvostelee ohjaaja

kandidaatintutkielmasta kirjoitetaan kypsyysnäyte ohjaajan määräämästä aiheesta kypsyysnäytteeseen voi ilmoittautua, kun tutkielma on jätetty tarkastettavaksi lopullisessa muodossaan
Oppimateriaali ja kirjallisuus: -
Toteutustavat: seminaarit ja itsenäinen työskentely
Suoritustavat: osallistuminen seminaareihin vähintään 3 kertaa, tutkielman laatiminen, kypsyysnäyte
Opetus- ja suorituskieli: suomi
Arvostelu: asteikolla 1-5 tai hylätty
Vastuuhenkilö: Daniel Sahebi
Opettaja Daniel Sahebi ja Katariina Pukkila-Palmunen

Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja: kts. Teknillisen tiedekunnan kauppatieteellisen alan kandidaatintutkielman laadintaohjeet sekä tiedekunnan kirjoitusohjeet, kandidaatintutkielmat tarkistetaan 1.8.2014 lähtien Turnitin-plagiaatintunnistusjärjestelmällä

■ Product Lifecycle Management

Tuotteen elinkaaren hallinta

Code: TUTA2210
Credits: 5 ECTS (5 op)
Prerequisites: basic studies in Industrial Management
Learning Outcomes: student will gain an understanding on the Basic Principles and Role of PLM in a Company, Challenges of creating a Product Structure and Strategy within a Company regarding of the Industry in case and understanding the preconditions of PLM in e-Commerce
Content: Basics of PLM and PLM Systems integration with other Business Applications, Product Structures and Strategies, Benefits and Challenges of a PLM System in various Industries, e-Business and PLM
Study Materials:
1. Book: Product Lifecycle Management, Antti Saaksvuori, Anselmi Immonen, Springer, ISBN: 978-3-642-09684-6
1. other course material provided by the lecturer

Teaching Methods: lectures 30 h
Modes of Study: written exam
Languages: language(s) of instruction: English; completion language(s): English
Grading: scale 1-5 or fail
Responsible Person: Katariina Pukkila-Palmunen
Teacher(s): Katariina Pukkila-Palmunen
Responsible Unit: Department of Production
Additional Information: this course is available only for major students in Industrial Management and to students who have been granted the right to minor in Industrial Management

■ Tuotannonohjaus, peruskurssi

Introduction to Production Management

Koodi: TUTA2170
Laajuus: 5 op
Edellytykset: MS-excel-ohjelman perustaidot (suositellaan tilastotieteen perusteiden osaamista)
Oppimistavoitteet: suoritettuaan kurssin opiskelija pystyy kehittämään tuotannonohjausprosessia sen eri vaiheissa, esimerkiksi valitsemalla menetelmiä kysynnän ennustamiseen tai varaston täydennyksiin
Sisältö: kysynnän ennustaminen, kapasiteettisuunnittelu, varastonhallinta, tuotantosuunnittelu, materiaalitarvelaskenta, töidenjärjestely
Oppimateriaali ja kirjallisuus: 1. Krajewski, Ritzman & Malhotra (2007): Operations Management (soveltuvin osin) 2. opettajan materiaalit
Toteutustavat: luennot 12 h ja harjoitukset 12 h, yritysvierailuja / kirjatentti
Suoritustavat: aktiivinen osallistuminen lähiopetukseen + tentti tai pelkkä kirjatentti
Opetus- ja suorituskieli: opetuskieli suomi, suorituskieli suomi ja englanti
Vastuuhenkilö: Päivi Haapalainen
Opettaja: Päivi Haapalainen
Vastuuorganisaatio: Tuotannon yksikkö
Lisätietoja: vain tuotantotalouden pääaineopiskelijoille ja tuotantotalouden sivuaineoikeuden saaneille. kurssin opetus on suomeksi, mutta kurssin voi suorittaa englanniksi kirjatenttinä

■ Tuotantolaitosten suunnittelu

Production Flow and Layout Planning

Koodi: TUTA2180
Laajuus: 5 op
Edellytykset:
Osaamistavoitteet:
opintojakson jälkeen opiskelija osaa analysoida tuotantolaitoksen sijaintiin vaikuttavia tekijöitä ja valita sopivan sijaintipaikan, opiskelija osaa suunnitella tuotantolaitoksen layoutin karkealla tasolla ja tuntee tuotantolinjan tasapainottamisen periaatteet sekä ryhmäteknologian periaatteet, lisäksi opiskelija osaa ottaa huomioon tuotantolaitosten ergonomisia, laadullisia- ja ympäristönäkökohtia
Sisältö: tuotantolaitoksen sijaintipaikan valinta, tuotantolaitoksen layout-suunnittelu, tuotantolinjan tasapainottaminen, ryhmäteknologian soveltaminen, , tuotantolaitosten ergonomiset näkökohdat
Oppimateriaali ja kirjallisuus:
2. opettajan ilmoittama materiaali
lisämateriaalina voi soveltuvin osin käyttää:

- Tompkins, J.; White, J.; Bozer, Y. & Tanchoco, J. Facilities planning, Wiley, 4th edition (2010)

Toteutustavat: lähiopetus, itsenäinen verkko-opiskelu ja ryhmätyöskentely
Suoritustavat: aktiivinen osallistuminen luennoille, harjoituksiin ja yritysvierailuille sekä harjoitustyö
Opetus- ja suorituskieli: suomi
Arvostelu: asteikolla 1-5 tai hylätty
Vastuuhenkilö: Päivi Haapalainen
Opettaja: Päivi Haapalainen
Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja: kurssi on vain tuotantotalouden pääaineopiskelijoille ja tuotantotalouden sivuaineoikeuden saaneille

■ Tuotantotalouden kirjallisuustutkimus ja -analyysi

Literature Study and Analysis in Industrial Management

Koodi: TUTA2190
Laajuus: 1-5 op
Edellytykset: tuotantotalouden muut perus- ja aineopintokurssit
Osaamistavoitteet: opiskelija osaa kuvata valitun aiheen peruskäsitteet ja hyödyntää oppimansa käytännön ongelmien ratkaisuun
Sisältö: tuotantotalouden ajankohtaisia aihepiirejä
Oppimateriaali ja kirjallisuus: sovitaan aina erikseen vastuuopettajan kanssa
Toteutustavat:
Suoritustavat: raportti, jossa lähteen sisältö kuvattu kappaleittain kirjan sisällysluettelon mukaisesti, lisäksi mukaan tulee Powerpoint tms. esitys, jossa jokaisen kappaleen pääkohdat kuvattu bulletein, (tarkemmat ohjeet Moodlessa)
Opetus- ja suorituskieli: suomi
Arvostelu: hyväksytty / hylätty
Vastuuhenkilö: Jussi Kantola
Opettaja: Jussi Kantola
Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja: vain tuotantotalouden pääaineopiskelijoille

■ Tuotekehitys ja innovaatioprosessit

Introduction to Product Development

Koodi: TUTA2200
Laajuus: 5 op
Edellytykset: projektitoiminta
Osaamistavoitteet: opintojakson jälkeen opiskelija osaa esitellä tuotekehitysprosessin pääpiirteet, ymmärtää mitä tuotekehitystoiminta on tuotannollisten yritysten ja organisaatioiden toiminnassa, osaa määritellä keskeisimmät termit ja pystyy käyttämään ideointimenetelmiä monipuolisesti sekä kykenee perustelemaan tuotekehitysprojektin eri vaiheissa tehtäviä päätöksiä
Sisältö: tuotekehitysprosessi, tuotekehitysprojektien vaiheet, tuotekehitysprojektien johtaminen ja pilotointi yrityksen tuotannossa, tuotteiden elinkaari-innovointi, asiakasvaatimusten hallinta, konseptisuunnittelu, päätöksenteko ja valinta, luova ongelmanratkaisu, prosessien ja projektien ymmärtäminen sekä aivoriihimenetelmä
Oppimateriaali ja kirjallisuus:

1. Tidd, Joe; Bessant, John & Pavitt Keith (2009 4th Edition), Managing Innovation, Wiley
2. Ulrich, Karl & Eppinger Steven (2007 4th Edition), Product Design and Development, McGraw-Hill inc.
3. Yliopisto-opettajan ilmoittama kurssimateriaali

Toteutustavat: luennot ja harjoitukset 30 h
Suoritustavat: kirjallinen tentti ja harjoitustyö sekä osallistuminen mahdollisille vierailijaluennoille
Opetus- ja suorituskieli: opetuskieli suomi, suorituskieli suomi ja englanti
Arvostelu: asteikolla 1-5 tai hylätty, 65% kirjallinen tentti ja 35%
Vastuuhenkilö: Katariina Pukkila-Palmunen
Opettaja: Katariina Pukkila-Palmunen
Vastuuorganisaatio: Tuotantotalouden yksikkö
Lisätietoja: kurssi on vain tietotekniikan ja tuotantotaloudentutkinto-ohjelman opiskelijoille ja tuotantotalouden sivuaineoikeuden saaneille

Syventävät opinnot

■ Advanced Course in Quality and Reliability Management

Laatujohtaminen ja luotettavuustekniikka

Code: TUTA3050
Credits: 5 ECTS (5 op)
Prerequisites: students are expected to be familiar with the basic issues of quality management
Learning Outcomes: student will gain a deeper understanding on Total Quality Management, Control and Continuous Improvement in various industries and businesses, learn to create a integrated Business, Quality and Environmental Management System and Balanced Scorecards Palette, manage the yearly Quality System Assessments, Audits and Controlling Activities as well as build up a Reliability Procedures within a Company
Content: Total Quality Management, Integrated Business, Quality and Environmental Management Systems, various Quality Standards, Assessments and Audits, Quality Management Awards and Frameworks, Maturity Models, Balanced Scorecards Palette, Program and Project Quality, Continuous Improvement, Quality Management Systems and Reliability in various Industries
Study Materials:

1. book: Total Quality Management and Operational Excellence: Text with Cases, by John S. Oakland, ISBN: 978-0-41563550-9, London - Routledge; 4 edition (June 14, 2014)
2. book: Managing, Controlling and Improving Quality by Douglas C. Montgomery, Cheryl L. Jenkins, Michele E. Phund, Wiley April 2010, ISBN: 978-0-471-69791-6
3. other course material provided by the lecturer

Teaching Methods: lectures and exercises 30 h
Modes of Study: written exam, written group work and participation in possible visitor lectures
Languages: language(s) of instruction: English; completion language(s): English
Grading: scale 1-5 or fail, 65% written exam and 35 % group work
Responsible Person: Katariina Pukkila-Palmunen
Teacher(s): Katariina Pukkila-Palmunen
Responsible Unit: Department of Production
Additional Information: this course is available only for the master students in Industrial Management

■ Anticipation and Diffusion of Technological Innovations

Teknologisten innovaatioiden ennakointi ja levittäminen

Code: TUTA3220
Credits: 5 ECTS (5op)
Prerequisites: TUTA2200 Introduction to Product Development or otherwise acquired basic knowledge about product development and innovation management
Learning Outcomes: to understand the concept of technology progress, how technologies evolve, how technologies compete with each other and how this affects enterprises and their NPD, to be able to analyze the dynamics involved in technological innovations; in particular how social, economic and cultural factors interact with technological factors in innovation processes and diffusion of innovations, to be able to understand the generic factors influencing the diffusion of innovations and based these the student can analyze prediction of failure patterns of diffusion
Content: the course contains two parts: 1) anticipation and management of technological innovations, both sustaining and disruptive innovations; 2) generic factors influencing the diffusion of innovations and prediction of future patterns of diffusion
Study Materials: for the book exam:

1) Christensen, C. M. (2011 or newer ed., also hard cover ed. 1997 can be used.): The Innovator's Dilemma, The Revolutionary Book That Will Change the Way You Do Business
2) Tidd, J. (2010 or newer ed.): Gaining Momentum: Managing the Diffusion of Innovations (except chapters 8 and 9)
   For the classroom teaching:
   1) the books mentioned above
   2) scientific articles

Teaching Methods: classroom teaching (PBL) OR self-study
Modes of Study: active participation and assignments OR book exam
Languages: language(s) of instruction: English; completion language(s): English
Grading: scale 1-5 or fail
Responsible Person: Päivi Haapalainen
Teacher(s): Päivi Haapalainen
Responsible Unit: Department of Production
Additional Information:, this course is available only for the master students in Industrial Management or Marketing

■ Buildind Trust in Industrial Networks

Code: TUTA3260
Credits: 5 ECTS
Prerequisites: students are expected to be familiar with the basic issues of management
Learning outcomes: After completing the course the student can synthesize information regarding the trust management in networks. Identify, explain and predict individual behavior in networks connected with trust sustaining and building. Appreciate the importance of trust in networks in industrial management. Identify and evaluate the role of leadership, human resoruce management, knowledge management in strategy of trust management. This course will also support the development of students' skills in the area of reading and analysing academic literature.
Course content: Orientation on trust in industrial management (definitions, types of trust); The importance of trust in networks; The process of trust in management: building, rebuilding and sustaining trust in networks; Identifying organizational and interpersonal trust; Trust and relations with partners in networks; Trust and learning processes in networks; Authentic Trust and leadership; Loyalty trust as a concept which generates innovation; Trust and human resource management; Trust and knowledge management in networks; Measuring trust – quantitative and qualitative studies; New technologies and trust in networks (cybertrust).
Study Materials:
1. lecture material
2. books and book chapters
3. web resources
4. scientific articles supplied by the teacher

Teaching Methods: lectures (12h)
Modes of Study: exam, assignment
Languages: English
Grading: scale 1-5 or fail
Responsible Person: professor Jussi Kantola
Teacher(s): Joanna Paliszkiewicz
Responsible Unit: Department of Production
Additional Information: available only to students of the Master´s Programme in Industrial Management

■ Contemporary Topics in Industrial Management

Tuotantotalouden erityiskysymyksiä

Code: TUTA3060
Credits: 2-5 ECTS
Prerequisites:
Learning Outcomes:
Content:
Study Materials:
1. White, M.A. & G.D. Bruton, (2006 or newer), The Management of Technology and Innovation – A Strategic Approach, Thomson South-Western. (Parts 1-3)
2. Garnsey, E. & J. McGlade, (2006) Complexity and Ceo-Eevolution: Continuity and Change in Socio-Economic Systems, Business & Economy, Edward Elgar Publishing Limited
3. Kawasaki G. (2015) Portfolio Hardcover The Art of the Start 2.0: The Time-Tested, Battle-Hardened Guide for Anyone Starting Anything, Penguin Group
4. McKinsey & Company Inc, T. Koller, M. Koedhard & D. Wessels, (2010) Valuation: Measuring and Managing the Value of Companies, 5th Edition, Wiley
5. Bartneck, N., V. Klaas & H.Schönherr (2009) Optimizing Processes with RFID and Auto ID: Fundamentals, Problems and Solutions, Example Applications, Publicis Publishing
6. Oshri Ilan (2011) Offshoring Strategies: Evolving Captive Center Models, the MIT Press

7. Hislop, D. (2005 or newer) Knowledge Management in Organizations: A Critical Introduction, Oxford, UK, Oxford University Press
Teaching Methods: self-study
Modes of Study: written summary from two books (20 pages/book), approved/fail
Languages: English
Grading: pass / fail
Responsible Person: Päivi Haapalainen
Teacher(s): Petri Helo, Päivi Haapalainen
Responsible Unit: Department of Production
Additional Information:

■ Enterprice Resource Planning
Yrityksen toiminnanohjaus

Code: TUTA3200
Credits: 3 ECTS
Prerequisites: Introduction to Production Management
Learning Outcomes: after the course the student will understand how ERP (Enterprise Resource Planning) systems are used in daily business, the student is able to analyze how ERP systems support business processes, will also learn to do simple tasks with SAP system related to sales, manufacturing and purchasing
Content: the course will give an introduction to ERP as part of production organization, the lectures will cover, transaction system principles, generic structure of ERP system, ERP implementation project and IT investments, IT part of Business Strategy, the exercises are related to ERP functionality and transactions (1) Sales and distribution, (2) Materials management, (3) Inventory Management, (4) Production Planning and Control, (5) Logistics execution, (6) Finance and control, enterprise Resource Planning will be discusses as part of global IT infrastructure
Study Materials: 1. George W. Anderson, Danielle Larocca, SAP in 24 hours, 2nd edition
2. Daniel E. O'Leary (2000), Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce and Risk
3. articles
Teaching Methods: lectures and labs 30 h
Modes of Study: exam, submitted assignment
Languages: English
Grading: scale 1-5 or fail
Responsible Person: Petri Helo
Teacher(s): Petri Helo, RaykoToshev
Responsible Unit: Department of Production
Additional Information: this course is only for master students in Industrial Management, replaces Enterprise Resource Planning – SAP

■ Master's Thesis
Pro Gradu -tutkielma

Code: TUTA3980
Credits: 30 ECTS
Prerequisites: master's level studies of industrial management
Learning outcomes: student will be able to conduct independent research work and practically apply the skills attained in the diverse fields of Industrial Management and to use the relevant literature to support the student´s own research work and written report
Content

The topic can be specified from a project in a company or organization, a research in the Department of production, or a subject of the student's own choosing. The topic must always be agreed upon with the thesis supervisor. After the topic is chosen a research plan has to be made. The research plan contains at least an overview of the topic area, preliminary research questions, constraints, required theories, description of data collection and analyses methods, time table and a preliminary table of contents. The student has to participate at least twice in the thesis seminar to present the research plan (TUTA3982) and preliminary / final results (TUTA3983). The research plan is presented in the beginning of the thesis work, and the results are presented close to the end of the thesis work. Thesis seminars are good occasions to discuss the challenges in the thesis process. Master's Thesis must be written according to the Master's Thesis instructions and writing instructions provided by the faculty. The final version of the thesis is handed (3-4 copies) in to the unit in the form printed hard copies, a single page copy of the thesis abstract is attached to the copies. The thesis is graded by the Dean on the basis of the thesis evaluators' recommendations in addition, a maturity exam has to be written about a subject specified by the thesis supervisor, the student can sign up for a maturity exam on any exam day, once the thesis in its final form has been handed in for evaluation (TUTA3984 master's thesis 29 op).
Study Materials: -
Teaching Methods: personal supervision, thesis seminars
Modes of Study: independent research and writing work, mandatory participation in 2 master's thesis seminar with presentations
Languages: English or Finnish
Grading: assessment scale sufficient, satisfactory, good, very good, excellent
Responsible Person: the professors and university lecturer in industrial management
Teacher(s): professors of the Department of Production
Responsible Unit: Department of Production
Additional Information: all Master's Theses will be checked with the Turnitin plagiarism detection software

■ New Knowledge Creation and Organizational Learning in Product Development

Uuden tiedon luominen ja organisaation oppiminen tuotekehityksessä

Code: TUTA3210
Credits: 5 ECTS
Prerequisites:
Learning Outcomes: students will understand theories of organizational learning and knowledge creation in product and service development context, and know how to apply different methods to support new knowledge creation and organizational learning in the context of product and service development in organizations
Content: individual learning at work, competence, motivation, learning organization and organizational learning, knowledge creation theories, responsive environment, systems thinking - putting pieces together for new product and service development / innovation
Study Materials:

1. lecture material
2. books and book chapters
3. online tools and web resources
4. scientific articles supplied by the teacher
5. material provided by the case organization/company

Teaching Methods: lectures 14 h, workshop 14 h, case organization/company visits
Modes of Study: lectures, workshops and student assignments in teams
Languages: English
Grading: scale 1-5 or fail, exam (30%), course assignments (70%), activity (+), 75 % attendance required for pass

Responsible Person: Jussi Kantola
Teacher(s): Jussi Kantola
Responsible Unit: Department of Production
Additional Information:

■ Operations Strategy

Tuotantostrategia

Code: TUTA3080
Credits: 5 ECTS
Prerequisites:
Learning Outcomes: after completing this course the student will be able to list major forces that drive corporate competition and name proven strategic management models, during the course student assess various types of industries and determine the position of a company within its business area, customized data collection methods are utilized with the help of the virtual learning environment (Moodle), working in groups, students apply strategy evaluation tools and build hierarchical model for multi criteria decision making, they put into practice in a real case study analytical evaluation tools to classify major business factors, categorize company strategic goals and prepare tailored plan how to reach aspired strategic type
Content: introduction, basic theories of strategy, lean strategies, technology management, research methods, e.g. analytical hierarchy process AHP and strategic networking strategic corporate planning as a scientific problem
Study Materials:
1. Braun, Ernest, 1998, Technology in Context, Technology Assessment for Managers, The Management of Technology & Innovation, Routledge, London and New York
2. Markides, Constantinos C.: All the right moves; a Guide to Crafting Breakthrough Strategy, Harward Business School Press., Boston 2000
3. Cantwell, John, (Editor) 2004, Globalization and the Location of Firms, Edward Elgar Publishing Limited UK
4. Doz Yves, Kosonen Mikko 2008, Fast Strategy: How strategic agility will help you stay ahead of the game
5. International Journals, e.g. Harvard Business Review, Research Technology Management, Product Innovation Management, Technology Management etc., A selection of approx. 20 scientific articles within the area
Teaching Methods: lectures and tutoring 15 hours and seminars 20 hours, seminars will be prepared during the course on the basis of real industrial cases and research within the area
Modes of Study: according to RBL-process, student have to participate at least in presenting the literature reference at the beginning and the final case study report, course is based on the lectures, seminars, literature references and written assignments, no examination
Languages: language(s) of instruction: teaching and seminars in English; completion language(s): English
Grading: scale 1-5 or fail
Responsible Person: Josu Takala
Teacher(s): Dr. Liu Yang
Responsible Unit: Department of Production
Additional Information:

■ Product and Service Design in Practice

Tuote- ja palvelusuunnittelu käytännössä

Code: TUTA3230

Credits: 5 ECTS
Prerequisites: Introduction to Product Development, TUTA1120
Learning Outcomes: students will learn axiomatic design theory, and to do design work in teams in real customer setting
Content: product and service development contexts, product and service design theory, methods and tools
Study Materials:

1. Suh, N. P., 2001, Axiomatic Design: Advances and Applications, Oxford University Press, New York, NY
2. lecture material
3. online tools and web resources
4. scientific articles provided by the teacher

Teaching Methods: lectures 14 h, workshops 14 h, presentations 8 h
Modes of Study: lectures, workshops, design project in teams, customer visits
Languages: English
Grading: scale 1-5 / fail, 2 quiz 20 % (10 % each), design project 80%, activity (+)
Responsible Person: Jussi Kantola
Teacher(s): Jussi Kantola
Responsible Unit: Department of Production
Additional Information:

■ Production Operations Management Methods

Tuotannonohjauksen menetelmät

Code: TUTA3240
Credits: 5 ECTS
Prerequisites: Operations Research
Learning Outcomes: to understand set of advanced methods and models in productions / operations management to apply production planning and control tools and techniques for decision making
Content: integration of productions / operations management, capacity planning, production performance and assessment, production dynamics and constraints and theory of constraints, impact of variability and managing in production systems, push vs pull production system, manufacturing execution systems, optimization models in POM, production planning and control, and production platforms and concept of flexibility
Study Materials:

1. Wallace Hopp (2007) Supply Chain Science, Mcgraw-Hill/Irwin
2. Wallace Hopp and Mark L. Spearman (2008) Factory Physics 3rd edition, Mcgraw-Hill / Irwin
3. articles

Teaching Methods: lectures and labs 23 hours, independent assignment work
Modes of Study: four submitted assignments
Languages: language(s) of instruction: English; completion language(s): English
Grading: scale 1-5 or fail
Responsible Person: Petri Helo
Teacher(s): Petri Helo, Pornthep Anussornnitisarn
Responsible Unit: Department of Production
Additional Information: this course is available only for the master students in Industrial Management, replaces advanced course in production operations management

■ Project Management

Projektinjohtaminen

Code: JOHT3019
Credits: 5 ECTS
Recommended time of completion: period 1-2
Prerequisites: -
Learning Outcomes: by the end of this course students should have a holistic understanding of different issues related to project management, firstly, students should have knowledge about the nature of projects and how projects can be organized, secondly, students should have knowledge about the process of project management, which ranges from planning, implementing and evaluating, during the course students will learn about different tools of managing projects and will also gain insights into the three most central issues to be managed: time, cost and quality, after the course you should also have knowledge about the more human aspects of project management, related to the project manager and the project team, you should also know about factors related to success and failure of projects, the course will also support the development of students' skills in the areas of critical thinking and reflection on learning
Content: topics that will be covered during the course are, among others, the management of time, quality and costs within projects; project planning and different tools for managing projects; projects from an international perspective; and projects from a human perspective, including issues related to the project manager and project teams
Study Materials: articles provided by the teacher, students can complement these with a project management book(s) of their choice – there are several available in Tritonia
Teaching Methods: the course is web-based, consisting of lectures, discussions and assignments on the web, in addition to this, the course contains a few in-class sessions
Modes of Study: individual assignments and group work
Languages: language(s) of instruction: English; completion language(s): English
Grading: scale 1-5 or fail
Responsible Person: Annika Tidström
Teacher(s): Annika Tidström
Right to participate: this course is only open to students registered on the Masters programmes in Strategic Management, IB, Henkilöstöjohtaminen and Industrial Management
Responsible Unit: Department of Management
Additional Information: this course is only open to students registered on the Masters programmes in strategic management, IB and industrial management

■ Project Work in Industrial Management

Tuotantotalouden työkurssi

Code: TUTA3070
TUTA3071 Quality
TUTA3072 Times/Venture Business Games
TUTA3073 Production Management
TUTA3074 Logistics
TUTA3075 agreed separately
Credits: 2-5 ECTS for the course, 2-3 ECTS per part
Prerequisites: bachelor level studies in department of industrial management
Learning Outcomes: the student can solve practical problems by the application of relevant theory and report the results according to the standards of the department of industrial management
Content: the course can be compiled from a number of elements 1) The Project Work course can be completed by carrying out project based development work in companies and other

organizations, the amount of credits granted for each project varies with the difficulty of the task, the content of each project is to be agreed upon with the relevant teacher, it is possible to carry out project work as a part of ongoing, wider research project of the department of industrial management 2) a second option is to take part in business games such as the Venture Cup (contact person Josu Takala) or the TIMES consulting competition (Tournament in Management and Engineering Skills) jointly arranged together with the TUTTI Student Society, the winning team of the local elimination rounds will be able to participate in the international ESTIEM semifinals, participating in a business game will give a maximum of 3 ECTS, we recommend that the course is completed by participation in several different events and projects, combining the different options available to the student
Study Materials: depend on the topic
Teaching Methods: self-study
Modes of Study: self-study (projects) or participating in TIMES or Vendor Business Games
Languages: English
Grading: pass or fail
Responsible Person: Päivi Haapalainen
Teacher(s): Päivi Haapalainen
Responsible Unit: Department of Production
Additional Information: the industrial management project work course can be completed around the year, and is not tied a specific course schedule (except the TIMES and Vendor Business Games), the course should consist of at least two different part performances, the part performances are added to the student's credit registry upon completion

■ Research Methods in Industrial Management

Tuotantotalouden tutkimusmenetelmät

Code: TUTA3190
Credits: 5 ECTS
Prerequisites:
Learning Outcomes: the student will learn how to select the topic and define the research question, the student will be able to define the research framework and design the research by choosing the method that fit on the project, this course is aimed at helping student write good scientific report and to start the Master's Thesis
Content: the aim is to give a good grounding in research methods with emphasis on how this can be applied in industrial management settings, it introduces the field of management and business studies and some of the main research paradigms and theories; it examines the pros and cons of varied approaches to research as well as some ethical and practical problems that may likely confront a researcher
Study Materials:
1. Mark Saunders, Philip Lewis, Adrian Thornhill (2007 or older) Research Methods for Business Students, Pearson
2. 2. Zikmund, Babin, Carr, Griffin 2014, Business Research Methods, 9th edition, International Edition
3. Journal articles: including an assessment of survey, case studies and other methods
Teaching Methods: lectures and tutoring 20 hours and seminars 20 hours, workshop based on PhD candidates' presentations, seminars based on students' proposed thesis topic (*conceptual/dynamic abstract, introduction and methods*), teaching and seminars in English
Modes of Study: coursework, project work, pop quiz, and workshops
Languages: English
Grading: scale 1-5 or fail
Responsible Person: Jussi Kantola
Teacher(s): Dr. Emmanuel Ndzibah
Responsible Unit: Department of Production

Additional Information: this course is available only for the master students in Industrial Management

■ Simulation of Production Systems

Tuotantojärjestelmien simulointi

Code: TUTA3250
Credits: 3 ECTS
Prerequisites: Introduction to Production Management, Basic Course in Statistics
Learning Outcomes: to understand production simulation methods, tools and techniques for decision making by using stochastic methods, to apply basic tools of simulation in context of operations management and management science, to evaluate simulation model results
Content: continuous and discrete event simulation, stochastic process, statistical ranking and selection procedures, verification and validation of simulation models, using MS Excel based simulation tools, production simulation by using Extend software
Study Materials: Manuel, L., Laguna, M., & Marklund, J. (2005) Business Process Modeling, Simulation and Design, Pearson Education India
Teaching Methods: lectures and labs 20 hours
Modes of Study: submitted assignments
Languages: language(s) of instruction: English completion language(s): English
Grading: scale 1-5 or fail
Responsible Person: Petri Helo
Teacher(s): Juta Pichitlamken, Yohanes Nugroho
Responsible Unit: Department of Production
Additional Information: this course is available only for the master students in Industrial Management

■ Supply Chain Design and Management

Toimitusketjujen suunnittelu ja johtaminen

Code: TUTA3120
Credits: 5 ECTS
Prerequisites: obligatory prerequisites: Introduction to Production Management, Basic Course in Logistics
Learning Outcomes: the aim of the course is to deepen the knowledge in Global Logistics and Supply Chain Management, introduce Tools in Designing, Managing and Optimizing the Supply Chain Network.
Content: Supply Chain Performance, Drivers and Metrics, Designing Global Supply Chain and Distribution Networks, Demand Forecasting, Aggregate and Sales and Operations Planning, Cycle and Safety Inventories, Product Availability Optimisation, Transportation, Sourcing and Pricing Decisions, Information Technology and Sustainability in Supply Chain
Study Materials:

1. book: Supply Chain Management, 5/E. Sunil Chopra, Northwestern University , Peter Meindl, ISBN-10: 0132743957. Prentice Hall, 2013. Cloth, 528 pp. Published 01/26/2012,
2. other course material provided by the lecturer

Additional reading:
book: Supply Chain Network Design: Applying Optimization and Analytics to the Global Supply Chain. Michael Watson, Sara Lewis, Peter Cacioppi, Jay Jayaraman, ISBN-10: 0-13-301737-0, Pearson Education Inc., 2013
Teaching Methods: lectures and exercises 30 h
Modes of Study: written exam, written group work and participation in possible visitor lectures

Languages: English
Grading: scale 1-5 or fail, 65% written exam and 35% group work
Responsible Person: Katariina Pukkila-Palmunen
Teacher(s): Katariina Pukkila-Palmunen
Responsible Unit: Department of Production
Additional Information: this course is available only for the master students in Industrial Management

■ Technology Management
Teknologiajohtaminen

Code: TUTA3030
Credits: 5 ECTS
Prerequisites: Introduction to Product Development and Quality Management, Introduction to Production Management
Learning Outcomes: to apply modern theories of strategy for industrial enterprises, especially in small businesses utilizing strategic networking, the sub strategy starts from the business strategy of the enterprise by utilizing technology and knowledge transfer mechanisms (benchmarking) to be implemented in the core business processes
Content: technology driven strategies technology and operations management, strategic networking and modern dynamic (qualitative) decision making processes all from the application point of view
Study Materials:
1. Garton, C. & McCulloch, E.: Fundamentals of Technology Project Management, McPress, 2005
2. Burgelman, R.; Christensen, C.; Wheelwright, S. & Maidique, M.: Strategic Management of Technology and Innovation, 4th ed. McGraw-Hill, 2003

Teaching Methods: 30 hours combining theory and seminars
Modes of Study: according to RBL-process
Languages: English
Grading: scale 1-5 or fail
Responsible Person: Josu Takala
Teacher(s): Rayko Toshev
Responsible Unit: Department of Production
Additional Information:

Industrial Internship

■ Industrial Internship
Työharjoittelu

Code: TUTA2950/TUTA3950
Credits: 1-5 ECTS
Prerequisites:
Learning Outcomes: the student learns to apply studied theory in to a practical situation
Content: internship in a company or public organization, the aim is to gather practical work experience
Study Materials: -
Teaching Methods: internship in a company or public organization

Modes of Study: internship and written report
Languages: Finnish, English
Grading: approved/fail
Responsible Person: Daniel Sahebi
Teacher(s): Daniel Sahebi
Responsible Unit: Department of Production
Additional Information: participation: industrial internship, 2 weeks of full-time work gives one credit unit, the Industrial Management unit's assistant approves the course credit on the basis of the student's internship report and the attached work certificate
can be done as a part of either the bachelor's degree or the master's degree, for more detailed instructions on internships and the internship report, see webpages of the University of Vaasa