

COURSE GUIDE

FOR EXCHANGE STUDENTS

FACULTY OF TECHNOLOGY, ENVIRONMENT AND BUSINESS



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AUTUMN SEMESTER 2013
AUGUST – DECEMBER

COURSE GUIDE

FOR EXCHANGE STUDENTS - AUTUMN SEMESTER 2013

TURKU UNIVERSITY OF APPLIED SCIENCES
Faculty of Technology, Environment and Business (including Design)

Dear Reader,

in this leaflet, you will find information on the courses taught in English at the **faculty of Technology, Environment and Business**, Turku University of Applied Sciences (TUAS) during the Autumn Semester 2013 (August – December).

THE PROGRAMS OFFERING COURSES IN ENGLISH DURING THE AUTUMN SEMESTER

- Industrial Sales / International Semester
- Purchasing / International Semester
- Production Engineering / International Semester
- Interior Textile Designs for The Market / International Semester
- Sustainable Development/ International Semester on Environment and Natural Resources
- Mechanical Engineering
- Civil Engineering
- Professional Sales, Business
- Automotive and Transportation Engineering
- Design
- General courses
- Research and Development (R & D)

GENERAL INFORMATION ABOUT THE COURSES

The language of instruction is English. The credits are European ECTS credits (1 ECTS equals 27 hours of work, both in- and out of the classroom).

The following course list is NOT a contractual document. It is possible that there might still be some changes to the courses by or at the beginning of the semester, or the course schedules might overlap. The final course plan will be made after the arrival in Finland.

Your student may choose courses from any degree program if there is no restriction mentioned. It is possible to choose a full international semester or make an individual combination of courses from different programs.

Please note that the courses offered by the degree program in **Design** are available only for the design students from the design partner universities. A major part of the studies within the design program is based on individual projects.

LEVEL OF STUDIES

(Finnish) Bachelor level. Please note that the Finnish bachelor is different from many other countries. It is either 3.5 years (210 ECTS) or 4 years (240 ECTS) in total, depending on the degree program.

SEMESTER DATES

Autumn Semester: from the end of August till the middle of December. A compulsory orientation takes place during the first few days of the Semester. The actual finishing date depends on each course, but will be no later than 20.12.2013. Please note that the final course plan will be made after the student's arrival in Finland.

INTERNATIONAL SEMESTER ON INDUSTRIAL SALES

- **For all the students who are interested**

The semester consists of three compulsory courses (5 ECTS credits each) and elective studies (choose 15 ECTS credits altogether). The semester will entitle the student to 30 ECTS credits.

Compulsory courses:

Course code	Course name	ECTS
3101023	Industrial Sales Skills and Sales Process	5
5091014	Sales Management	5
3101024	Sales Workshops	5

Elective studies (10 ECTS to be selected for the full semester):

Course code	Course name	ECTS
3090045	International Operations	5
5091023	Professional Services and Productisation	5
1001078	Business Game	3
3100027	International Selling and Business Cultures	5

+ We also have general courses available for your student. Please read about them in the end of the course guide.

INTERNATIONAL SEMESTER ON PURCHASING

- For engineering students (industrial management, mechanical)

The semester will entitle the student to 30 ECTS credits. The student can also choose individual courses.

Courses:

Course code	Course name	ECTS
5091033	Purchasing	5
3060129	Supply Chain Management (virtual course)	5
5091034	Global Sourcing	5
3100012	Responsible Business Management	5
3090045	International Operations	5
5091023	Professional Services and Productisation	5

INTERNATIONAL SEMESTER ON PRODUCTION ENGINEERING

- **For engineering students (industrial management, mechanical)**

For the autumn 2013, a limited number of students can be accepted.

You must choose the full international semester, which will entitle you to 30 ECTS credits.

Course code	Course name	ECTS
5091021	Production Planning and Control	5
5091019	Production Management with ERP	5
5091018	Welding and Machining	5
5091020	Production Automation and Computer Integrated Manufacturing	5
7090035	Logistics and Quality	5
5091002	Responsible Business Management	5

INTERNATIONAL SEMESTER ON INTERIOR TEXTILE DESIGNS FOR THE MARKET

- Only for Design and Sales students

If the student chooses the full international semester, it will entitle him/her to 31 ECTS credits of Interior Textile Designs for the Market. Otherwise the student is welcome to choose ANY of these following courses.

Course code	Course name	ECTS
	A - Research for the Project	1
	B - Research for the Project	1
	Trends and Design	8
	Design of Industrial Interior Textile Collections	9
	International Business Skills	5
	Project Work - Case study	5
	Marketing at Heimtextil Fair - Case Study	2

DEGREE PROGRAMME IN SUSTAINABLE DEVELOPMENT / INTERNATIONAL SEMESTER ON ENVIRONMENT AND NATURAL RESOURCES

For all the students who are interested

The student is welcome to choose any of these courses.

Course code	Course name	ECTS
6021046	Foreign lecturers (Lecture series on environmental issues)	3
6021020	Ecological Assessment of Products and Services	5
6021045	Pro Healthy Life (virtual course)	3
6021043	Climate Change Locally (virtual course)	3
6021049	National Parks of Finland (virtual course)	3
6021050	Archipelago Sea –Baltic Sea (virtual course)	3

The following courses are offered only for students of environmental studies (sustainable development, environmental engineering, environmental sciences etc.)

Course code	Course name	ECTS
6021053	Environmental Marketing	3
6021014B	Water Quality Management	2
6021018B	Environment and Natural Resource Valuations	2
6021041	Project of Sustainable Development	3

DEGREE PROGRAMME IN MECHANICAL ENGINEERING

- For engineering students (mechanical, industrial management)

Course code	Course name	ECTS
	Various projects within Mechanical Engineering, 5 ECTS each –topics to be discussed	Each 5
7030284	CAE/Finite Element Method	6
031003D	Basics of Computing	2
5031004C	Physics laboratory *	3
5031002B	Data-analysis with SPSS **	3
5031011	Production Technology	5

* Maximum 6 exchange students

** Minimum 5 exchange students. Course will not be available if less than 5 students enrol.

INTERNATIONAL SEMESTER ON CIVIL ENGINEERING

- For civil engineering students only

If the student chooses the full international semester, it will entitle him/her to 28-35 ECTS (depending on the research hatchery task). It is also possible to choose single courses.

Course code	Course name	ECTS
	Research Hatchery	1-8
For Structural Engineering →		
7040289A	Cast-in-situ Structures	3
7040289B	Prefabricated Concrete Structures	3
7040292B	Masonry	3
For Real Estate Renovation →		
7040313A	Basics of Renovation Engineering	3
7040313B	Condition Survey	2
7040316B	History of Finnish Architecture	3
For Production Management →		
7040233B	Construction Quality Management, advanced level	2
7040234A	Foundation Work, Frame Mounting and Prefabricated Construction	3
For Infrastructure Engineering →		
7040245A	Water Management in Sparsely Populated Areas	2
7040249A	Planning	1
7040249B	Urban Planning	1
7040249C	Slow Speed Streets, Pedestrian Streets	2

DEGREE PROGRAMME IN PROFESSIONAL SALES

- For all the students who are interested

Course code	Course name	ECTS
3100010	Business Economics	3
1001078	Business Game	3
7000180	Project Hatchery	3
3100027	International Selling and Business Cultures	5

DEGREE PROGRAMME IN AUTOMOTIVE AND TRANSPORTATION ENGINEERING

- For all the students who are interested

Course code	Course name	ECTS
7010289	Order and Delivery Control	5
7010337	Logistics and Quality	5
7010317	New Fuels and Drive Systems for Vehicles	5

PRODUCT DESIGN - WITHIN THE DEGREE PROGRAMME IN DESIGN

- AUTUMN 2013 -only for Product design students from the design partner universities of TUAS

Course code	Course name	ECTS
	Special Projects	21
6050317	Design History	3

SPRING 2014

Course code	Course name	ECTS
	Special Projects	21

INDUSTRIAL DESIGN - WITHIN THE DEGREE PROGRAMME IN DESIGN

- AUTUMN 2013 -only for Industrial design students partner universities of TUAS

Course code	Course name	ECTS
	Special Projects	21
6050317	Design History	3

SPRING 2014

Course code	Course name	ECTS
	Special Projects	21

TEXTILE DESIGN – WITHIN THE DEGREE PROGRAMME IN DESIGN

- AUTUM 2013-only for textile design students partner universities of TUAS

Course code	Course name	ECTS
6050344	Full autumn semester: Product Development and Concept Design – Advanced Studies Heimtextil project / combined with a Fair in Frankfurt Germany	31
6050317	Design History	3

SPRING 2014

Course code	Course name	ECTS
	Special projects	21

FASHION DESIGN – WITHIN THE DEGREE PROGRAMME IN DESIGN

AUTUM 2013-only for fashion design students from the design partner universities of TUAS

Course code	Course name	ECTS
	Special Projects	21
6050317	Design History	3

SPRING 2014

Course code	Course name	ECTS
	Special projects	21

GENERAL COURSES

- For all the students who are interested

Course code	Course name	ECTS
1000233	Intercultural Conversation	3
1000474	Finnish for Exchange Students	3
1000393	Get FINternational	3

COURSE DESCRIPTIONS:

INTERNATIONAL SEMESTER ON INDUSTRIAL SALES

Industrial Sales Skills and Sales Process, 3101023, 5 ECTS

This course should be combined with the courses Sales Management and Sales Workshops. Selling is about influencing and the critical assets are interaction skills and the correct selling style for each customer and for each circumstance. The salesperson has to know not only the solutions that his or her company can offer, but also the market situation, in order to benefit from the prevailing conditions. The focus is on business to business selling.

Sales Management, 5091014, 5 ECTS

This course should be combined with the courses Industrial Sales Skills and Sales Process as well as Sales Workshop. Effective sales management is a key issue related to sales performance. Consistent competence development of sales personnel is essential for profitable operation under changing market conditions. Sales management includes activities required to lead, direct or supervise the personal selling efforts of an organization.

Sales Workshops, 3101024, 5 ECTS

This course should be combined with the courses Industrial Sales Skills and Sales Process as well as Sales Management. The students will participate in sales workshops. The students can practice their sales skills, partnering skills and sales management skills in role play exercises. The culmination of the course is the European Sales Competition, where the students' sales skills are evaluated on the basis of seller-buyer role plays.

International Operations, 3090045, 5 ECTS

The overall aim of the study unit is to increase the students' awareness of the content and significance of international business. The students learn to understand the concept of planning, implementation and evaluation of international operations. The significance of internationalization; The international environment; Gathering international market information; The strategic planning of international operations; Alternatives for internationalization; Export planning; Implementation and evaluation of international business

Professional Services and Productisation, 5091023, 5 ECTS

The study unit focuses on professional services and their marketing practices which are faced in the current businesses not only in the service sector but in industrial companies as well. Students are given an insight into the orientations in services marketing theory and their practical applications. They will gain basic understanding of professional services and the importance of their role in the modern marketing of firms in different fields. The further aim for the study unit is to introduce the students to productisation and commercialization issues in the context of service marketing. Students learn to plan productisation and marketing of professional services. The concept of services and customer-orientation; Problems and challenges in marketing of professional services; Service marketing process and service quality issues; Organising services; Productisation and commercialization of services; Means of competition in marketing of services; Marketing planning of professional services

Business Game, 1001078, 3 ECTS

The student improves his/her team work skills and understanding of business activities. The aim of the business game is to improve his/her managerial skills as well as skills in decision-making process and team work. The business game offers a case example, simulation and throughout knowledge of the different operations of a company – a knowledge which can be transferred to the real-life

situations and also different types of business sectors and clusters. Typically the business game gives the student a wonderful, different learning example, simulation of the “big picture” of the company environment, where many different skills and all previously learnt must be put into the practice. It teaches and gives entrepreneurial skills, project work skills as well as gives practical tools for today’s business world.

International Selling and Business Cultures, 3100027, 5 ECTS

The aim of the study unit is to increase the student’s awareness of the content and significance of selling and marketing communications in general in international business, and preparing them for an understanding of the concept of the international marketing mix. A further aim is to make the students understand cultural differences and customer behaviour in international business life, especially in the selling context.

INTERNATIONAL SEMESTER ON PURCHASING

- **For engineering students (industrial management, mechanical)**

Purchasing, 5091033, 5 ECTS

After completing this study unit, the student will be able to:

- Explain the different stages of the purchasing process
- Use cost analyses
- Compare quotations
- Use and explain Incoterms 2010
- Utilize the sources of information necessary for purchasing
- Describe various indicators measuring purchasing operations
- Prepare for purchasing negotiations
- Explain the similarities and differences of purchasing in different forms of business

Supply Chain Management (virtual course), 3060129, 5 ECTS

The student understands how the principles and strategies of business logistics affect its management. The student knows the key elements that have an effect on logistics and understands the impact of these elements on the firm’s service level, profitability and competitiveness. The student also gets basic knowledge to develop and manage logistics processes. He/she understands the potentials of data processing in business operation with a view of development both to the internal operations of an enterprise and the demand/supply chain.

Global Sourcing, 5091034, 5 ECTS

After completing this study unit the student will be able to:

- Manage terminology concerning purchasing legislation
- Agree and create purchasing agreements in international business
- Describe differences concerning contract law in various countries
- Apply a suitable purchasing strategy in different situations
- Decide what documents and payment transactions will be needed when importing goods and services and knows where to find them
- Explain the risks and costs of international purchasing

Responsible Business Management, 3100012, 5 ECTS

This course aims at providing the participants with the current tools and instruments for managing world-class business. For far too long business has concentrated on the profit mandate without regard to such issues like the environment and the sustainable future of the consumers. In this course, we are going to demonstrate that good business ethics makes good business sense. The world has witnessed thousands of liquidations, bankruptcies, mergers, alliances, and partnerships. Corporate scandals highlighted the need for improved business ethics and corporate disclosures of financial transactions. Thus the challenges and opportunities facing organizations of all sizes today are greater than ever.

International Operations, 3090045, 5 ECTS

The overall aim of the study unit is to increase the students' awareness of the content and significance of international business. The students learn to understand the concept of planning, implementation and evaluation of international operations. The significance of internationalization; The international environment; Gathering international market information; The strategic planning of international operations; Alternatives for internationalization; Export planning; Implementation and evaluation of international business

Professional Services and Productisation, 5091023, 5 ECTS

The study unit focuses on professional services and their marketing practices which are faced in the current businesses not only in the service sector but in industrial companies as well. Students are given an insight into the orientations in services marketing theory and their practical applications. They will gain basic understanding of professional services and the importance of their role in the modern marketing of firms in different fields. The further aim for the study unit is to introduce the students to productisation and commercialization issues in the context of service marketing. Students learn to plan productisation and marketing of professional services. The concept of services and customer-orientation; Problems and challenges in marketing of professional services; Service marketing process and service quality issues; Organising services; Productisation and commercialization of services; Means of competition in marketing of services; Marketing planning of professional services.

INTERNATIONAL SEMESTER ON PRODUCTION ENGINEERING

- **For engineering students (industrial management, mechanical)**

Production Planning and Control, 5091021, 5 ECTS

After completing the course the students:

- Can explain the differences between the various production methods (MTS, ATO, MTO)
- Will be able to explain the overall picture of production planning including the following
- Understand the basic principles of LEAN and JIT production
- Will be familiar with production optimization (simulation software used)

Topics: Sales and Operations Planning, Master Production Scheduling, Material Requirements Planning, Capacity Planning

Production Management with ERP, 5091019, 5 ECT

After completing the course the students:

- Understand the overall use of ERP systems in production management
- Will be able to create a product BOM structure (Microsoft Dynamic NAV)
- Will be able to define new machines to the system (Microsoft Dynamic NAV)

- Will be able to create routings for parts (Microsoft Dynamic NAV)
- Understand how production costs of a product are calculated in ERP

Welding and Machining, 5091018, 5 ECTS

After completing the course the students:

- Know basic metallurgy of welding
- Have hands-on experience of the following welding methods: MIG/MAG, manual metal arc welding, TIG and gas welding
- Will be able to calculate machining parameters for turning and milling operations
- Will be able to estimate the cost of machined pieces

Production Automation and Computer Integrated Manufacturing, 5091020, 5 ECTS:

After completing the course the students:

- Will be able to evaluate the profitability of automated machine invest
- Will be able to understand the benefits and drawbacks of automated production
- Have hands-on experience of programming robot by teaching
- Understand the direct link created between product design and manufacturing by using CAD/CAM-technology

Logistics and quality, 7090035, 5 ECTS

After completing the course the students:

- Will know what quality management is and how quality control, quality assurance and quality improvement are carried out in a logistics service company and in a production environment
- Will be familiar with the ISO standards and be able to establish a quality management system in a company following the ISO 9000 and ISO 14000 series requirements

Responsible business management, 5091002, 5 ECTS

After completing this course the students understand:

- The various strategic tools used in business organizations
- Planning related strategic management and innovative organizations
- The nature of strategy formulation, implementation, and evaluation activities
- The benefits of good strategic management
- The nature and role of vision and mission statements in strategic management
- How to conduct SWOT analysis for a business firm
- The Resource-Based View (RBV) in strategic management
- When particular strategies are the most appropriate ones to be pursued
- Why good ethics is good business in strategic management
- How companies can best ensure that their code of business ethics is used as a guide in decision-making instead of being ignored

INTERNATIONAL SEMESTER ON INTERIOR TEXTILE DESIGNS FOR THE MARKET

– For Design and Sales students only

September 2013 - January 2014

The international semester on Interior Textile Designs for the Market combines project management, industrial interior textile design and marketing in case study, in order to market the students' designs in Finland and at Heimtextil Fair in Frankfurt, Germany in January 2014. The students will get an understanding of international interior textile design and marketing. All the students will pay the costs concerning the fair, and the design students pay also the materials for their designs.

Design students have compulsory courses 31 ECTS. Sales students have compulsory courses 13 ECTS. All the students can choose also elective courses. The sales students are allowed to take also other studies from the Degree Programme in Professional Sales.

A - Research for the Project, 1 ECTS (Design and Sales students)

The distance learning task to research interior textile markets and to take contact to possible clients for selling the textile designs will be given in May and the task has to be done before the autumn term starts.

B - Research for the Project, 1 ECTS (Design students)

The distance learning task to research upcoming trends will be given in May and the task has to be done before the autumn term starts.

Trends and Design, 8 ECTS (Design Students)

The student learns to analyse and construe trends and make trend forecasts. The student is able to utilize the trend forecasts in generating ideas for collection design for marketing. The student understands how the designs are placed in comparison with the existing and upcoming trends.

Design of Industrial Interior Textile Collections, 9 ECTS (Design Students)

The student deepens the conception and design skills in marketing environment. The student increases her / his professionalism by co-operating with business. The student learns to design commercial interior textile collections for sale according to the companies needs. The collections can be CAD printouts for textiles, wall and wrapping papers and jacquards, or material based designs as woven, printed, embroidered or mixed media designs.

International Business Skills, 5 ECTS (Design and Sales Students)

The student knows how to market and sell across cultures. The student understands cultural differences and customer behavior in business life and trade-fair context. The student can sell the product by applying most feasible selling strategies for chosen target group and adjust selling arguments and styles according to target audience. The student learns to understand the concept of planning, implementation and evaluation of international operations. For trade fair organizers careful planning is vital because trade fairs involve many details.

Project Work - Case study, 5 ECTS (Marketing, Media, Graphic, Fair Stand groups) (Design and Sales students)

The practical project helps to learn and deepen the studied subjects: the project management, marketing, business and media management and communication skills. The design students deepen also their visual communication skills. The students work in small teams (Marketing, Media, Graphic, Fair Stand teams), which all have their own responsibilities but also co-operate together. All the students participate in marketing and selling of the designs in Finland and take contacts to possible clients abroad.

Marketing at Heimtextil Fair - Case Study, 2 ECTS (Design and Sales students)

The aim of the course is to gain a wider perspective in international textile design and marketing. The students sell their group's designs at Heimtextil Fair in Frankfurt, Germany. Heimtextil Fair, the biggest interior textile Fair in Europe, will take place in the 2nd week in January.

DEGREE PROGRAMME IN SUSTAINABLE DEVELOPMENT/ INTERNATIONAL SEMESTER ON ENVIRONMENT AND NATURAL RESOURCES

- **For all the students who are interested**

Foreign Lecturers, 6021046, 3 ECTS

In this course the students can participate in different lectures, seminars and conferences on sustainable development and reflect their learning by writing a learning diary.

Ecological Assessment of Products and Services, 6021020, 5 ECTS

Objectives: The student knows how to compare the ecology of products and services and to use different analyses and methods in planning and decision-making. The student recognizes the environmental impacts of products and services. The student learns about eco-efficiency and different methods of measuring and promoting eco-efficiency.

Pro Healthy Life, 6021045, 3 ECTS

The objective of the course is to give students knowledge about the linkages between environment and human health. Students will acquire knowledge of the central areas of environmental health: air, water and the impacts of nutrition and through individualised course work students will be given the opportunity to critically examine one of the topics. This is a virtual course with no specific starting date.

Climate Change Locally, 6021043, 3 ECTS

A virtual course with no specific starting date. The purpose of the course is to learn more about the effects of climate change locally and to know your own chances to influence climate change.

National Parks of Finland, 6021049, 3 ECTS

On the completion of the course, the students are acquainted with the national parks and understand their importance in nature protection and in people's wellbeing. This is a virtual course with no specific starting date.

Archipelago Sea – Baltic Sea 6021050, 3 ECTS

Learning outcomes: the students will get to know the characteristics of the Baltic Sea and its archipelago and the importance of protecting it. They learn about methods that are more favourable for the environment and understand how daily choices impact the environment and near-by water areas. On the completion of the course the students are familiar with the problems that occur in the Baltic Sea and understand the requirements of different user groups. This is a virtual course with no specific starting date.

Environmental Marketing, 6021053, 3 ECTS

The students are introduced to the various concepts of sustainability with environmental marketing as an important framework for better business. Participants gather knowledge of green marketing and apply the knowledge in real business settings.

Water Quality Management, 6021014B, 2 ECTS

Note, this course is only for the students of environmental studies (sustainable development, environmental engineering, environmental sciences or equivalent)

The students receive information about water quality problems in fluvial systems and the causes and effects of such problems. The students also learn how to interpret research results and are able to apply this information in solving water quality problems in a sustainable manner.

Environmental and Natural Resource Valuations, 4020139B, 2 ECTS

Note, this course is only for the students of environmental studies (sustainable development, environmental engineering, environmental sciences or equivalent). The course description will be available later.

DEGREE PROGRAMME IN MECHANICAL ENGINEERING

- **For engineering students (mechanical, industrial management)**

Various projects within Mechanical Engineering, 5 ECTS each project

Topics to be defined. 1 ECTS credit equals to 27 hours of work.

CAE/Finite Element Method, 7030284, 6 ECTS

This course is provided by the degree programme in Mechanical Engineering. The course provides computer based methods to analyze the strength of materials (Computer Aided Engineering/Finite Element Method). The objective is to extend the strength analysis to more complicated structures, where the application of manual analysis methods is difficult and may be unreliable. In the first part of the course, starting from simple struss and beam structures, one continues to the analysis of complicated space frames. In the second part of the course the finite element method is applied to structures containing plates and shells and three dimensional solids. Both static and dynamic loading conditions are considered. The application of computer based methods requires a solid understanding of certain theoretical aspects. Therefore, for example the theory of plates and shells and of structural vibrations is considered and also an introduction to multiaxial stress state is made and the failure hypotheses are presented.

Basics of Computing, 031003D, 2 ECTS

The aim of the course is to help the student to use computer effectively in his/her studies. The programs used are Microsoft Excel and Word.

Physics laboratory, 5031004C, 4 ECTS

The course consists of ten basic laboratory experiments and a workshop. The experiments are related to topics including thermal expansion, elasticity, electric current and voltage, friction, toy car crash test, etc.

Prerequisites: An introductory course in physics is recommended.

Attendance in laboratory experiments is mandatory. Maximum 6 exchange students.

Data-analysis with SPSS, 5031002B, 3 ECTS

Basics of statistics; probability, normal and binomial distribution, confidence interval, testing. In each lesson students have a task, which is solved with computer by the statistical program SPSS. The maximum number of students taken in to the course is 22 (computer for each student in a classroom).

Minimum 5 exchange students. Course will not be available if less than 5 students enrol.

Production Technology, 5031011, 3 ECTS

After a completed study unit the student has a grasp of the relevant machine tools, NC programming and cutting tools, including the parameters and cutting geometry of the cutting tools; is capable of devising a machining plan and of selecting the correct machine tool, the method of securing the tool, and the cutting parameters; can specify the operational principles of the production equipment and tools used for sheet metal work and welding techniques; knows the concepts, definitions and performance parameters of sheet metal work and welding techniques; can plan the operations needed for sheet metal work and welding production as well as the quality factors related to materials and manufacturing.

The basics of metal cutting, tool geometry, cutting parameters, cutting techniques and machine tools, securing of workpieces, production systems in machining, practice assignments, sheet metal cutting methods, processing techniques required by different materials, sheet forming techniques, the most important welding methods, steel weldability, mechanisation of production, quality factors in welding technology, quality management, main factors affecting the design of a steel plate structure.

INTERNATIONAL SEMESTER ON CIVIL ENGINEERING

- For civil engineering students only

It is also possible to choose single courses out of this semester.

Research Hatchery, 1-8 ECTS

For civil engineering students only. Combination of group work and project work. Students work in small groups with existing projects: assignments are given by companies and other organizations and ~~voluntary~~ students are divided into small teams of three-five persons. Learning takes place under counselling, giving a chance to support the students' learning process based on personal aspects of interest. The students' own activity and team work skills are emphasized. Each research hatchery will be started with one or several meetings, where the topic and the research methods will be carefully studied. The teacher has mainly a counselling role.

In addition, the teacher provides expert lectures or guidance when needed.

Cast-in-situ Structures, 7040289A, 3 ECTS (within structural engineering)

For civil engineering students only. The student becomes familiar with the phases and practices related to the design of cast-in-situ structures and is able to produce the design documents. Material and manufacturing techniques; behavior of statically indeterminate slab structure; changes in stiffness. Design practices and structural solutions per structural member. Beams, slabs, calculation methods, foundations. Designing reinforcement for in-situ cast structures. Design documents. CAD design. Work practices at an engineering office.

Prefabricated Concrete Structures, 7040289B, 3 ECTS (within structural engineering)

For civil engineering students only. The student becomes familiar with the design tasks related to prefabricated concrete construction and the design practices of the most important prefabricated slabs. S/he understands the need for stiffening in different types of structures, masters load calculation and the design of stiffening members and joints. Operation of a concrete prefabrication factory: manufacturing, transportation, installation. Prefabricated products: frame structures,

elevations. Design and dimensioning of prefabricated products, materials, reinforcement, fixtures. Structural members: columns, beams, slabs, separating walls, external wall elements.

Masonry, 7040292B, 3 ECTS (within structural engineering)

For civil engineering students only. The student becomes aware of applications and uses for masonry and learns to design brick and block structures. There will be a project individualised for exchange students.

Typical uses, materials, design and dimensioning of brick and block structures, beams, columns, walls. Structural details. Work methods. Lifespan and renovation of masonry. Historical background.

Basics of Renovation Engineering, 7040313A, 3 ECTS (within Real Estate Renovation)

For civil engineering students only. After the course, the student is familiar with the building methods and structures typical of different periods, can assess the building for different utilizations, is able to carry out a basic condition assessment of a building, knows what the common types of damage are, and how such damage is repaired/how the structures are reinforced, is aware of the causes and repair methods of moisture damage, knows the causes of damage in and is capable of basic repair and reinforcement planning of foundation, frame and external wall structures, identifies structural spoilage and is familiar with the basic principles of building restoration.

There will be a project individualised for exchange students.

Condition Survey, 7040313B, 2 ECTS (within Real Estate Renovation)

For civil engineering students only. After the course, the student is familiar with the building methods and structures typical of different periods, is able to carry out a basic condition assessment of a building, knows how different structures are surveyed as well as masters the observation and measurement methods applied in condition assessment.

There will be a project individualised for exchange students.

History of Finnish Architecture, 7040316B, 3 ECTS (within Real Estate Renovation)

For civil engineering students only. Finnish architecture from prehistoric times to the present; a chronological introduction to the building stock. Churches, castles, other public constructions, and housing. History of urban and rural building traditions. Practice in timing buildings and identifying building trends. Examples of interiors and furniture. Possible excursions.

Construction Quality Management, advanced level, 7040233B, 2 ECTS

(within Production Management) For civil engineering students only.

Organizing a project, reporting, inspection and control, ending a project. Quality control systems and their maintenance; securing quality in planning and during construction. Based on the lectures, the student draws up e.g. a quality assurance plan for a small building project, as well as a plan for organizing, supervising and controlling a project. There will be a project individualised for exchange students.

Foundation Work, Frame Mounting and Prefabricated Construction, 7040234A, 3 ECTS
(within Production Management). For civil engineering students only.

After the course, the student is familiar with common foundation and frame types, how they are built and what requirements they are to meet, as well as with prefabricated structures, mounting work and the planning of mounting work. Foundation work, work on frame structures, different types of framework and the requirements thereof, prefabricated parts, mounting, and planning of mounting.

Water Management in Sparsely Populated Areas 7040245A, 2 ECTS

(within infrastructure engineering) For civil engineering students only.

After the course, the student masters the requirements for water management in sparsely populated areas. The student can estimate the environmental effects in water management in sparsely populated areas. There will be a project individualised for exchange students.

Planning, 7040249A, 1 ECTS (within infrastructure engineering)

For civil engineering students only. After the course, the student is familiar with the town planning system. The student can estimate the effects of construction on the environment, is aware of the recent changes in the building legislation relating to town planning, and is able to use CAD to create a town plan.

Urban Planning, 7040249B, 1 ECTS (within infrastructure engineering)

For civil engineering students only. After the course, the student is familiar with the basics of urban structure and the concept of space, the effect of the surroundings on the pleasantness and habitability of an area, landscape structures and the role of green area development in landscaping, as well as with the environmental impact assessment procedures. The student is able to estimate the effects of construction on the environment.

Slow Speed Streets, Pedestrian Streets, 7040249C, 2 ECTS (within infrastructure engineering)

Main focus at the course is in traffic and how to control it in densely populated areas. All the means to order different parts of streets is included.

The course is involved with surrounding and environment, esthetical aspect, how to organize slow speed streets, public transportation and also pedestrian streets.

DEGREE PROGRAMME IN PROFESSIONAL SALES

- **For all the students who are interested**

Business Economics, 3100010, 3 ECTS

The students understand the functioning of different kinds of economies and their effect on business and trade. The students also become aware of the reasons for economic fluctuations and the development behind them. Economic environment is analyzed as an essential part in a generic business environment. This course increases the students' awareness of the development and different aspects in international economy. Connections between domestic and international business are discussed. Different kinds of economies and economic theories; Demand and supply in the economy; Equilibrium in the economy; Economic fluctuations; Economic growth; Employment/unemployment; Inflation; Monetary policy; Interest rate and exchange rate; Competitiveness on different levels; Structure and trends of international economics; Globalization and global trade; Problems and opportunities in the global economy

Business Game, 1001078, 3 ECTS

The student improves his/her team work skills and understanding of business activities. The aim of the business game is to improve his/her managerial skills as well as skills in decision-making process and team work. The business game offers a case example, simulation and throughout knowledge of the different operations of a company – a knowledge which can be transferred to the real-life situations and also different types of business sectors and clusters. Typically the business game gives the student a wonderful, different learning example, simulation of the “big picture” of the company environment, where many different skills and all previously learnt must be put into the practice. It

teaches and gives entrepreneurial skills, project work skills as well as gives practical tools for today's business world.

Project Hatchery, 7000180, 3 ECTS

Students learn to work in teams. They also learn project skills. Introduction to project hatchery Working in a project hatchery, Poster, Presentation, Competition (best hatchery).

International Selling and Business Cultures, 3100027, 5 ECTS

The aim of the study unit is to increase the student's awareness of the content and significance of selling and marketing communications in general in international business, and preparing them for an understanding of the concept of the international marketing mix. A further aim is to make the students understand cultural differences and customer behaviour in international business life, especially in the selling context.

DEGREE PROGRAMME IN AUTOMOTIVE AND TRANSPORTATION ENGINEERING

- **For all the students who are interested**

Order and Delivery Control, 7010289, 5 ECTS

The objective is to provide students understanding of complete goods transportation chains; knowledge of each individual part and factor belonging to the chain; designing, controlling as well as developing such chains.

Logistics and Quality, 7010292, 5 ECTS

The course covers issues about the concept of quality, quality systems and their relation to logistic processes. The contents include general facts about quality, quality thinking, quality of products and processes, quality measurement systems, ISO 9000 series, responsibilities, quality manual, audits, and case examples.

New Fuels and Drive Systems for Vehicles, 7010317, 5 ECTS

The objective is to give the students detailed information about different emission components and what their effects are. Emphasis will be put on global warming and climate change, which is the main reason why alternative fuels and drive systems are being investigated. The course introduces new fuels like alcohols (methanol, ethanol), gaseous fuels (LPG, CNG, biogas), biodiesel and hydrogen. New drive systems covered will include the latest innovations in conventional engine technology, hybrid and electric drives, fuel cell etc.

DESIGN STUDIES

Design History, 6050317, 3 ECTS

The student will gain a basic grasp of design.

The evolution of design and industrial art from the 1900's to 2000: jugend, art deco, functionalism, the decades from the 40's onwards. Examples of different designers and their work.

Note: The course descriptions will be available later for the design projects, or are subject to discussions with the department.

GENERAL COURSES

- **For all the students who are interested**

Intercultural Communication, 1000233, 3 ECTS

The course description will be available later.

Finnish for Exchange Students, 1000474, 3 ECTS

The student understands the basic structures of the Finnish language and is able to cope in everyday situations. Basic grammar; Everyday situations; Finnish culture

Get Finternational, 1000393, 3 ECTS

For both Finnish and international students. The aim for the international students: gaining a wider perspective into the Finnish society, taking part in it more actively, learning how to analyse the adaptation to a foreign culture, learning how to interact with the representatives of different cultures.

<http://getfinternational.tuas.fi>

RESEARCH AND DEVELOPMENT (R & D) 1-5 ECTS

- **For all the students who are interested**

There are projects available for exchange students depending on the study field.

**THANK YOU FOR CHOOSING US
TERVETULOA - WELCOME!**

