2024

Engineering Management BSc

STUDY PROGRAM

UNIVERSITY OF DUNAÚJVÁROS

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Description of the Study Program

Engineering Management BSc	
The higher educational institution responsible for the study program	University of Dunaújváros (Dunaújvárosi Egyetem)
Identification number of the higher educational institution	FI60345
Address	1/A Táncsics Mihály utca, 2400 Dunaújváros, Hungary
Head of the higher educational institution	Dr. habil. István András, Ph.D., Rector
People responsible for the study program	
The institute responsible for the study program	Institute of Social Sciences
Director of the institute (name, scientific degree)	Dr. Adrea Keszi-Szeremlei Ph.D, College Professor
Responsible person for the study program (name, scientific degree)	Dr. habil Mónika Rajcsányi-Molnár Ph.D., College Teacher
Specializations and the person responsible for the specialization (name, scientific degree)	
Logistics specialisation:	Dr. Lajos Veres Ph.D., College Professor
Details of the study program	
Entry requirements	- General Certificate of Education or a certificate of secondary school final exam, that certificate, which is required to start a higher educational study program in the home country of the student, - The mother tongue of a foreign student is qualified as advanced language exam according to the Hungarian regulations.
Level	undergraduate
Qualification	bachelor (BSc)
Description of the qualification in Hungarian	műszaki menedzser
Description of the qualification in English	Engineering Manager

Duration of study	7 semesters (3 and a half year) full-time program
Credit points to be acquired	210
Educational goals of the study program	The objective(s) of the training is to train engineering managers, who have acquired adequate knowledge of natural sciences, engineering, economics and management in order to be able to resolve IT, financial and human resource related problems of products and services in an integrated manner. Furthermore, they must have in-depth knowledge that is adequate to enable them to continue with their studies in the graduate, master level.
Prerequisite(s) of starting a specialization and the way of classification	To take the Logistics specialisation the student must complete the study requirements of the following subjects until the end of semester nr. 4. DUEN-TVV-122 Enterpreneurship. DUEN-TVV-114 Management DUEN-TVV-219 Operations and Quality Management In the semester determined in the curriculum the Logistics specialisation will be started.
Work placement/Internship	Min 6 weeks in an internship place.
Prerequisitie(s) of issuing the pre-degree certificate (absolutorium)	The university leaving certificate certifies the successful completion of the exam requirements in accordance with the curriculum and the completion of the other study requirements (e.g. physical education) and the collection of the required number of credit points defined in the study and output requirements (except the credit points related to the thesis). This certificate is a proof without qualification and evaluation that the student has fulfilled all the study and exam requirements defined in the curriculum.
Thesis	The thesis research means the solution of a Engineering management problem or the elaboration of a research task on such a special field, on which it can be completed on the basis of the knowledge acquired by the student during the years of his studies with the guidance of the first and second supervisor in one semester. The candidate proves with writing the thesis that he has adequate expertise in the practical use of the factual knowledge that he has learnt, and that he

	is able to do the tasks of an engineering business manager and that he is familiar not only with the course material, but with the related special literature, as well, and he is able to apply that in a value-creating way. Formal requirements: the extent of the thesis must be 40 – 60 pages.
Prerequisite(s) of the final exam	The prerequisites of the final exam are the receipt of the university leaving certificate and the thesis accepted for evaluation.
The final exam	The aim of the final exam is to check and assess the knowledge, skills and abilities required for the obtaining of a certificate on the study program. Students are also expected to prove their competence in applying the acquired theoretical knowledge in professional practice. The final exam consists of defending the student's thesis and an oral exam on the subjects defined in the curriculum (FES1, FES2)
Subjects of the final exam	**- Final Exam Subjects 1 (FES1) (Complex):** DUEN-TVV-114 Management DUEN-TVV 111 Human Resource Management DUEN-TVV 216 Management Methods **- Final Exam Subjects 2 (FES2) (Green Logistic Specialization):** DUEN-TVV-212 Basics of Logistics DUEN-TVV-121 Business Logistics DUEN-TVV-214 Logistics Management DUEN-TVV-110 ESG approach for businesses
Average of the certificate	The average of the certificate should be calculated in the following way: (FE + D + SA)/3. Where (FE) is the mathematical average of the marks of the final exam subjects (FES1, FES2); (D) is the mark awarded for the thesis by the final exam committee; and (SA) is the cumulative average of the study marks weighted with the credits points obtained by the student.
Qualification of the certificate	excellent 4,51 - 5,00 good 3,51 - 4,50 satisfactory 2,51 - 3,50 pass 2,00 - 2,50
Preconditions of issuing the certificate	The precondition of the issue of certificate to prove the completion of higher educational

	studies is the successful final exam.
Language of Training	English
Mobility window	During the program, students should ideally take advantage of the mobility window in the 4th and 5th and 7th semesters. Since mobility depends on both the capacity of the foreign institution and the student's travel options, this window is flexibly integrated into the curriculum by the principles outlined in Section 45 of the Student Requirements System Study and Examination Regulations. A designated member of the International Relations Office will assist in selecting the host institution.
Physical Education	For full-time students, the minimum training time is. 2 hours/week for 4 semesters of the minimum duration.
Study mode	Full time

Required competencies:
The students graduated in Engineering Business Management BSc know - the basic concepts and major correlations of the area of engineering and management; - the science, arts and economic and social (inter)connections of production and supplying processes; - the principles of operation of organisations; - the engineering, economical and management like activities in organisations and their inter-relations; - the knowledge necessary for founding and managing the manufacturing and supplying enterprises; - the principles and usable results of marginal areas of related fields of science (e.g. sociology, psychology) and engineering and management sciences; - the requirements of environmental protection, safety engineering, quality assurance, industrial-law protection and consumer protection. The students graduated in Engineering Business Management BSc can and are able - organise, manage and control technological, production, logistic, quality assurance and information technological processes; - prepare business plans; - fulfil decision-preparatory tasks; - implement innovation strategies; - manage groups at workplaces; - manage information; - fulfil the tasks of human resource management; - surveying the accountancy system; - fulfil operational tasks of production management, provide production and supply activities;

- define quality and efficiency indices; - analyse the competitors, products and the possibilities of bringing products to the market. The graduates of the course have skills for co-operation and making contacts, communication skills, knowledge of foreign languages, have a sense of responsibility, related to the engineering profession; they are quality conscious, and they have evaluation, self-evaluation, analysing and synthesizing skills.

Curricular Web

Course descriptions of the Engineering Management BSc study program

Engineering Manager BSc.																														
Subject code	Subject name	Credit	Requirement	Semester - Classes per week																										Prerequisite
				1			2			3			4			5			6			7							
				T	P	L	T	P	L	T	P	L	T	P	L	T	P	L	T	P	L	T	P	L						
DUEN-IMA-100	Tutorial Mathematics	0	M	0	2	0																								-
DUEN-IMA-151	Mathematics 1.	5	E	1	2	0																								-
DUEN-MGT-111	Engineering representation	5	M	1	2	0																								-
DUEN-MUT-151	Engineering Physics	5	E	1	1	1																								-
DUEN-TKM-150	Legal Knowledge	5	E	3	0	0																								-
DUEN-TKT-151	Economics 1.	5	E	1	2	0																								-
DUEN-TVV-122	Entrepreneurship	5	M	1	2	0																								-
DUEN-IMA-211	Mathematics 2.	5	M				1	2	0																					DUEN-IMA-151
DUEN-MST-210	Industrial materials	5	M				1	0	2																					-
DUEN-MUT-250	Heat and Fluid Dynamics	5	E				1	1	1																					DUEN-MUT-151
DUEN-TKT-211	General and Business Statistics	5	M				1	0	2																					-
DUEN-TKT-217	Principles of Accounting	5	M				1	2	0																					-
DUEN-TVV-220	Business economics	5	M				1	2	0																					-
DUEN-IMA-110	Mathematics 3.	5	M							0	3	0																		DUEN-IMA-151
DUEN-MGT-112	Engineering construction	5	M							1	2	0																		-
DUEN-MUA-110	Technology of Structural Materials	5	M							1	0	2																		DUEN-MST-210
DUEN-MUG-152	Mechanics 1.	5	E							1	2	0																		-
DUEN-MUG-211	CAD	5	M							0	0	3																		-
DUEN-TVV-114	Management	5	M							1	2	0																		-
-	Optional course	5	-										-	-	-															-
DUEN-MUG-222	Basics of machine design	5	M										2	1	0															DUEN-MUG-212, DUEN-MUG-152, DUEN-
DUEN-MUG-251	Production Technology	5	E										2	1	0															-
DUEN-TVV-215	Marketing	5	M										1	2	0															-
DUEN-TVV-219	Operations and Quality Management	5	M										1	2	0															-
DUEN-TVV-250	Strategic planning	5	E										1	2	0															DUEN-TVV-114
-	Specialization	20	-													-	-	-												-
DUEN-ISF-010	Informatics	5	M													0	0	3												-
DUEN-TKT-114	Basic of Finance	5	M													1	2	0												-
-	Specialization	15	-																-	-	-									-
-	Optional course	5	-																-	-	-									-
DUEN-TGT-214	Ergonomics and health promotion	5	M																1	2	0									-
DUEN-TVV-090	Thesis-Research Methodology	0	S																1	0	0									-
DUEN-TVV-116	Project Management	5	M																1	2	0									-
-	Specialization	5	-																			-	-	-						-
DUEN-MUT-110	Environmental protection and energy management	5	M																			2	0	1						-
DUEN-TVV-091	Thesis writing MMENBSC	15	S																			1	0	0						DUEN-TVV-090
DUEN-TVV-093	Internship MMENBSC	0	S																			0	0	0						DUEN-TVV-091
DUEN-TVV-111	Human Resource Management	5	M																			1	2	0						-
	Number of Theoretical/Practice/Lab classes per we			8	11	1	6	7	5	4	9	5	7	8	0	1	2	3	3	4	0	4	2	1						
	Total number of classes per week			**20**			**18**			**18**			**15**			**6**			**7**			**7**								
	Total credit points			**210**																										
GREEN LOGISTICS																6	6	0	4	3	1	1	2	0						
																12			8			3								
				20			18			18			15			**18**			**15**			**10**								

GREEN LOGISTICS																										
Subject code	Subject name	Credit	Requirement	Félévek - féléves óraszám																						Prerequisite
				1			2			3			4			5			6			7			
				T	P	L	T	P	L	T	P	L	T	P	L	T	P	L	T	P	L	T	P	L	
DUEN-MGT-153	Basics of energy saving and conservation	5	E													2	1	0							-
DUEN-TGT-110	ESG approach for businesses	5	M													2	1	0							-
DUEN-TVV-119	Analysis of Business Cases	5	M													1	2	0							-
DUEN-TVV-212	Basics of Logistics	5	M													1	2	0							-
DUEN-MGT-216	Novel techniques of environmental protection	5	M																2	0	1				-
DUEN-TVV-120	Enterprise Information Systems	5	M																0	2	0				DUEN-TVV-220, DUEN-ISF-010
DUEN-TVV-214	Logistic Management	5	M																2	1	0				-
DUEN-TVV-121	Business Logistics	5	M																			1	2	0	DUEN-TVV-212
	Number of Theoretical/Practice/Lab classes per week			0	0	0		0	0	0	0	0	0	0	0	6	6	0	4	3	1	1	2	0	
	Total number of classes per week			0			0			0			0			12			8			3			
	Total credit points			40																					

Tutorial Mathematics

Subject name		In Hungarian	Matematika felzárkóztató								Level	**BSc**	
		In English	**Tutorial mathematics**								Subject code	**IMA-100**	
Responsible Educational unit name			**Institute of Informatics**										
Name of the required preliminary study											Subject code		
Type		Study load per week (in hours)							Requirement		Credit	Teaching language	
		Theoretical		Practice			Lab						
Full time	**150/26**	per Week	**0**	per Week	**2**		per Week	**0**	**Signature**		**0**	**English**	
Part time	**150/10**	per Semester	**0**	per Semester	**10**		per Semester	**0**					
Course leader				Name	**Dr. Antal Joós**						Position	**associate professor**	

Training course aims	**Educational goals, development objectives** Based on the preliminary knowledge assessment, this course is recommended for students studying in the bachelor courses in economics and management, materials engineering, mechanical engineering, business informatics, computer engineering, technical management, and in the higher vocational courses in engineering, economics, and management. The aim is to acquire basic mathematical knowledge, to raise students' mathematical knowledge, skills, and competences to a level appropriate for the preparation of higher education studies and for the completion of mathematics courses.	
Typical transfer methods	Theoretical	-
	Practice	Classroom exercises, student-prepared papers, presentations, case studies.
	Lab	-
	Misc.	-
Requirements (expressed study results)	**Knowledge** Students know the methods and procedures needed to solve mathematical problems in their field. Possesses the knowledge and understanding of the mathematical, linear algebraic literacy required for the field of specialisation.	
	Ability Ability to apply the mathematical knowledge and activities learned. Ability to apply the problem-solving methods and procedures learned. Ability to develop and defend their own solution plans in discussions (argumentative debating skills) in relation to the mathematical concepts learnt. Ability to organise his/her own learning process effectively, to find and use different learning resources (print, electronic).	
	Attitude Open to learning about and embracing mathematically based, applied mathematical developments and innovations related to your qualifications and area of expertise. Interested in new methods and tools related to the field.	
	Autonomy and Responsibility Taking responsibility for your own work and the work of others.	
Short description of the subject content	The material for the intermediate mathematics exam. Operations with complex numbers. Set theory, the concept of a function. Number sequences, powers, roots, order of operations. Logarithm, solutions of linear and quadratic equations. Solving problems in text. Exercise problems from the numeracy exercise in Engineering Mathematics 1.	
Forms of student activity	- Task solving with guidance 60 % - Independent processing of tasks 40 %	

Required reading and availability	• Lay, D. C.: Linear Algebra and its applications, 4th edition, Addison-Wesley, 2012. • Stewart, J.: Complex Numbers, Additional Topic to Essential Calculus, 2nd edition, 2013, pp. 1-11. • Smith, R. T., Minton, R. B.: Calculus: Early transcendental functions, 4th edition, McGraw Hill, New York, 2012.
Recommended readings and availability	Electronic content and learning material in Moodle and/or in Neptun systems.
Description of tasks/measurement procedures to be submitted	-
Description and schedule of the midterm tests	During the semester, full-time and correspondence students write 1 final examination in week 13. The final examination is assessed according to the Examination and Study Regulations.

Mathematics 1.

<table>
<tr><td colspan="2" rowspan="2">Subject name</td><td>Hungarian</td><td colspan="3">Matematika 1.</td><td colspan="3">Level</td><td>A</td></tr>
<tr><td>English</td><td colspan="3">Mathematics 1.</td><td colspan="3">Code</td><td>DUEN(L)-IMA-151</td></tr>
<tr><td colspan="10">0</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="8">Institute of Information Technology</td></tr>
<tr><td colspan="2">Name of prerequisite subject</td><td colspan="8"></td></tr>
<tr><td colspan="2" rowspan="2">Type</td><td colspan="3">Class hours / week</td><td colspan="3" rowspan="2">Requirements</td><td rowspan="2">ECTS</td><td rowspan="2">Language of instruction</td></tr>
<tr><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td>Full time course</td><td>150/39</td><td></td><td>1</td><td></td><td>2</td><td></td><td>0</td><td rowspan="2">E (Exam)</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Long distance course</td><td>150/15</td><td>per Semester</td><td>5</td><td>per Semester</td><td>10</td><td>per Semester</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for subject</td><td colspan="2">Name</td><td colspan="3">Dr. Joós Antal</td><td>Position</td><td>Associate Professor</td></tr>
<tr><td colspan="2" rowspan="2">Educational goal (competencies to be acquired)</td><td colspan="8">Short description of the subject's goal
A mathematical theory is introduced to solve quantitative problems in technical and other fields.</td></tr>
<tr><td colspan="8">Education history, development goals
Methods of problem solving in the course topics are introduced and ability for students to use these methods are developed.</td></tr>
<tr><td colspan="2" rowspan="4">Typical transfer ways</td><td>Theoretical</td><td colspan="7">Introducing notions and methods in lecture hall, using blackboard.</td></tr>
<tr><td>Practice</td><td colspan="7">Teaching in small groups, solving computational and applied exercises.</td></tr>
<tr><td>Lab</td><td colspan="7">Teaching in small groups, in computer labs.</td></tr>
<tr><td>Other</td><td colspan="7"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements (expressed in educational results)</td><td colspan="8">Knowledge
Knowing basics mathematical background and theoretical concepts. Knowing and understanding of the concepts needed in further studies. Basics in applying a computer algebra system.</td></tr>
<tr><td colspan="8">Ability
Able to use the mathematical methods learned.</td></tr>
<tr><td colspan="8">Attitude
Open-minded for the mathematical innovation on their field.</td></tr>
<tr><td colspan="8">Autonomy and Responsibility
Responsible for their results.</td></tr>
<tr><td colspan="2">Brief description of the subject content</td><td colspan="8">System of linear equations. Matrices. Determinants. Eigenvalues, eigenvectors. Set theoretical background. Functions of one variable. Basic properties of functions of one variable. Limits of functions and sequences. Differential calculus of functions of one variable. Differentiation rules. Mean value theorems. Applications of derivatives. Integral calculus of functions of one variable. The definite integral. The indefinite integral and its properties. Basic properties of functions of several variables. Differential calculus of functions of several variables.</td></tr>
<tr><td colspan="2">Forms of student activity</td><td colspan="8">Directed learning of theoretical material (10%), Independent learning of theoretical material (30%), Directed exercise solving (30%), Independent exercise solving (30%)</td></tr>
<tr><td colspan="2">Compulsory reading and its availability</td><td colspan="8">-Faragó, I. et al. Introductory Course in Analysis, ELTE, Bp, 2009. http://www.cs.elte.hu/~simonp/jegyzet_2_ford.pdf</td></tr>
<tr><td colspan="2">Recommended reading and its availability</td><td colspan="8">-Talata, I.: A Guide to Mathematical Analysis, Dunaújváros, 2007, pp. 1-79. Electronic Study Guide.
-Smith, R.; Minton, R.: Calculus, Early Transcendental Functions, 3rd ed., McGraw-Hill, 2006
-Finney, R. L.; Thomas, G. B.: Calculus, Addison-Wesley, New York, 1990.</td></tr>
</table>

Description of midterm tests	There will be four midterm exams (week 3, 6, 9, 12 for 10 points maximum each) The midterm exams consist of questions on theoretics and applied problems as well. 30 minute is provided to take each midterm exam.

Engineering representation

Name of the subject	in Hungarian	Műszaki Ábrázolás							Level	A	
	in English	Engineering representation							Code of	DUEN-MGT-111	
Responsible educational unit		Institute of Technology, Department of Energy and Mechanical Engineering									
Name of the required prior learning											
Type		Hours per week						Requirement	Credit	Language of education	
		Theoretical		**Practice**		**Lab**					
Nappali		Weekly	**1**	Weekly	**2**	Weekly	**0**	**F**	**5**	**Hungarian**	
Correspondent		Half-yearly	**5**	Half-yearly	**10**	Half-yearly	**0**				
Teacher responsible for the subject		Name		Dr. Gábor Vizi					schedule:	Associate Professor	

Training objective of the course	**Objectives, development objective**	
	The student should be able to perform any variation of the basic constructions found in descriptive geometry. Recognise the elementary constructions needed to solve various complex problems and be able to determine their correct sequence. Be able to select the optimal solution for a given situation from a range of possible solutions. The student should be familiar with the theory and practice of technical drawing projections and sections. The student should be able to edit technical drawings of machine parts using conventional tools, to read technical drawings. The student should be able to construct dimensional drawings of machine parts.	
Typical delivery methods	Theoretical	All students in a large lecture, using lecture, Power Point and overhead projector
	Practice	Small group exercises for up to 25 people, sketching and editing
	Lab	
Educational objective (in terms of learning outcomes)	**Knowledge**	
	You know the terminology, key concepts and theories related to your field. You have a comprehensive knowledge of the main theories and problem-solving methods in your field. Basic knowledge of machine design principles and methods, machine manufacturing technology, control procedures and operating processes. Comprehensive knowledge of the operating principles and structural units of the machines, power tools, mechanical equipment and tools used. Understand, characterise and model the structure and operation of the structural units and elements of mechanical systems, the design and interrelationship of the system components used.	
	Ability	
	Performs the job according to his/her qualifications. Ability to plan, organise and carry out independent learning. Ability to identify routine professional problems, to identify, formulate and solve them (using standard operations in practice) against a theoretical and practical background.	
	Attitude	
	Open to learning about and embracing developments in machine design related to his/her qualifications and area of expertise. Interested in new methods and tools related to the field.	
	Autonomy and responsibility	
	Taking responsibility for your own work and the work of others.	
Short description of the subject content	Image plane, coordinate system, projection. Representation of a point, real line and point image. Law of projection and of change of view. Mutual positions of spatial elements. Projections dependent on the positions of a straight line, lines of deviation and intersection. Transversals, notable lines of a plane. True magnitude of the plane, constructions with rotation. Intersection of two planes, angles of inclination, distances. Solving problems with basic constructions. Basic standards of technical drawing design. Theoretical overview of projection systems in engineering practice. Application of views, views. Use of sections and sections. Dimensioning on engineering drawings. Grids of dimensions.	

Types of student activities	Theoretical processing with guidance 20 % Theoretical processing with guidance 20 % Problem solving with guidance 20 % Problem solving with guidance 40 % Laboratory measurements with guidance - Preparation of laboratory reports -
Required literature and contact details	Illustrative Geometry Basic Tasks (Guide and practical exercises, Tamás Zahola) László Tóth- Tamás Zahola: Mechanical Engineering. Zahra Zahola. Főiskolai Kiadó
Recommended literature and contact details	Károly Koffán: 15 lectures. 15 lectures. Főiskolai Kiadó. Koffán Károly: 15 exercises. College notes. College Publishing House.
Description of the tasks to be submitted/measurement reports, other reporting	
Description and timetable of the workshop	

Engineering Physics

Subject name		Hungarian	Mérnöki fizika						Level	A		
		English	Engineering Physics						Code	DUEN(L)-MUT-151		
Responsible educational unit			Institute of Engineering									
Name of prerequisite subject												
Type		Class hours / week							Requirements	ECTS	Language of instruction	
		Theoretical		Practice		Lab						
Full time course	150/39		1		1		1		E (Exam)	5	English	
Long distance course	150/15	per Semester	5	per Semester	5	per Semester	5					
Teacher responsible for subject				Name		Dr. Miklós Horváth			Position	College Professor		
Educational goal (competencies to be acquired)				- To understand and learn the principles of particle mechanics, electricity, - fluid and gas mechanics, thermodynamics, optics, quantum mechanics - the preparation of the BSc level in Physics and other related subjects.								
Typical transfer ways				Theoretical		Introducing notions and methods in lecture hall, using blackboard.						
				Practice		Teaching in small groups, solving computational and applied exercises.						
				Lab								
				Other								
Requirements (expressed in educational results)				**Knowledge** Students will know the basic terms of kiematics, axioms of mechanics understand the effect mechanisms of mechanics, know the basic penomena of fluid dynamics, Archimedes' principle, know the basics of thermodynamics.								
				Ability They are able to use the obtained skills even few years later, in real situations								
				Attitude Open-minded for the mechanical innovation on their field.								
				Autonomy and Responsibility Responsible for their results.								
Brief description of the subject content				Kinematics, axioms of mechanics, basic equation of dynamics, work, energy, power, linear momentum, and collisions, oscillatory motion, simple harmonic motion, damped oscillation, forced oscillation, resonance. Basic phenomena of fluid dynamics, buoyant forces, Archimedes' principle, continuity equation, Bernoulli equation. Thermodynamics, thermal expansion, work and heat, specific heat, latent heat, calorimetry, thermodynamic processes, First Law of thermodynamics, kinetic theory of gases, Second Law of thermodynamics, entropy and disorder, energy conservation. Electricity electrostatics, electric current, resistance, Ohm's law, network analysis, magnetic field, electromagnetic induction, alternating current circuits. Optics, geometric optics, propagation of light. Interference of light, single-slit diffraction, diffraction grating, photometry. Laboratory practices.								
Forms of student activity				- to understand and learn the subjects of the presentation making notes and using the electronic course book 40% - executing the laboratory practices 20% - problem solving session 20% - solving tests 20%}								
Compulsory reading and its availability				- Alvin Halpern: Beginning Physics I-II - SHAUM OUTLINE SERIES McGraw- Hill, ISBN 0-07-025653-5)								

Recommended reading and its availability	- Daniel Oman- Robert Oman: Physics for the Utterly Confused (McGraw- Hill Companies, ISBN: 0-07-048262-4) Daniel Oman- Robert Oman: How to solve Physics Problems (McGraw- Hill Companies, ISBN: 0-07-048166-0)

Legal knowledge

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="3">Jogi alapismeretek</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="3">Legal Knowledge</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="5"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="5">Institute for Social Sciences
Department of Communication and Media</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="5"></td></tr>
<tr><td colspan="3">Number of Lessons</td><td rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Lecture</td><td>Seminar</td><td>Laboratory</td></tr>
<tr><td>Full-time</td><td>3</td><td></td><td></td><td rowspan="2">CA
(Continuous assessment)</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>15</td><td></td><td></td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="2">Dr. habil. Orsolya Falus</td><td>Position</td><td>assoc. prof.</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="5">The goal of the course is to introduce the terminology of law and the rule of law in Hungary, in the European Union and from an international perspective, as well. Students will learn the principals of the Fundamental Law and the basics of public administration in Hungary, in the EU and the countries of the international community. They should be able to understand laws and apply the principle rules regulating business life. Students understand corruption as a criminal law concept, and know its forms, the United Nations Convention against Corruption, the EU anti-fraud policy, the OLAF (European Anti-Fraud Office) and its investigative powers. They are familiar with the policies aiming at the prevention of corruption.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Lecture</td><td colspan="4">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Seminar</td><td colspan="4"></td></tr>
<tr><td>Laboratory</td><td colspan="4"></td></tr>
<tr><td colspan="2" rowspan="3">Requirements (expressed in learning outcomes/competencies to be acquired)</td><td colspan="5">Knowledge
Students know:
• the types, terminology and main principles of law,
• how to understand and apply rules,
• how public administration works,
• how legal entities are established and registered,
• the content of basic contracts,
• the legal norms for the regulation and prevention of corruption crimes, as well as international and European conventions and the institutional system.</td></tr>
<tr><td colspan="5">Ability
Students will be able to:
• find, understand and apply law,
• see the structure of law,
• establish and operate a legal entity,
• create basic contracts,
• recognize situations that may be suspicious of corruption and consciously apply the relevant laws in force to avoid and prevent them.</td></tr>
<tr><td colspan="5">Attitude
They should be open-minded, unprejudiced and creative to find the appropriate legal solution for certain cases. They avoid all forms of corruption.</td></tr>
</table>

	Autonomy and responsibility They should use legal jargon properly and be able to find and explain the appropriate law alone. They should recognize legal conflicts and exert a review concerning them with correct application of legal terms. They should understand the system of public administration and be aware of the importance of civic responsibility.
Brief description of the subject content	The deffinition of law and the rule of law. The system of legal sources. Human rights. The Fundamental Law of Hungary. The National Assembly and the national referendum. Legal competency - legal capacity and forms of representation. Legal entity. Establishment and termination of firms. Contracts. Introduction to criminal law. International law and EU law. Legal case studies.
Activity forms of students	Frontal work: 50 % Individual or group work: 15% Test: 15% Communication situation exercises: 20%
Compulsory reading and its availability	• Falus, Orsolya (2021), DIGITAL LEGAL KNOWLEDGE TEXTBOOK FOR INTERNATIONAL STUDENTS. Dunaújváros: DUE Press. ISBN 978-615-6142-12-2 (available: Moodle) • United Nations Convention against Corruption (UNCAC) is the only legally binding universal anti-corruption instrument. It was drafted and negotiated in Vienna, Austria in 2002-2003 and subsequently adopted by the United Nations General Assembly on 31 October 2003. • https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XVIII-14&chapter=18#EndDec • UNCAC: https://www.unodc.org/corruption/en/learn/what-is-uncac/prevention.html • https://www.unodc.org/corruption/en/learn/what-is-corruption.html • https://www.unodc.org/corruption/en/uncac/index.html • OLAF: https://anti-fraud.ec.europa.eu/index_en • Prevention: https://corruptionprevention.gov.hu/index
Recommended reading and its availability	• The Universal Declaration of Human Rights (available: https://www.un.org/en/sections/issues-depth/human-rights/) • The European Convention on Human rights (available: https://www.coe.int/en/web/human-rights-convention) • The Fundamental Law of Hungary (available: http://hunmedialaw.org/dokumentum/151/THE_FUNDAMENTAL_LAW_OF_HUNGARY.pdf) • Elizabeth Wolfenden: How to Evaluate an Oral Presentation • (available: https://www.theclassroom.com/evaluate-oral-presentation-2661.html)
Hand-in Assignments/ measurement reports	On 7th week MIDTERM ESSAY (legal cases) On 13th week presentation/case study/ essay.
Description of midterm tests	According to the predetermined items.

Economics 1.

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Közgazdaságtan 1.</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Economics 1.</td><td>Code</td><td>DUEN-TKT-151</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TKT- 151</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Economics</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6"></td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="4" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td><td></td><td></td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td colspan="2" rowspan="2">E
(Exam)</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td>10</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="3">Dr. Mohamad Saleh</td><td>Position</td><td>Adjunct Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">This course is an introduction to economic concepts and basic economic theory. The course is split between the study of microeconomics, which focuses on the decision making of individual consumers and firms, and macroeconomics, with focuses on aggregate level economic questions such as interest rates, government spending, among others. Perhaps most important, this course will introduce you to the “economic way of thinking,” an approach to decision making that applies to personal decisions. It will: give you an idea of the range of behaviors that economists investigate, introduce you to the basic tools that we use to analyze the economy, and apply these tools to public policy issues.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">In a classroom with the use of projector or computer in each seminar.</td></tr>
<tr><td>Lab</td><td colspan="5"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements (expressed in learning outcomes/competencies to be acquired)</td><td colspan="6">Knowledge
Students as potential Economist know:
the types, terminology and main principles of Economics
basic concepts in Economics
the steps of analysis in Economics</td></tr>
<tr><td colspan="6">Ability
Students will be able to:
carry out basic analysis
formulate a synthetic relationship
carry out adequate evaluation activities</td></tr>
<tr><td colspan="6">Attitude
- Openness to authentic mediation and transmission of the overall mindset and the essential characteristics of practical operation of the profession.
- Desire for continuous self-education in the field of economics.</td></tr>
<tr><td colspan="6">Autonomy and responsibility
In professional questions, the students can play the role of a decision-maker and are able to solve problems alone. They can tackle problems as responsible persons, i.e. in a certain situation, they can decide if there is a need to cooperate with others.</td></tr>
<tr><td colspan="2">Brief description of the subject content</td><td colspan="6">The science of economics. Introduction to economic thinking. Macro- and microeconomics. Positive and normative approach to economics. The basic concepts of economics. Coordination mechanisms in the economy. The market and its basic concepts. The operation of the market and price mechanisms. The market balance. The agents of mixed economy. The motivations, income and expenditures of household. The management of business organizations.</td></tr>
</table>

	Production factors and their markets. The concept of national economic performance, its most important statistical indicators. The concepts, conditions and measurement of economic growth. Economic development and sustainable growth. The concept and functions of money. The basic categories of the labor market. The state and the market economy. The role and functions of the government. Globalization, international trends and issues of the global economy.
Activity forms of students	Guided learning 17% Individual learning 17% Guided task completion 17% Individual task completion 49%
Compulsory reading and its availability	Samuelson, Paul Anthony - Nordhaus, William D. Economics (2009) Mcgraw-Hill Publ.Comp. Handouts from the lecturer Materials on MOODLE
Recommended reading and its availability	Mankiw, Gregory Principles of Economics (2007) Sixth Edition, by Mason, Ohio: Thomson South-Western Begg, D., S. Fischer and R. Dornbusch Economics (2002) -7th Edition- (McGraw- Hill) Moffat, Mike: Online Microeconomics Textbook.
Hand-in Assignments/ measurement reports	Preparation and presentation of home assignments on pre-determined topics of micro and macroeconomics
Description of midterm tests	The test usually lasts for one hour and covers everything taught up to the date of test. The question paper will consist of multiple choice questions and short essay questions.

Entrepreneurship

Subject name		In Hungarian		Vállalkozástan					Level	A	
		In English		Entrepreneurship					Code	DUEN-TVV-122	
Subject code											
Responsible educational unit				Institute for Social Sciences Department of Management and Enterprise Sciences							
Name of Mandatory Preliminary Study				-							
Number of Lessons								Requirements	Credits (ECTS)	Language of Education	
		Theoretical		Practice		Lab					
Full-time	150/39		1		2		0	M (Midterm mark)	5	English	
Correspondence	150/15		5		10		0				
Teacher responsible for the course				Name		Dr. Andrea Keszi-Szeremlei			Position	College Teacher	
Educational goals				The curriculum provides a comprehensive knowledge of entrepreneurship, including the creation, operation, transformation, liquidation, financial management and the management of assets and liabilities. The student will be familiar with the means of preventing corruption. The student will be able to review the essence and the conduct of corporate management and to understand and apply corporate (business) law and regulations. They will be familiar with the economic, financial, human, material and property characteristics and components of companies, the risks inherent in the activities of companies and their types, the characteristics of international and domestic corporate cooperation and will be able to apply these at a skill level. In addition to theoretical knowledge, practical features will also be explored.							
Typical delivery methods				Theoretical		In a classroom with the use of projector or computer in each lecture.					
				Practice		Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work					
				Lab		-					
Requirements				**Knowledge** Students will know the basic terms of entrepreneurship, understand the effect mechanisms of operating firms, know the legal background of companies, their internal and external environments, know the economic systems, aims and strategies of firms.							
				Ability Students will be able to use terms of this field professionally, to identify and determine the resources of companies, to understand the steps of company aims and strategies, to understand and use the relevant literature.							
				Attitude They are open and willing to discuss all points of the cases, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They have sensibility to find potentials for development.							
				Autonomy and responsibility Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.							
Brief description of the subject content				The emergence of companies, their concept, the legal background of their operation. The macro and micro, external and internal environment of the							

	company. Anti-corruption in entrepreneurial practice (Forms of corruption, means of prevention) The company as an economic system, characteristics of economic systems, basic concepts of their operation. The corporate purpose, objectives, strategy. Economic decisions of companies. Description of the resources and activity system of a company. Assets and liabilities of the company, financing of the company. Organisation and management of companies. Resource management of companies. Introduction to corporate production, services, material processes. Internal and external logistics of the company. Human resource management in the company. Sources and role of corporate information. Corporate innovation. Corporate revenue and cost management. The concept of quality, total quality management and control (TQM). Corporate strategy, strategic guiding principles, strategic management, strategy development, implementation and control. Controlling. The role of business planning, presentation. Corporate ethics, responsibility, culture in the operation of companies. Outsourcing, its development, types, ways of implementation. Corporate partnerships.
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Essay writing
Compulsory reading and its availability	William D. Bygrave - Andrew Zacharakis (2014): Entrepreneurship, 3rd Edition, John Wiley & Sons, DUE Library Materials on MOODLE
Recommended reading and its availability	Jerome Katz, Richard Green (2014) Entrepreneurial Small Business. 4th ed. McGraw-Hill International Ed., ISBN: 978-0078029424, DUE Library
Hand-in Assignments/ measurement reports	Processing and analysis of 1 chosen case study (On week 8th)
Description of midterm tests	Midterm tests on weeks 7th and 12th. Supplementary test on week 13th.

Mathematics 2.

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="5">Matematika 2.</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="5">Mathematics 2.</td><td>Code</td><td>DUEN-IMA-211</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="7"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="7">Institute for Informaticon Technology</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="7">DUEN-IMA-151- Mathematics1.</td></tr>
<tr><td colspan="3" rowspan="2">Number of Lessons</td><td colspan="4" rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td colspan="2">Full-time</td><td>150/39</td><td>1</td><td colspan="2">2</td><td colspan="2">0</td><td rowspan="2">M (Midterm mark)</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td colspan="2">Correspondence</td><td>150/15</td><td>5</td><td colspan="2">10</td><td colspan="2">0</td></tr>
<tr><td colspan="3">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="3">Dr. Antal Joós</td><td>Position</td><td>Associate Professor</td></tr>
<tr><td colspan="3">Educational goals</td><td colspan="7">To be acquainted with the basic knowledge referring to mathematics, probability, mathematical statistics which are required to the special subjects, as well as improvement of mathematical knowledge to study specialized literature. Student knows and understands the most remarkable relations, connections, and set of ideas.</td></tr>
<tr><td colspan="3" rowspan="3">Typical delivery methods</td><td colspan="2">Theoretical</td><td colspan="5">Introducing notions and methods in lecture hall using blackboard and projector.</td></tr>
<tr><td colspan="2">Practice</td><td colspan="5">Teaching in small groups, solving computational and applied exercises. Using projector, blackboard, calculator.</td></tr>
<tr><td colspan="2">Lab</td><td colspan="5"></td></tr>
<tr><td colspan="3" rowspan="4">Requirements (expressed in learning outcomes/competencies to be acquired)</td><td colspan="7">Knowledge
Student knows methods and procedures required for solving of mathematical tasks from economic areas. Student has enough knowledge referring to mathematics, probability, and mathematical statistics which are required by his/her special field</td></tr>
<tr><td colspan="7">Ability
Student is able to apply the studied mathematical knowledge and activity. Student is able to apply the studied methods and procedures. Student is able to create an own solving-plan and argue. Student is able to organize his/her own learning procedure as well as to find and use different learning sources.</td></tr>
<tr><td colspan="7">Attitude
Student is willing getting acquainted with mathematical developments and innovations and their acceptance. Student is interested in new methods and means referring to his/her specialization.</td></tr>
<tr><td colspan="7">Autonomy and responsibility
Student takes responsibility for his/her own work and the works of fellows at school</td></tr>
<tr><td colspan="3">Brief description of the subject content</td><td colspan="7">Combinatorial analysis. Experiment, sample space and events, basic event-operations. The probability of an event. Axioms of probability. Conditional probability. Independent events. Theorem of Total Probability. Bayes' Theorem. Random variables and their characteristics. Notable probability distributions. The Week Law of Large Numbers. The Central Limit Theorem. Basic notions in statistics. Samples. Descriptive statistics. Numerical and graphic characterization of data sets. Inferences about a population. Theory of estimation. Point estimation and estimation by confidence interval for the population mean, for standard deviation and for a proportion. Statistical hypotheses, basic concepts. Parametric tests for the mean and for the standard deviation.
Nonparametric tests. The bases of correlation and regression analysis</td></tr>
<tr><td colspan="3">Activity forms of students</td><td colspan="7">Learning of the theory with direction and without direction. Solving mathematical exercises with direction and without direction using pattern and examples. Directed learning of theoretical material 10 % Independent learning of theoretical material 30 % Directed exercise solving 30 % Independent exercise solving 30 %</td></tr>
<tr><td colspan="3">Compulsory reading and its availability</td><td colspan="7">[1] R.E. Walpole, R.H. Myers, S.L.Myers, K.Ye: Probability and Statistics for Engineers and Scientists, 9th Edition, ISBN 978-0-321-62911-1</td></tr>
</table>

Recommended reading and its availability	[2] Ross, Sheldon: A First Course in Probability, Pearson Education Inc.,ISBN 0-13-201817-9 http://zalsiary.kau.edu.sa/Files/0009120/Files/119387_A_First_Course_in_Probability_8th_Edition. pdf [3] Hoel, Paul G.: Introduction to Mathematical Statistics (A Wiley Publication in Mathematical Statistics) Third Edition, John Wiley & Sons, Inc. New York-London-Sydney
Hand-in Assignments/ measurement reports	
Description of midterm tests	Test 1. Probability 1. Content of the lectures and seminars. Combinatorial analysis. Operation with events. Applications of the theorems of probability. Dependency and independency of events. Theorem of Total Probability and Bayes' Theorem. (20 scores, 20 minutes, according to the course program) Test 2. Probability 2. Content of the lectures and seminars. Random variables. Cumulative distribution function and density function and their properties and applications. Calculation notable numerical characteristics. Notable discrete and continuous probability distributions. Law of Large Numbers. (30 scores, 25 minutes, according to the course program) Test 3. Mathematical statistics 1. Content of the lectures and seminars. Basic terms and definitions. Graphical and numerical characterization of data sets. Point estimation and estimation by confidence intervals. (20 scores, 20 minutes, according to the course program) Test 4. Mathematical statistics 2. Content of the lectures and seminars labors. Testing hypotheses. Basis of correlation and regression analysis. (30 scores, 25 minutes, according to the course program) Usage of cellular phone is prohibited.

Industrial materials

Name of the subject		in Hungarian		Műszaki anyagismeret					Level	MA	
		in English		Industrial materials					Code	DUEN-MST-210 DUEL-MST-210	
Responsible educational unit				Technical Institute, Structural Integrity Department							
Name of compulsory prior learning											
Type		Theoretical		Practice		Lab		Requirement	Credit	Language of education	
Full time	150/39	per week	1	per week	0	per week	2	F	5	english	
Part time	150/15	per term	5	per term	0	per term	10				
Teacher responsible for the subject				Name		Dr Andrea Szabó			schedule	associate professor	

Training objective and justification of the course (content, output, location in the curriculum)	**Goals, development objectives** The aim of the course is to provide students with a basic knowledge of chemistry, through which they will become familiar with the structure of materials, the electron shell structure that determines material properties, the types of chemical bonds that determine macroscopic properties, and the microscopic structure and methods of analysis of different types of materials (metals, ceramics, polymers). Students will learn about the relationships between the structure and properties of materials, enabling them to select the most suitable materials for a given application in simple cases.	
Typical delivery methods	Theoretical	Projector, ppt lectures, learning materials available in moodle.
	Practice	
	Lab	Laboratory measurements and calculations in groups of up to 20 people.
	Other	
Requirements (expressed in terms of learning outcomes)	**Knowledge** Have a comprehensive knowledge of the basic facts, directions and limits of the subject area of engineering. Knowledge of the general and specific mathematical, scientific and social principles, rules, contexts and procedures necessary for the operation of the field of engineering. Thorough knowledge of the materials used in the field of engineering, the methods of their manufacture and the conditions of their use.	
	Ability Ability to plan, organise and carry out independent learning.	
	Attitude Open to learning and absorbing knowledge related to chemistry and materials related to their qualifications and areas of expertise. Interested in new methods and tools related to the field.	
	Autonomy and responsibility It takes its decisions independently, in consultation with other disciplines, and takes responsibility for them.	
Short description of the subject content	Atomic structure. The structure of the periodic table. Electron configuration. Types and characteristics of chemical bonding. Electron affinity, electronegativity, oxidation number. Strong bonds. Weak bonds. General characterisation of metals, reactivity. Basic knowledge of organic chemistry. Grouping of carbon compounds, nomenclature. Isomerism. Main reactions of organic substances. Interconnection of macromolecules as a basis for polymer production. Basic knowledge of silicate chemistry. Basic knowledge of colloid chemistry. State change in solid phase processes. Polymorphic transformation. Types of engineering materials. Structure - processing - properties interaction. Crystal structure, crystal systems. Crystal, crystallite. Crystal lattice defects. Movement of atoms in matter, diffusion. Phases and constituents of metallic materials. Significance, definition of equilibrium phase diagrams.	
Types of student activities	Processing of heard text with annotation 50%. Conducting material tests 30%. Evaluation of measurements, preparation of report 20%..	
Required literature and contact details	• Balázs Verő, Éva Dénes, Zsolt Csepeli:Introduction to the Engineering Materials Science, Főiskolai Kiadó, Dunaújváros • Éva Dénes, Péter Farkas, Zsoltné Fülöp, Zoltán Szabó.	
Recommended literature and contact details	• Dr. Tamás Tóth: Mechanical properties of materials and methods of their investigation. Főiskolai Kiadó, Dunaújváros, Hungary	

Description of tasks to be submitted/measurement reports	The student shall draw up a measurement report on the measurements carried out.
Description and timetable of the workshops	A final paper in weeks 6 and 12 from the lectures and laboratory classes.

Heat and Fluid Dynamics

<table>
<tr><td colspan="2" rowspan="2">Name of the subject</td><td>in Hungarian</td><td colspan="3">Hő és áramlástan</td><td>Level</td><td>A</td></tr>
<tr><td>in English</td><td colspan="3">Heat and Fluid Dynamics</td><td>Code</td><td>DUEN-MUT-250
DUEL-MUT-250</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Technical Institute, Department of Energy and Mechanical Engineering</td></tr>
<tr><td colspan="2">Name of compulsory prior learning</td><td colspan="6">DUEN-MGT- 151</td></tr>
<tr><td colspan="2">Type</td><td>Theoretical</td><td>Practice</td><td>Lab</td><td>Requirement</td><td>Credit</td><td>Language of education</td></tr>
<tr><td>Full time</td><td>150/39</td><td>per week 1</td><td>per week 1</td><td>per week 1</td><td rowspan="2">E</td><td rowspan="2">5</td><td rowspan="2">english</td></tr>
<tr><td>Part time</td><td>150/15</td><td>per term 5</td><td>per term 5</td><td>per term 5</td></tr>
<tr><td colspan="2">Teacher responsible for the subject</td><td>Name</td><td colspan="2">Endre Kiss, PhD</td><td>schedule</td><td colspan="2">college professor</td></tr>
<tr><td colspan="2">Training objective and justification of the course (content, output, location in the curriculum)</td><td colspan="6">Goals, development objectives
The study of the practical problems solutions in heat and fluid dynamics.</td></tr>
<tr><td colspan="2" rowspan="4">Typical delivery methods</td><td>Theoretical</td><td colspan="5">For all students, using a large speaker, a board presentation, a projector or an overhead projector</td></tr>
<tr><td>Practice</td><td colspan="5">For every students, problem solving in small groups</td></tr>
<tr><td>Lab</td><td colspan="5">Measurements in pairs</td></tr>
<tr><td>Other</td><td colspan="5"></td></tr>
<tr><td colspan="2" rowspan="3">Requirements (expressed in terms of learning outcomes)</td><td colspan="6">Knowledge
You are fully aware of the basic facts, directions and boundaries of the field of technical expertise. You are familiar with the general and specific rules, contexts and procedures necessary for the cultivation of the technical field. He knows the concept of his field, the most important contexts and theories. He is fully familiar with the main theories of his field of knowledge and problem solving Methods. At the employing level, he is familiar with the measurement procedures used in mechanical engineering, their tools, instruments and measuring equipment. It can interpret, characterize and model the structure, operation, design and relationship of the structural units and components of mechanical systems.</td></tr>
<tr><td colspan="6">Ability
It is capable of basic analysis of the disciplines that make up the technical field of knowledge, the synthetic formulation of correlations and the activity of evaluating the quality.
It is able to apply the most important terminology, theories and procedures of the technical field in which they are performed.
It is capable of planning, organising and performing independent learning.
It is able to identify routine professional problems, to solve them in principle and
to explore, formulate and provide practical background (standard operations
(e.g., the application of this problem).
It is able to understand and use the typical expertise, computer science and library resources of its field. The knowledge acquired is capable of carrying out tasks in its field
solution of the application.
It is capable of creating basic models of technical systems and processes.
It is able to communicate in your mother tongue in a professional, professional lyande manner, orally and in writing.</td></tr>
<tr><td colspan="6">Attitude
He accepts and authentically represents the social role of his profession, his fundamental relationship with the world.
It is open to the knowledge and acceptance and authentic transmission of professional, technological development and innovation in the field of technology.
It strives to resolve problems as much as possible in cooperation with others.
With sufficient endurance and monotony tolerance to carry out practical activities
Have.
Using his acquired technical knowledge, he strives to learn more about observable phenomena, to describe and explain his legalities.
In the course of its work, it complies with and enforces the relevant safety, health, environmental and quality assurance and control requirements.</td></tr>
</table>

	Autonomy and responsibility Even in unexpected decision-making situations, it independently takes a look at the broad, underlying professional issues and developthem on the basis of specific sources. In carrying out his professional duties, he also cooperates with qualified professionals in other fields (primarily technical, economic and legal). Share your experiences with colleagues to help them grow. It takes responsibility for the consequences of its technical analyses, its proposals and the decisions that are taken.With sufficient endurance and monotony tolerance to carry out practical activities Have. Using his acquired technical knowledge, he strives to learn more about observable phenomena, to describe and explain his legalities. In the course of its work, it complies with and enforces the relevant safety, health, environmental and quality assurance and control requirements.
Short description of the subject content	The basics of fluid dynamics and thermodynamics. Euler and Bernoully equations, Haagen-Poiseuille equations, viscosity, laminar and turbulent flow, pressure drag in turbulent flow. Pressure drop in fittings. Impulse theorem. Similarity. Solid body in viscous substance. Intensive and extensive quantities. Uneversal and unified gas law. The mechanical work and the heat, and the firstlaw of thermodynamics. Isochoric, isobaric, isotherm and adiabatic processes. The politropic process. Cycles. Otto and Diesel cycles. Enthalpy, entropy, the second law of thermodynamics. Real gases. Thermal energy transport, conductance. convection and radiation. Heat pump and refrigerator.
Types of student activities	Lecture: Written text processing with note-taking 40%, theoretical material self-processing 20%, task solution 40%. Labor: Heard text processing with note-taking 10%, home preparation for measurement 20%, measurement 40%, minutes preparation 30%.
Required literature and contact details	• Kiss E. Heat and Fluid Dynamics Electronic notes (Moodle) • Kiss E. Heat and Fluid Dynamics Problem solving Electronic notes (Moodle) • Kiss E. Laboratory syllabuses Electronic notes (Moodle)
Recommended literature and contact details	•
Description of tasks to be submitted/measurement reports	Full time: 5 measurement reports Part time: 3 measurement reports
Description and timetable of the workshops	There are two tests during the semester. the first is in the 6th, and the second in the 13th week. The test is consisting of 10 freechoise questions (max. 30 points), two assay questions (max 20 points), and two problems tos olve for 50 points. If the results of the two test is as an average lower than 51 points, the semester is not successful. There are chances to repeat the tests.

General and Business Statistics

Subject name		In Hungarian		Általános és gazdasági statisztika					Level	A	
		In English		General and business statistics					Code	DUEN-TKT-211	
Subject code											
Responsible educational unit				Institute for Social Sciences Department of Economics							
Name of Mandatory Preliminary Study											
Number of Lessons								Requirements	Credits (ECTS)	Language of Education	
		Theoretical		Practice		Lab					
Full-time	150/39		1		0		2	M (Midterm mark)	5	English	
Correspondence	150/15		5		0		10				
Teacher responsible for the course				Name		Dr. Mohamad Saleh			Position	Associate Professor	
Educational goals				Students will be aware of and able to use the electronic databases. They know and are able to use high-level statistical methods to analyse economic and social phenomena. They acquire high-level statistical tools necessary for carrying out analyses. After the course students can apply the basic statistics methods. They can prepare statistic reports necessary to understand business processes. They can make simple statistic analyses from the data available. They can apply mean, dispersion and distribution methods used for analysing quantitative data. They are capable of making and analysing PIVOT tables. They can quantify factors affecting complex economic processes by standardisation. They can apply the method of correlation calculation and variance analysis to explore relations as well as association indices. Having completed the course the students are able to use statistic databases online. They can collect, systematise, process and analyse the data needed to solve a certain task or make a decision, and present them to the decision maker in an appropriate form.							
Typical delivery methods				Theoretical		In a classroom with the use of projector or computer in each lecture.					
				Practice		In a classroom with the use of projector or computer in each seminar.					
				Lab							
Requirements (expressed in learning outcomes/competencies to be acquired)				**Knowledge** Students will be able to: use the electronic databases know and use statistic methods for the purpose of economic and social analysis know statistic methods to solve analysis tasks							
				Ability Students will be able to: use simple statistic methods make simple statistical analysis .use mean, scatter and dispersion for analyzing quantitative data create and analyze Pivot chart use statistical databases on the internet collect, organize, process and analyze data, use a statistical software individually						
				Attitude They are open to the authentic transmission and delivery of the comprehensive way of thinking and fundamental characteristics of their profession. They are curious about and interested in learning, and elementary work situation. Ready to share the common work and knowledge with others.						

	Autonomy and responsibility They work independently, under constant control. Make decisions in legal and ethical rules of the field. Feel responsibility about own or group led work, about the achievements and failures
Brief description of the subject content	Basic definitions of statistics. Methods of purchasing and using data. Basic statistical operations. Simple analysis, ratios, graphical representations. Definition of multitude according to a criterion. Arrangement and classification according to quantitative criteria. Types of quantitative series. Quantitative values. Graphical representations and attributes of frequency distributions. Position indexes. Types of means. Diffusion indexes. The analysis of concentration. Shape indexes. Description of multitude according to several criteria. Description of heterogenic multitude. Part and complex ratio. Part and main means. Dispersion and variance of part and main multitude. Description of the relation between criteria. Types of relations between criteria. Association, mixed relation, correlation, rank correlation. Comparison with standardization and index calculation. Resolution of differences, resolution of quotient. Comparison of aggregates with index calculation. Aggregated types of indexes. Mean types of indexes. Laspeyres- and Paasche indexes. Price – scissors. Analysis of timelines. Decomposition timeline models. Smoothing, clearing, prognosis, cyclicality, seasonality
Activity forms of students	Weekly online tests: 20% Frontal work: 40 % Individual or group work: 20% Test: 20%
Compulsory reading and its availability	BLACK Ken: Business Statistics for contemporary decision making, Sixth edition, Letöltés: http://fac.ksu.edu.sa/sites/default/files/business-statistics-for-contemporary-decision-making-by-ken-black_1.pdf
Recommended reading and its availability	HANKE, John E. – REITSCH, Arthur G. (1991): Understanding business Statistics. Boston: Richard Irwin Inc. 878 p. ISBN 0-256-06627-2 TRIOLA, Mario F. (2012): Elementary Statistics Plus. 12th ed. Upper Saddle River: Pearson Education 864 p. ISBN 978-0-321-8369-60 FREEDMAN, David – PISANI, Robert – PURVES, Roger (2007): Statistics. 720 p. ISBN 978-0-393-92972-0 (Teljes szöveggel: http://www.e-bookspdf.org/download/statistics-4th-edition-david-freedman.html) (Letöltve: 2014. május 28.)
Hand-in Assignments/ measurement reports	Written mid-term tests (2)
Description of midterm tests	Questions concerning the basic concepts of statistics. Numerical exercises.

Principles of Accounting

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="3">Számvitel alapjai</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="3">Principles of Accounting</td><td></td><td>DUEN-TKT-217</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="5"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="5">Institute for Social Sciences
Department of Economics</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="5"></td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="3" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td>Practice</td><td>Lab</td><td></td><td></td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td>M (Midterm mark)</td><td>5</td><td>English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>2</td><td>10</td><td>0</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="2">Dr.Erzsébet Szász</td><td>Position</td><td>Associate Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">By the end of the course, students will get acquainted with the purpose, philosophy, structure, requirements and principles of the (Hungarian) Law of Accounting. They will have an overall view of the interrelations of tax systems and accounting in economic practice. They will be familiar with the materials and tools necessary for the application of accounting software programs. They will be able to understand business processes and analyze them under professional guidance.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of a projector or a computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">In a classroom with the use of a projector or a computer in each seminar.</td></tr>
<tr><td>Lab</td><td colspan="5"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements (expressed in learning outcomes/competencies to be acquired)</td><td colspan="6">Knowledge
Students know
the most important context and theories of accounting and they make up the terminology.
the basic knowledge acquisition and problem-solving methods of accounting</td></tr>
<tr><td colspan="6">Ability
Students will get acquainted with the purpose, philosophy, structure, requirements and principles of the (Hungarian) Law of Accounting; and they will have an overall view of the interrelations of tax systems and accounting in economic practice. They will be able to:
apply accounting software programs.
understand business processes
analyze them under professional guidance
understand economic phenomena
analyze their effects on the balance and results of a business</td></tr>
<tr><td colspan="6">Attitude
Good accountants are patient, well-educated and have empathy, i.e. they can identify with the representatives of the other side and accept their opinion. Good, future-oriented bargainers respect their counterpart, are trustworthy and not aggressive. They are open and willing to cooperate discussing all points of the negotiation process, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They take responsibility for their work.</td></tr>
<tr><td colspan="6">Autonomy and responsibility
Students are expected to consider comprehensive, fundamental professional problems independently based on the literature and other recommended sources for the course.
Students are open to cooperate with other professionals of the field and take</td></tr>
</table>

	responsibility for their professional stand.
Brief description of the subject content	
Activity forms of students	Weekly tests: 20% Frontal work: 30 % Individual or group work: 35% Test: 15%
Compulsory reading and its availability	Materials on MOODLE from accountingcoach.com http://www.accountingcoach.com/
Recommended reading and its availability	Accounting Principles: Finance Skills [free-management-ebook]. Full text at http://www.free-management-ebooks.com/dldebk/dlfi-principles.htm AGTARAP-SAN JUAN, Donatila (2007): Fundamentals of Accounting: Basic Accounting Principles Simplified for Accounting Students. Bloomington: Author House, 408 p. ISBN 978 1 434 32299 9 CELENDER, Michael A. (2013): Accounting Basics: Complete Guide. Create Space Independent Publishing Platform, 378 p. ISBN 978 1 482 32481 5
Hand-in Assignments/measurement reports	
Description of midterm tests	General principles, case study

Business Economics

Subject name	In Hungarian	Vállalatgazdaságtan						Szintje	A	
	In English	Business economics						Level	A	
Subject code		DUEN-TVV-220								
Responsible educational unit		Institute for Social Sciences Department of Management and Enterprise Sciences								
Name of Mandatory Preliminary Study		-								
Number of Lessons								Requirements	Credits (ECTS)	**Language of Education**
		Theoretical		Practice		Lab				
Full-time	150/39		1		2		0	M (Midterm mark)	5	**English**
Correspondence	150/15		5		10		0			
Teacher responsible for the course		Name		Dr. Mohamad Saleh				Position	Associate professor	

Educational goals	The learning material gives board knowledge in Business economics such as types of new companies, tasks during their establishing. The course deals with the role of business, activity systems of operating firms like production and services. It also focuses on capital and planning of companies. By the end of the course the students will be able to understand economic and financial results of firms, how to handle changes and crisis in firms' life, transition and finishing of enterprises.	
Typical delivery methods	**Theoretical**	In a classroom with the use of projector or computer in each lecture.
	Practice	Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work
	Lab	-
Requirements	**Knowledge** Students will • know the basic terms of business economics, • know the capital structure of companies, and the role and functions of planning in companies, • know the different types of changes and crisis of firms, • know the tasks of transition and finishing of firms.	
	Ability Students will be able • to use terms of this field professionally, • to evaluate the capital structure of companies, • to understand the steps of company aims and strategies, • to handle changes and crisis of firms.	
	Attitude They are open and willing to discuss all points of the cases, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They have sensibility to find potentials for development.	
	Autonomy and responsibility Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.	

Brief description of the subject content	Becoming an entrepreneur. Success fails and experiences in enterprises. The essence, term, necessity, fulfilment and stakeholders of business. The role, types, operation, life stages of enterprises. The business plan. Recession, transition and termination of firms. Success, as motivating factor.
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Essay writing
Compulsory reading and its availability	• Sloman, John - Kevin Hinde - Dean Garratt (2013) Economics for business. Pearson, DUE Library • Materials on MOODLE
Recommended reading and its availability	• Paul Keat; Philip K Young; Steve Erfle (2013): Managerial Economics (7th Edition), Prentice Hall, ISBN : 0133020266, DUE Library

Mathematics 3.

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="5">Matematika 3.</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="5">Mathematics 3.</td><td></td><td>DUEN-IMA-110</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Information Technology</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">DUEN-IMA-151 Mathematics 1.</td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="3" rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td>Full-time</td><td>150/39</td><td>0</td><td></td><td>3</td><td></td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>0</td><td></td><td>15</td><td></td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="3">Dr. Papp Zoltán</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="7">A mathematical theory is introduced to solve quantitative problems in technical and other fields. Methods of problem solving in the course topics are introduced and abilities for students to use these methods are developed</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td colspan="2">Theoretical</td><td colspan="5">Introducing notions and methods in lecture hall using blackboard and projector.</td></tr>
<tr><td colspan="2">Practice</td><td colspan="5"></td></tr>
<tr><td colspan="2">Lab</td><td colspan="5">Teaching in small groups, solving computational and applied exercises. Using projector, blackboard, calculator.</td></tr>
<tr><td colspan="2" rowspan="4">Requirements (expressed in learning outcomes/competencies to be acquired)</td><td colspan="7">Knowledge
Student knows methods and procedures required for solving of mathematical tasks from economic areas. Student has enough knowledge referring to mathematics, probability, and mathematical statistics which are required by his/her special field</td></tr>
<tr><td colspan="7">Ability
Student is able to apply the studied mathematical knowledge and activity. Student is able to apply the studied methods and procedures. Student is able to create an own solving-plan and argue. Student is able to organize his/her own learning procedure as well as to find and use different learning sources.</td></tr>
<tr><td colspan="7">Attitude
Student is willing getting acquainted with mathematical developments and innovations and their acceptance. Student is interested in new methods and means referring to his/her specialization.</td></tr>
<tr><td colspan="7">Autonomy and responsibility
Student takes responsibility for his/her own work and the works of fellows at school</td></tr>
<tr><td colspan="2">Brief description of the subject content</td><td colspan="7">Special differentiation rules. Geometric application of derivatives. Area. Volumes and surfaces of revolution. Length of a curve. Centre of gravity. Multiple integration. Numerical integration. Solving nonlinear equations. Separable differential equations. Variable transformation: ax+by+c. Variable transformation: y/x. First order linear differential equations. Second order linear differential equations. Missing variable in second order differential equations.</td></tr>
<tr><td colspan="2">Activity forms of students</td><td colspan="7">Learning of the theory with direction and without direction. Solving mathematical exercises with direction and without direction using pattern and examples. Directed learning of theoretical material 10 % Independent learning of theoretical material 30 % Directed exercise solving 30 % Independent exercise solving 30 %</td></tr>
<tr><td colspan="2">Compulsory reading and its availability</td><td colspan="7">Talata, I.: A Guide to Mathematical Analysis, Dunaújváros, 2007, pp. 1-79. Electronic Study Guide.</td></tr>
<tr><td colspan="2">Recommended reading and its availability</td><td colspan="7">Finney, R. L. ; Thomas, G. B.: Calculus, Addison-Wesley, New York, 1990.</td></tr>
<tr><td colspan="2">Hand-in Assignments/ measurement reports</td><td colspan="7"></td></tr>
</table>

Engineering construction

Name of the subject		in Hungarian		Gépszerkesztés					Level	A	
		in English		Engineering construction					Code	DUEN-MGT-112 DUEL-MGT-112	
Responsible educational unit				Technical Institute, Department of Energy and Mechanical Engineering							
Name of compulsory prior learning											
Type		Theoretical		Practice		Lab		Requirement	Credit	Language of education	
Full time	150/39	per week	1	per week	2	per week	0	F	5	english	
Part time	150/15	per term	5	per term	10	per term	0				
Teacher responsible for the subject				Name		Dr. Szilassy Péter Ákos			schedule		
Training objective and justification of the course (content, output, location in the curriculum)				**Goals, development objectives** and their interactions. In heating, cooling, ventilation and air conditioning, the systems, system components, and							
Typical delivery methods				Theoretical	For all students, in a large lecture, presentation on a whiteboard, projector or on-line using MS Teams, using a computer network.						
				Practice	Group work presentations						
				Lab							
				Other							
Requirements (expressed in terms of learning outcomes)				**Knowledge** You know the terminology, key concepts and theories related to your field. Comprehensive knowledge of the methods of knowledge acquisition and problem-solving in the main theories of the field. Has a thorough understanding of machine design principles and methods, machine technology, control procedures and operational processes. Comprehensive knowledge of the operating principles and structural units of the machinery and power tools, mechanical equipment and tools used. Understand, characterise and model the structure and operation of the components and elements of mechanical engineering systems, and the design and interrelationship of the system components used. Apply the related computational and modelling principles and methods of mechanical product.							
				Ability Perform the job according to your qualifications. Ability to plan, organise and carry out independent learning. Ability to identify, formulate and solve (through the practical application of standard operations) routine professional problems, and to identify, formulate and solve (through the practical application of standard operations) the theoretical and practical background necessary for their solution.							
				Attitude Open to learning and absorbing knowledge related to mechanical engineering related to his/her qualifications and area of expertise. Interested in new methods and tools related to the field.							
				Autonomy and responsibility Taking responsibility for your own work and the work of others.							
Short description of the subject content				Typical surfaces and bodies of engineering practice. Plane intersection of plane bodies. Plane section of curved bodies. Passing through flat bodies. Passing of curved bodies. The ISO tolerance system. Tolerances for length dimensions. Fits. Surface quality metrics and how they are specified. Typical design of cast, welded and machined parts. Reconstruction of machine parts (reverse engineering).							
Types of student activities				Processing theoretical material with guidance 20 % Independent processing of theoretical material 20 % Problem solving with guidance 20 % Independent processing of tasks 40 % Laboratory measurements with guidance -							
Required literature and contact details				• Moodle							
Recommended literature and contact details				• Robert L. Norton: Machne Design - An Integrated Approach, 2006, Pearson Prentice Hall Upper Saddle River NJ. - Franz Koenigsberger, Machine tool structure,ISBN 10: 008013405X							
Description of tasks to be submitted/measurement reports											

Description and timetable of the workshops	

Technology of Structural Materials

Subject name		Hungarian		Szerkezeti anyagok technológiája				Level		A	
		English		Technology of Structural Materials				Code		DUEN(L)-MUA-116	
Responsible educational unit				Institute of Engineering							
Name of prerequisite subject				MST-210							
Type		Class hours / week						Requirements		ECTS	Language of instruction
		Theoretical		Practice		Lab					
Full time course	150/39		1		0		2	M		5	English
Long distance course	150/15	per Semester	5	per Semester	0	per Semester	10				
Teacher responsible for subject				Name		Dr. Szabó Andrea		Position		Associate professor	
Educational goal (competencies to be acquired)				The aim is that the students be able to select the materials and production technologies that are the most suitable for a given objective. The students learn the manufacturing, properties, application and property modification technologies (alloying, melting, plastic deformation, heat treatment, surface treatment), melting and forming technologies of the most important metallic and non-metallic structural materials. The students learn most important welding technologies and their application.							
Typical transfer ways				Theoretical		In a classroom with the use of projector or computer in each lecture.					
				Practice							
				Lab		In a classroom with the use of projector or computer in each seminar.					
Requirements (expressed in educational results)				**Knowledge** Students will know the basic terms of matherial structures know the Phase diagrams and transformations know the steel production methods know the steel applications							
				Ability They are able to use the obtained skills even few years later, in real situations							
				Attitude Open-minded for the mechanical innovation on their field.							
				Autonomy and Responsibility Responsible for their results.							
Brief description of the subject content				Phase diagrams. The Fe-Fe3C equilibrium phase diagram. Phase transformations. Steel production. Basic oxygen steelmaking. Electric arc furnace. Continuous casting. Steel processing. Hot rolling. Cold rolling. Forging. Casting. Heat treatment of steels. Mechanical properties. Strengthening mechanisms. Steel applications Sustainability (steel and the environment, principles of life cycle thinking). Aluminum production and processing. Properties of aluminum. Heat treatment of aluminum. Case studies for the industrial application of aluminum.							
Forms of student activity				Understanding and assimilation of the topics of presentations 50% Testing of materials 30% Laboratory excercises 20%							
Compulsory reading and its availability				1. William D. Callister: Materials Science and Engineering, An Introduction, 2007, Wiley 2. www.steeluniversity.com 3. www.alumatter.info							
Recommended reading and its availability				4. ASM Metals Handbook Desk Edition 2001 5. ASM Metals Handbook Volume 14 - Forming And Forging 6. core.materials.ac.uk							

Mechanics I.

<table>
<tr><td colspan="3" rowspan="2">Subject name</td><td>Hungarian</td><td colspan="4">Mechanika 1.</td><td>Level</td><td>A</td></tr>
<tr><td>English</td><td colspan="4">Mechanics 1.</td><td>Code</td><td>DUEN-MUG-152</td></tr>
<tr><td colspan="3">Responsible educational unit</td><td colspan="6">Institute of Engineering</td></tr>
<tr><td colspan="3">Name of prerequisite subject</td><td colspan="6"></td></tr>
<tr><td colspan="3" rowspan="2">Type</td><td colspan="2">Class hours / week</td><td colspan="3"></td><td rowspan="2">Requirements</td><td rowspan="2">ECTS</td><td rowspan="2">Language of instruction</td></tr>
<tr><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td>Full time course</td><td>150/39</td><td></td><td>1</td><td></td><td>2</td><td></td><td>0</td><td rowspan="2">E (Exam)</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Long distance course</td><td>150/15</td><td>per Semester</td><td>5</td><td>per Semester</td><td>10</td><td>per Semester</td><td>0</td></tr>
<tr><td colspan="3">Teacher responsible for subject</td><td colspan="2">Name</td><td colspan="3">Dr. Sánta Róbert</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="3">Educational goal (competencies to be acquired)</td><td colspan="6">Getting acquainted with the bases of statics and the strength of materials, forming the application skill.</td></tr>
<tr><td colspan="3" rowspan="4">Typical transfer ways</td><td>Theoretical</td><td colspan="6">Introducing notions and methods in lecture hall, using blackboard.</td></tr>
<tr><td>Practice</td><td colspan="6">Teaching in small groups, solving computational and applied exercises.</td></tr>
<tr><td>Lab</td><td colspan="6"></td></tr>
<tr><td>Other</td><td colspan="6"></td></tr>
<tr><td colspan="3" rowspan="4">Requirements (expressed in educational results)</td><td colspan="7">Knowledge
Students will
know the basic terms of mechanics,
understand the effect mechanisms of mechanics,
know the the elements of load-bearing structures,
know the basics of design.</td></tr>
<tr><td colspan="7">Ability
They are able to use the obtained skills even few years later, in real situations</td></tr>
<tr><td colspan="7">Attitude
Open-minded for the mechanical innovation on their field.</td></tr>
<tr><td colspan="7">Autonomy and Responsibility
Responsible for their results.</td></tr>
<tr><td colspan="3">Brief description of the subject content</td><td colspan="7">Concept of force, system of forces, equilibrium. Resultant of system of forces (using a calculation or a construction). Elements of load-bearing structures. Restraints. Static and load models. Reaction forces, internal loading functions and beam diagrams. Cross sectional features: centre of gravity, first and second order moment of a cross section. Concept of deformations, strains and the mechanical stresses. Tensile test diagram and the main material properties of mechanics. Basics of design: stress analysis of pure and complex load cases (tensile/compression, shearing, bending, torsion and combinations). Stress state and general Hooke's law. Concept equivalent stress.</td></tr>
<tr><td colspan="3">Forms of student activity</td><td colspan="7">Assimilation of the theoretical matter with/without assistance: 15/35 % Problem solving with/without assistance : 15/35 %</td></tr>
<tr><td colspan="3">Compulsory reading and its availability</td><td colspan="7">1. - F.P. Beer, E.R. Johnston, E.R. Eisenberg: Vector Mechanics for Engi-neers ? Statics, McGraw Hill, New York, USA, 2004
2. F.P. Beer, E.R. Johnston, J.T. DeWolf: Mechanics of Materials, McGraw Hill, New York,
USA, 2004</td></tr>
</table>

CAD

<table>
<tr><td rowspan="2">Subject name</td><td>Hungarian</td><td colspan="6">CAD</td><td>Level</td><td>A</td></tr>
<tr><td>English</td><td colspan="6">CAD</td><td>Code</td><td>DUEN(L)-MUG-212</td></tr>
<tr><td colspan="3">Responsible educational unit</td><td colspan="7">Institute of Engineering</td></tr>
<tr><td colspan="3">Name of prerequisite subject</td><td colspan="7"></td></tr>
<tr><td rowspan="2">Type</td><td colspan="2" rowspan="2"></td><td colspan="6">Class hours / week</td><td rowspan="2">Requirements</td><td rowspan="2">ECTS</td><td rowspan="2">Language of instruction</td></tr>
<tr><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td>Full time course</td><td>150/39</td><td></td><td>0</td><td></td><td>0</td><td></td><td>3</td><td rowspan="2">M (Midterm mark)</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Long distance course</td><td>150/15</td><td>per Semester</td><td>0</td><td>per Semester</td><td>0</td><td>per Semester</td><td>15</td></tr>
<tr><td colspan="3">Teacher responsible for subject</td><td colspan="3">Name</td><td colspan="3">Dr. Vizi Gábor</td><td>Position</td><td></td></tr>
<tr><td colspan="3">Educational goal (competencies to be acquired)</td><td colspan="8">To make the students familiar with the practice of computer aided geometrical modelling through the use of a modern, parametrical modelling system (SolidWorks). Building parametrical models of machine parts. Making assemblies and generating documentation for manufacturing.</td></tr>
<tr><td colspan="3" rowspan="4">Typical transfer ways</td><td colspan="2">Theoretical</td><td colspan="7"></td></tr>
<tr><td colspan="2">Practice</td><td colspan="7"></td></tr>
<tr><td colspan="2">Lab</td><td colspan="7">In a classroom with the use of projector or computer in each seminar.</td></tr>
<tr><td colspan="2">Other</td><td colspan="7"></td></tr>
<tr><td colspan="3" rowspan="4">Requirements (expressed in educational results)</td><td colspan="8">Knowledge
Students will
know the basic terms of CAD
able to creat asemblies
able to generate drawings from parts.
able to create views, sections detail views</td></tr>
<tr><td colspan="8">Ability
They are able to use the obtained skills even few years later, in real situations</td></tr>
<tr><td colspan="8">Attitude
Open-minded for the mechanical innovation on their field.</td></tr>
<tr><td colspan="8">Autonomy and Responsibility
Responsible for their results.</td></tr>
<tr><td colspan="3">Brief description of the subject content</td><td colspan="8">Features of parametric modelling systems. Basic concepts. Parametric geometric models, associativity, features as building blocks, sketches, geometric relations etc. Prerequisites of running the program, initial steps, screen areas. Contracting basic features. Adding and removing material.
Features demanding a sketch. Features not demanding a sketch. Creating protrusion, cut, chamfer, fillet and shell. Creating a revolution solid. Sweep and loft. Geometrical relations in sketches. The application of equations to fulfil the designer's intentions. Linking dimensions. Creating configurations and part families. Creating assemblies. The Top-Down technique. Generating drawings from parts. Creating views, sections, detail views. Generating drawings from assemblies. Creating bills of material automatically.</td></tr>
<tr><td colspan="3">Forms of student activity</td><td colspan="8">- to understand and learn the subjects of the presentation making notes and using the electronic course book 40%
- executing the laboratory practices 20%
- problem solving session 20%
- solving tests 20%}</td></tr>
<tr><td colspan="3">Compulsory reading and its availability</td><td colspan="8">SolidWorks Online Help</td></tr>
<tr><td colspan="3">Recommended reading and its availability</td><td colspan="8">- Descriptions and documentations related to SolidWorks</td></tr>
</table>

Management

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Menedzsment</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Management</td><td></td><td>DUEN-TVV-114</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6"></td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="3"></td><td rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td>Practice</td><td colspan="2">Lab</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td>10</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="3">Dr. habil Mónika Rajcsányi-Molnár</td><td>Position</td><td>College Teacher</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">The module provides a comprehensive understanding of management in theory and in practice.
The course is designed to familiarize students with the most important information for the management of labor organizations, to provide insight into the "special" management dimensions, and those determinants.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">In a classroom with the use of projector or computer in each seminar.</td></tr>
<tr><td>Lab</td><td colspan="5"></td></tr>
<tr><td colspan="2" rowspan="3">Requirements</td><td colspan="6">Knowledge
Students as potential manager:
Familiar with the fundamental aspects of science organization, the most important concepts, requirements, relationships and procedures.
It learns supply management tasks, theoretical and methodological foundations of the exercise of the functions.
Familiar with the planning, organization and management frequently used procedures and methods.
Familiar with the leadership style models and understand their role in effective leadership behavior.</td></tr>
<tr><td colspan="6">Ability
Students will be able to:
analyse and develop the management and decision making mechanisms of work organizations
effectively organize individual and team work
identify and solve problems
integrate knowledge
recognize and evaluate alternatives
handle operative planning tasks
work in groups
accept divergent views
manage time
select and focus on various tasks
identify, understand and apply different leadership styles
understand and manage organizational processes</td></tr>
<tr><td colspan="6">Attitude
Open to accommodate new innovative approaches.
Avoids the stereotypes.
Not think schemas.
Susceptible development opportunities for exploitation.</td></tr>
</table>

	Good, future-oriented bargainers respect their counterpart, are trustworthy and not aggressive. They are open and willing to discuss all points of the negotiation process, as well as express their opinion, but without disclosing any important information about the circumstances of their own company.
	Autonomy and responsibility In professional questions negotiators can play the role of a decision-maker and are able to solve problems alone. They can tackle problems as responsible persons, i.e. can decide if it is a need in a certain negotiation phase or situation to cooperate with others.
Brief description of the subject content	Interpretation and origin of management. The role and importance of management in the governance of companies. Historical overview of management studies: concepts, schools, trends; similarities and differences. Practicing management functions: - Planning: vision of the future, goal hierarchy, short term and operative planning, planning methods. - Organizing: changing the structure, processes, defining organizations, division of labor, developing processes and organizational structures, structural differences of organizations, organization types and characteristics. - Control: changing conditions, exercise authority, define norms, measurement, evaluation and adjusting, managing everyday problems. - Coordinating: harmonizing goals-processes-organization, coordination tools, operation control, task-authority-responsibility fit, control processes of organizations: rules of organization and operation, professional rules and regulations, job description. - Leadership: leadership effectiveness, leadership styles: characteristics, decision making theories, behavioral theories, contingency-approach. Organizational culture and strategy. Components and dimensions of culture. Understanding and analyzing cultural differences. Managing corporate culture.
Activity forms of students	Frontal work: 30 % Individual presentation 20% Group work: 35% Test: 15%
Compulsory reading and its availability	Williams-DuBrin-Sisk (1995):Management & Organization, South-Western Publishing Co. Cincinnati, Ohio, USA Materials on Moodle
Recommended reading and its availability	Chelsom-Payne-Reavill (2005): Management for Engineers, Scientists and Technologists, John Wiley& sons, Ltd, England
Hand-in Assignments/ measurement reports	Case study analysis Group work Individual presentation: An organization working goal, process and organizational structure These tasks cannot be replaced during the exams.
Description of midterm tests	Test

Basics of machine design

Name of the subject		in English~~English~~Hungarian		Géptervezés alapjai				Level		A	
		in English		Basics of machine design				Code of		DUEN-MUG-222	
Responsible educational unit				Institute of Technology, Department of Energy and Mechanical Engineering							
Name of the required prior learning				MUG-212, MUG-152, MGT-111							
Type		Hours per week						Requirement		Credit	Language of education
		Theoretical		Practice		Lab					
Nappali		Weekly	**2**	Weekly	**1**	Weekly	**0**	**F**		**5**	**Hungarian**
Correspondent		Half-yearly	**10**	Half-yearly	**5**	Half-yearly	**0**				
Teacher responsible for the subject				Name		Zahola Tamás				schedule:	

Training objective of the course	**Goals, development objective**	
	The student should know the construction and operation of typical machine parts, components, assemblies and sub-assemblies used in engineering practice. Be able to select standard parts for such units, determine the main dimensions, and design the associated components. Be able to prepare drawing documentation of units using traditional and computer tools. The student will be able to apply the knowledge acquired in Engineering representation~~Mechanical Engineering~~ I, CAD and Mechanics I to the construction of simple structures and assemblies.	
Typical delivery methods	Theoretical	All students in a large lecture, using lecture, Power Point and overhead projector
	Practice	Small group of up to 25 people, sketching, drafting, calculation exercises
	Lab	
Educational objective (in terms of learning outcomes)	**Knowledge**	
	Have a comprehensive knowledge of the basic facts, directions and limits of the subject area of engineering. You know the terminology, key concepts and theories related to your field. You have a comprehensive knowledge of the main theories and problem-solving methods in your field. Basic knowledge of machine design principles and methods, machine manufacturing technology, control procedures and operating processes. Comprehensive knowledge of the operating principles and structural units of the machines, power tools, mechanical equipment and tools used. In-depth knowledge of learning, knowledge acquisition, data collection methods, their ethical limitations and problem-solving techniques in mechanical engineering. Understand, characterise and model the structure and operation of the structural units and elements of mechanical systems, the design and interrelationship of the system components used. Apply the related computational and modelling principles and methods of engineering product, process and technology design.	
	Ability	
	Performs the job according to his/her qualifications. Ability to plan, organise and carry out independent learning. Ability to identify routine professional problems, to identify, formulate and solve them (using standard operations in practice) against a theoretical and practical background. Ability to build basic models of technical systems and processes. Routinely identifies professional problems, explores and formulates the theoretical and practical background necessary to solve them, and solves them by applying standard operations in practice.	
	Attitude	
	Open to learning and absorbing knowledge related to mechanical engineering related to his/her qualifications and area of expertise. Interested in new methods	

	and tools related to the field.
	Autonomy and responsibility
	Taking responsibility for your own work and the work of others.
Short description of the subject content	Repetitive parts or units of machinery performing the same function and having a similar design - machine components. Definition, grouping, description, description, representation, strength dimensioning, correct construction, operation and maintenance of machinery parts. The main machine components or groups to be discussed in detail are: drive and connecting screws, shafts, shaft couplings, couplings, bearings, belt drives, gears. In the discussion of the subjects, the emphasis is on the illustration and overview of the parts/assemblies.
Types of student activities	Processing theoretical material with guidance 20 % Independent processing of theoretical material 20 % Task solving with guidance 20 % Independent processing of tasks 40 % Laboratory measurements under supervision Preparation of laboratory reports.
Required literature and contact details	László Tóth- Tamás Zahola: Mechanical Engineering. Zahra Zahola. Főiskolai Kiadó Dr. Péter Szendrő and co-authors, Mechanical Engineering BSc. textbook, 2007. Mezőgazda Kiadó, Budapest, 758 p.
Recommended literature and contact details	Dr. József Őze: Mechanical Elements I/2. I/3. I/4. I/5. I/6. I/7. I/8. manuscripts.1. Árpád Zsáry:Machine Elements II., Budapest, 1991. György Diószegi: Mechanical Engineering Handbook. Technical Book Publishing House, Budapest, 1988. István Majdán: Technical Pocketbook. Technical Book Publishing House, Budapest, 1995. Géza Nagy: Atlas of Mechanical Engineering. GTE ME Machine Elements Department, Budapest, 1991 4000 SKF Bearing Master Catalogue
Description of the tasks to be submitted/measurement reports, other reporting	
Description and timetable of the workshop	

Production Technology

Subject name		Hungarian	Gyártástechnológia						Level		A
		English	Production Technology						Code		DUEN(L)-MUG-252
Responsible educational unit			Institute of Engineering								
Name of prerequisite subject			MUG-152								
Type		Class hours / week						Requirements	ECTS		Language of instruction
		Theoretical		Practice		Lab					
Full time course	150/39		2		1		0	E (Exam)	5		English
Long distance course	150/15	per Semester	10	per Semester	5	per Semester	0				
Teacher responsible for subject				Name		Dr. Gábor Vizi			Position		College Professor
Educational goal (competencies to be acquired)				The students shall learn the basics of production technology. Cutting: the students shall learn the basics of cutting and its results. Knowledge of the basic cutting processes. Calculation and selection of the technological data. Calculation of machine time and standard time norm and determination of costs. Knowledge of other cutting processes.							
Typical transfer ways				Theoretical		In a classroom with the use of projector or computer in each lecture.					
				Practice		In a classroom with the use of projector or computer in each seminar with max. 20 students					
				Lab		Presentations and exercises in a cutting workshop					
				Other							
Requirements (expressed in educational results)				**Knowledge** Students will know the basic terms of cutting processes know the type and features of cutting able to do calculation of machining time and cost analysis able to do calculation of dimensional chain							
				Ability They are able to use the obtained skills even few years later, in real situations							
				Attitude Open-minded for the mechanical innovation on their field.							
				Autonomy and Responsibility Responsible for their results.							
Brief description of the subject content				Cutting processes. Type and features of cutting. Technologies of turning, planing, boring, milling, grinding. Calculation of allowances, feeds, speeds, number of cycles in case of every process. Calculation of machining time and cost analysis. Unconvencial cutting processes, sawing, broaching, threading, gearing. EDM technologies. Determination of stock. Calculation of dimensional chain.							
Forms of student activity				Assimilation of the theoretical material with assistance: 5 % Assimilation of the theoretical material without assistance: 40 % Problem solving with assistance: 15 % Problem solving without assistance: 40 %							
Compulsory reading and its availability				1. Manufacturing Technology, (Manufacturing processes) R.K.RAJPUT LAXMI PUBLICATIONS (P) LTD 113, Golden House, Daryaganj, New Delhi-110002, EMT-0750-350-ATB OF MANUFACTURING TECH 2. Production Technology, HMT Bangalore, Tata McGraw-Hill Education, 2001, ISBN-13: 978-0-07-096443-3, ISBN-10: 0-07-096443-2							

	3. Production engineering, K.C. Jain, A. K. Chitale, 2010, PHI learning Private Limited, New Delhi, ISBN-978-81-203-3526-4
Recommended reading and its availability	Manufacturing process-I, H.S.Bawa, 2004, Tata McGraw-Hill Publishing Company Limited, second reprint 2006. ISBN 0-07-053525-6

Marketing

Subject name	In Hungarian	Marketing							Szintje	A	
	In English	Marketing							Level	A	
Subject code		DUEN-TVV-215									
Responsible educational unit		Institute for Social Sciences Department of Management and Enterprise Sciences									
Name of Mandatory Preliminary Study											
Number of Lessons									Requirements	Credits (ECTS)	Language of Education
		Theoretical		Practice		Lab					
Full-time	150/39		1		2		0		M	5	English
Correspondence	150/15		5		10		0				
Teacher responsible for the course		Name				Dr. Catherine Odorige			Position		
Educational goals		The curriculum supports the student's mastery of marketing concepts and highlights their interconnections with different disciplines. During the course, students understand and apply the concepts of the market, the tools of marketing environment analysis, market sharing criteria and methodologies, become familiar with the purchasing decision process and the factors influencing customer behavior. Students understand the diversity and variations of marketing tools, and become proficient in using the most important marketing techniques and institutional marketing communications.									
Typical delivery methods		Theoretical		Flipchart, blackboard and other multimedia equipment in auditorium							
		Practice		Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work.							
		Lab									
Requirements		**Knowledge** By the end of the semester, students as potential marketing practitioners comprehend the basic concepts used in marketing and PR know the basic tools of marketing and recognize the relationships among them know the elements of an organization's internal and external environment and their interaction with the company's marketing and PR activities know and appropriately apply market research methodologies									
		Ability Students will be able to: Use and apply the basic terms and vocabulary of the profession with confidence Synthetize and organize their knowledge and apply it in the appropriate situations Examine business problems with a marketing approach Analyze the market of a product or service Detect correlations between strategic and operational marketing processes. Detect the relationship and interactions between the company, its customers and business partners									
		Attitude Students should be: Open to classroom case studies, and to the active interpretation of discussed situations. Sensitive and critical towards theoretical and practical innovation Susceptible to development opportunities for exploitation.									
		Autonomy and responsibility Responsible for his/her own development. Cooperate with the instructor and fellow students, seeks to solve the discussed problems. Feel responsible for the development of his/her working environment									

Brief description of the subject content	Concepts and instruments of marketing, main communication channels and strategies. Components of the marketing mix, market participants, the basic processes of marketing management. Consumer behavior, B2B markets, the basic methods of marketing research. Pricing, product development, brands, branding and challenges of contemporary marketing
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Group work, Role play
Compulsory reading and its availability	Kotler, P. – Wong, V. – Saunders, J. – Armstrong, G.: Principles of Marketing, 4th European Edition, Pearson, 2005, DUE Library
Recommended reading and its availability	Kotler, P. – Armstrong, G.: Marketing: An Introduction, Pearson, 2015 Kotler, P. – Kartajaya, H. – Setiawan, I.: Marketing 4.0: Moving from traditional to digital, Wiley, 2017 Palmer, A.: Introduction to marketing, Oxford University Press, 2003
Hand-in Assignments/ measurement reports	Group work (Week 11): Creating and presenting the marketing plan of a chosen company. The marketing plans have to be submitted the day before the presentation the latest. Individual work (Week 7): Students have to analyse their own consumer habits (5-10 pages) and behaviours, and submit it in written form. The essay should contain citations from relevant scientific literature.
Description of midterm tests	The goal of the final test is to assess the students' knowledge and comprehensive understanding on the main marketing concepts, tools and strategies, and to measure and evaluate their knowledge in a system-wide context through complex problem solving. (Week 13.)

Operations and Quality Management

<table>
<tr><td colspan="2" rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Termelés és minőségmenedzsment</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Operation and Quality Management</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TVV-219</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Communication and Media</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">-</td></tr>
<tr><td colspan="4">Number of Lessons</td><td rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td>Full-time</td><td>150/39</td><td></td><td>1</td><td></td><td>2</td><td></td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td></td><td>5</td><td></td><td>10</td><td></td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="3">Dr. Anita Varga</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="7">The goal of this course is to prepare the students for efficient management of the production and quality assurance. It introduces the engineering business management students to the definition, scope and role of production management in system approach. In frame of this fundamental topic the students learn the Function Matrix and its application, the basic production systems and layout and their features, the basics of the marketing and technical life cycle management of product and related production technology. To understand the production management issues, the course contains the summary of the definition, methods and hierarchical levels of control, the stages of the product structure. The second part summarize the quality management systems, standards and the history of main quality standards and some hard and soft techniques of the quality management.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td colspan="2">Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td colspan="2">Practice</td><td colspan="5">In a classroom project work, small team and cooperative work with the use of projector or computer in each seminar.</td></tr>
<tr><td colspan="2">Lab</td><td colspan="5"></td></tr>
<tr><td colspan="2" rowspan="3">Requirements</td><td colspan="7">Knowledge
overviews the system of production and quality management,
has a strategic and system-oriented thinking,
knows the principles, policies and processes of production and quality management teams.</td></tr>
<tr><td colspan="7">Ability
Students will be able to:
applies the theoretical knowledge systematically in practice,
manages the system components individually and in system,
sketches the stages of control,
implements the ISO 9001 standard,
regulates basic-level processes,
overviews the documentation of the quality system,
manages changes,
understands the professional literature,
applies the definitions of the specialization professionally.</td></tr>
<tr><td colspan="7">Attitude
opened for the innovations of the specialization
pursue continuous self-improvement
Able to solve problems alone.
Can tackle problems as responsible persons.
Self-training ability.
Open for cooperation with professionals on other related fields.</td></tr>
</table>

	Autonomy and responsibility responsible for self-training co-operates with colleagues search the solutions for problems responsible for the development of work environment takes responsible part in forming professional opinions and its explanations
Brief description of the subject content	Definition of production, production management, interpretation in system approach. Production processes and process structures. Product structure. Production structure. Construction, manufacturing, industrial specialties. Technical, economic, human and IT factors of production. Price, cost and profit functions of production. Basic documentation of the production management. Quality, value, value hierarchy. Top management activities related to the quality. Components of the quality policy. Practical factors of the enterprise quality related activities. Quality management of services and business processes. Definition and parts of TQM and TVM.
Activity forms of students	Frontal work: 40 % Individual or group work: 40% Test: 20%
Compulsory reading and its availability	[1] KUMAR, S. Anil. *Production and operations management*. Second edition, ISBN : 978-81-224-2425-6, New Age International, 2008.
Recommended reading and its availability	[2] Graeme Knowles: Quality management, ISBN 978-87-7681875-3, BookBoon, 2011.
Hand-in Assignments/ measurement reports	Students have to write an industrial case study in 20-25 pages.
Description of midterm tests	Mid-term written exams (2 times): theoretical questions, practical tasks.

Strategic Planning

Subject name	In Hungarian	Stratégiai Tervezés							Szintje	A	
	In English	Strategic Planning							Level	A	
Subject code		DUEN-TVV-250									
Responsible educational unit		Institute for Social Sciences Department of Management and Enterprise Sciences									
Name of Mandatory Preliminary Study		DUEN-TVV-114 Management									
Number of Lessons per semester								Requirements	Credits (ECTS)	Language of Education	
		Theoretical		Practice		Lab					
Full-time	150/39		1		2		0	E (Exam)	5	English	
Correspondence	150/15		5		10		0				
Teacher responsible for the course		Name		Dr. habil Mónika Rajcsányi-Molnár				Position	College Teacher		
Educational goals		The goal of the course is to develop the essential skills required of employees at the workplace and to expand students' planning skills. The course is designed to familiarize students with the planning processes taking place in work organizations on key information. Provided by the knowledge of the course enables the students to the need for long-term planning and the importance of understanding claim. In practical terms, students will be able to interpret theoretical knowledge of the relevant relationships to recognize.									
Typical delivery methods		Theoretical		In a classroom with the use of projector and computer in each lecture.							
		Practice		In a classroom with the use of projector and computer in each seminar.							
		Lab		-							
Requirements		**Knowledge** Students as potential manager know and understand: • the difference between the traditional and the strategic management approach • the main steps of the strategic management process and apply management methodologies • the implementation of the required change management strategy, particularly sociological and psychological aspects of the organization									
		Ability Students will be able to: • use the concepts of area of specialty • choose the most suitable method in terms of business logic • apply the methods of approaches based on the theoretical approach • draw correct conclusions from the analyzes • Structured, systemic problems identified, to identify cause and effect relationships.									
		Attitude • Good negotiators are patient, well-educated and have empathy, i.e. they can identify with the representatives of the other side and accept their opinion. • Open to accommodate new innovative approaches. • Avoids the stereotypes. • Not think schemas. • Susceptible development opportunities for exploitation..									

	Autonomy and responsibility In professional questions negotiators can play the role of a decision-maker and are able to solve problems alone. They can tackle problems as responsible persons, i.e. can decide if it is a need in a certain negotiation phase or situation to cooperate with others.
Brief description of the subject content	The course familiarizes students with definition the strategic position of the organization (environment-, resources-- and analysis of the stakeholder). The strategic decision. Corporate and business level strategies. The strategic portfolio analysis. Implementation of the strategy, organizational development and change management.
Activity forms of students	30% Student-workbook 30% mid-term test 30% final test 10% Individual presentation
Compulsory reading and its availability	• Robert M. Grant & Judith Jordan (2012) Foundations of Strategy, John Wiley & Sons, Inc. DUE Library • Materials on MOODLE
Recommended reading and its availability	• Art of War, Sun-Tzu (e-book) • Blue Ocean Strategy, Kim Chan & Renee Mauborgne, Harvard Business Review Press; 1st edition 2005. • Business Model Generation, Alexander Osterwalder & Yves Pigneur 2010. • Hand-outs from the lecturer, case studies, additional materials (Moodle)

Informatics

<table>
<tr><td rowspan="2">Subject name</td><td>Hungarian</td><td colspan="4">Informatika</td><td>Level</td><td></td></tr>
<tr><td>English</td><td colspan="4">Informatics</td><td></td><td>DUEN-ISF-010
DUEL-ISF-010</td></tr>
<tr><td colspan="8"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute of Informatics</td></tr>
<tr><td colspan="2">Name of prerequisite subject</td><td colspan="6"></td></tr>
<tr><td rowspan="2">Type</td><td colspan="3">Class hours / week</td><td colspan="2"></td><td rowspan="2">Requirements</td><td rowspan="2">ECTS</td><td rowspan="2">Language of instruction</td></tr>
<tr><td>Lecture</td><td>Seminar</td><td colspan="2">Laboratory</td></tr>
<tr><td>Full time course</td><td>150/45</td><td></td><td>0</td><td></td><td>0</td><td>3</td><td rowspan="2">F</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Long distance course</td><td>150/15</td><td>per Semester</td><td>0</td><td>per Semester</td><td>0</td><td>per Semester</td><td>15</td></tr>
<tr><td colspan="2">Teacher responsible for subject</td><td>Name</td><td colspan="3">Dr. Mariann Váraljai</td><td>Position</td><td>associate professor</td></tr>
<tr><td colspan="2" rowspan="2">Educational goal (competencies to be acquired)</td><td colspan="6">Short description of the subject's goal</td></tr>
<tr><td colspan="6">Education history, development goals
In addition to the necessary basic IT knowledge, students should acquire a higher level of knowledge in the given areas that will enable individuals to develop the knowledge and skills necessary for the efficient, effective and professional use of the most common computer applications in the workplace.
• Be able to confidently manage a graphical operating system.
• Be able to browse the Internet, search for relevant information and conduct electronic correspondence. Learn about scientific search services and the general rules of etiquette for Internet communication (NETiquette)
• Be able to create any complex, multi-page text document with a word processing program, and be able to create professional digital text.
• Be able to create tables, manage data with a spreadsheet program, and be able to implement data visualization.
• Be able to create presentations and apply advanced presentation techniques.
• Be able to use artificial intelligence (AI) responsibly and safely, with particular attention to critical thinking when making decisions involving AI technology.
• Be able to develop an appropriate ethical attitude towards AI and data protection.
• Be able to independently creatively use any innovative IT tools and applications.</td></tr>
<tr><td colspan="2" rowspan="4">Typical transfer ways</td><td>Lecture</td><td colspan="5"></td></tr>
<tr><td>Seminar</td><td colspan="5"></td></tr>
<tr><td>Laboratory</td><td colspan="5">In classrooms with the use of projector and computer, students solve individual tasks on the computers, using programs, with teacher assistance. Computer based exercises, individual tasks.</td></tr>
<tr><td>Other</td><td colspan="5"></td></tr>
<tr><td colspan="2">Requirements (expressed in educational results)</td><td colspan="6">Knowledge
Students familiar with the general and specific mathematics, informatics principles, rules, relationships and procedures of the user programs in the field of</td></tr>
</table>

	information technology. They have adequate expertise in the IT field specialist knowledge of specific tools for selecting tools and to carry out its tasks.
	Ability Students are able to perform partial activities independently during solving more complex system problems. They apply their studied problem solving methods and procedures efficiently in expertly tasks. Throughout the course, participants will learn to handle AI technology with critical thinking and make responsible decisions in source management.
	Attitude Students are interested in new methods and tools related to IT section. Students consider their own professional competences and activities on reflective way. Open to understand and accommodate professional, technological development and innovation area. They apply technology in an ethical manner and in accordance with moral guidelines.
	Autonomy and Responsibility Students strive for efficient and quality work. The responsible for the technical operations carried out independently.
Brief description of the subject content	• Confident use of operating system: managing files and folders. • Goal-oriented use of the Internet, knowledge of NETiquette. Targeted search on the Internet. Use of email programs. • Word processing with MS Word word processor program: Basic text editing operations, creating tables, applying styles, creating a table of contents and other lists, and creating mail merges. • Spreadsheet management with MS Excel spreadsheet program: Creating, uploading and formatting tables, using cell references, formulas, functions, charts as data visualization, applying simple database operations, managing and visualizing data. • Making a presentation with MS PowerPoint or Prezi: basic slide editing and formatting operations, using the slide master, slide templates, applying styles, slideshow settings and presentation techniques. • They make independent, creative use of innovative information technology (e.g. AI) and tools.
Forms of student activity	• Heard information processing by creating notes, • systematization of information has led by tasks (40%) • Self-processing (individual) tasks (60%)
Compulsory reading and its availability	1. WORD 2010 All-In-One for Dummies by Doug Lowe with Ryan Williams, Wiley Publishing Inc., 2010, Indianapolis, Indiana (free pdf on Internet) 2. EXCEL 2010 All-In-One for Dummies by Greg Harvey, Wiley Publishing Inc., 2010, Indianapolis, Indiana (free pdf on Internet) 3. ACCESS 2010 All-In-One for Dummies by Margaret Levine Young, Alison Barrows, and Joseph C. Stockman, Wiley Publishing Inc., 2010, Indianapolis, Indiana (free pdf on Internet) 4. POWER POINT 2010 All-In-One for Dummies by Doug Lowe, Wiley Publishing Inc., 2010, Indianapolis, Indiana (free pdf on Internet) 5. The Internet for Dummies 12th edition by John R. Levine – Margaret Levine Young, Wiley Publishing Inc, Indiana (free pdf on Internet) 6. OFFICE 2010 All-in-one for Dummies by Peter Weverka, Wiley Publishing, Inc. Indiana (free pdf on Internet)
Recommended reading and its availability	• Electronic literature in Moodle or in Neptun. • Office Tutorial and examples (Internet).

Description of project works / measurement reports	**Compulsory assignment:** Create an own individual presentation using MS Power Point or Prezi program based on the conditions set by the instructors. Deadline: **until Week 10!** (Upload to the Moodle system!) **Not mandatory, but for extra (bonus) points:** The student has the opportunity to solve a Word and Excel tasks on a topic of his or her own choice that match and are consistent with the learning materials of the semester. The extra point will be included in the final grade. It is necessary to discuss the undertaken tasks with the teacher in advance. The tasks are to create a document, table, database that meet real needs with the help of Microsoft Office programs.
Description of midterm tests	At the end of each topic, students write closed papers, typically: • ***Week 5***: Word processing computer-based test • ***Week 11***: Spreadsheet management computer-based test In case of any computer-based tests, the opportunity for replacement and correction is available in the last week of the school period (typically ***in Week 13***) and during the exam period.

Basics of Finance

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="3">Pénzügytan alapjai</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="3">Basic of Finance</td><td></td><td>DUEN-TKT-114</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="5"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="5">Institute for Social Sciences
Department of Economics</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="5"></td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="3" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td>Practice</td><td>Lab</td><td></td><td></td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td>10</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="2">Dr. Andrea Keszi-Szeremlei</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="5">By the end of the course the student is expected to understand the essential financial concepts and processes and to be prepared for more advanced economic, business and financial studies. The course covers a wide range of topics related to the basic concepts of finance, such as the role of the financial assets, the financial institutions and the financial system in modern economy. They learn about how the financial markets, the public budget processes and the international financial systems are functioning. They see the links between the domestic and international financial processes. They possess the basic toolbox for performing financial calculations.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="4">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="4">In a classroom with the use of projector or computer in each seminar.</td></tr>
<tr><td>Lab</td><td colspan="4"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements (expressed in learning outcomes/competencies to be acquired)</td><td colspan="5">Knowledge
Students as potential financial professionals will know:
the terminology, types and principles of financial markets, institutions and decisions,
the steps of effective financial performance measurement,
how to implement public finance and international financial, information in individual or collective financial decision situations,
how to create and claim value.</td></tr>
<tr><td colspan="5">Ability
Students will be able to:
collect and analyze financial information,
make financial decisions in their professional and private activities,
apply professional experiences learnt during their economic, business, and financial activities to improve their financial decisions and the effectiveness of their activities.</td></tr>
<tr><td colspan="5">Attitude
Students are expected to be
good at understanding financial situations, to become well-educated financial professionals with empathy, i.e. they can identify and solve financial situations with the other players of financial markets and institutions, based on financial reasoning;
competent, development-oriented financial professionals, who respect their counterparts, are trustworthy and purposeful;
open and willing to discuss all aspects of financial problems which they face in their activities, as well as express their opinion, but without disclosing any sensitive information about the economic, business and financial circumstances of the company or the institution where they are working.</td></tr>
<tr><td colspan="5">Autonomy and responsibility
In professional financial questions, students</td></tr>
</table>

	can understand complex financial situations, play the role of a decision-maker; are able to solve basic financial problems alone; can tackle problems as responsible persons, i.e. can decide if there is a need in a certain financial situation to cooperate with others.
Brief description of the subject content	The course makes students acquainted with the main financial concepts, financial markets, institutions, and decisions. The course presents students introductory issues of public finance and international finance, contributing to the development of their financial thinking skills.
Activity forms of students	Discussing theoretical financial concepts and case studies/applications under the tutor's guidance: 30% Solving exercises under the tutor's guidance: 40% Learning course material and doing exercises independently: 30%
Compulsory reading and its availability	Lecturer's notes available on MOODLE Study materials provided on MOODLE
Recommended reading and its availability	Pamela Peterson –Drake-Frank J.Fabozzi: The Basics of Finance, An Introduction to Financial Markets, Business Finance and Portfolio Management, The Frank J.Fabozzi Series, 665 pages, Wiley Online Library, Elérhető: http://elib.peaceland.edu.ng:8383/greenstone3/sites/localsite/collect/peacelan/index/assoc/HASHc0b1.dir/doc.pdf Eddie McLaney- Business Finance, Theory and Practice, 8th Edition, Pearson Education, Letölthető: http://www.books.mec.biz/tmp/books/E58R5U5EUTFE1SF8SBF3ZSBVUI16N6.pdf
Hand-in Assignments/ measurement reports	Submitting the study material of the presentations delivered in the seminars (10 pages, type space: 1.5, font size: 12, Times New Roman)
Description of midterm tests	The midterm in-class tests will take 120 minutes. The composition of each midterm test: quiz questions with true or false and open ended questions on theory (40%), calculations and problem solving (60%). Solutions will be accepted only with exact demonstration and comments on how the student obtained his/her results.

Ergonomics and health promotion

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="3">Ergonómia és egészségfejlesztés</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="3">Ergonomics and health promotion</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="5">DUEN-TGT-214</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="5">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="5">-</td></tr>
<tr><td colspan="3">Number of Lessons</td><td rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td>Practice</td><td>Lab</td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td>M</td><td>5</td><td>English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td>10</td><td>0</td><td></td><td></td><td></td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="2">Dr. habil Mónika Rajcsányi-Molnár</td><td>Position</td><td>College Teacher</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="5">To enable the students to improve the man-machine-environment system, ergonomic aspects of the interpretation, the effective design and operation of safe and convenient to use human. The student will be familiar with: The ergonomic, security and health-saving regulations in workplaces, and the main knowledge of health promotion.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="4">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="4">Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work</td></tr>
<tr><td>Lab</td><td colspan="4">-</td></tr>
<tr><td colspan="2" rowspan="3">Requirements</td><td colspan="5">Knowledge

Students will
• have the basic terms of ergonomics and how to apply these into practice,
• know the features and correlations of strain and stress
• know the characteristics of sensation and perception,
• know the ergonomic aspects of tool design,
• know the special features and planning conditions of the man-machine-environment system,
• know the security and health-saving regulations in workplaces.
• the student knows the concept of health promotion, the possibilities of individual skill development, and the requirements of creating a healthy environment.</td></tr>
<tr><td colspan="5">Ability

Students will be able
• to evaluate and plan of the man-machine-environment systems from ergonomic aspects,
• to use in practice the learnt planning rules and methods,
• to determine and maintain safe and healthy working conditions,
• to share their knowledge, experience so as to create more effective, safer and more comfortable conditions.</td></tr>
<tr><td colspan="5">Attitude

• They are open and willing to discuss all points of the cases, as well as express their opinion.
• For them it is important to maintain their and others’ safety and health.
• To achieve these goals they endeavour to have ergonomic facilities and environments both at home and in workplaces.
• Obey the relevant safety,- health regulations and ergonomic requirements.</td></tr>
</table>

	Autonomy and responsibility Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.
Brief description of the subject content	The interpretation of ergonomics, the conceptual system, the development of history and social usefulness. Application of the ergonomics and features, The strain and stress correlations. The relationship between stress and performance. The man, as a consumer and user features attitudes, perception, cognition, cognitive processing, and anthropometry. The man-machine interface system /tool design, management/. Design and Selection. The man-machine-environment system characteristics, the design conditions. Physical environment from ergonomic aspects. Safety and healthcare issues in organizations. The concept and purpose of health development, the requirements for creating a health-supportive environment, and learning the legal and economic background conditions.
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Essay writing
Compulsory reading and its availability	• McCauley-Bush, Pamela (2012) Ergonomics: foundational principles, applications and technologies. Boca Raton: CRC Press, ISBN 9781439804452, DUE Library • Materials on MOODLE
Recommended reading and its availability	• Kroemer K, H. K. E. (2001): Ergonomics: How to design for ease and efficiency, Upper Saddle River, NJ, Prentice Hall, DUE Library

Thesis – Research Methodology TVV

Subject name	In Hungarian	Szakdolgozat – Kutatásmódszertan TVV						Szintje	A	
	In English	Thesis – Research methodology						Level	A	
Subject code		DUEN-TVV-090								
Responsible educational unit		Institute for Social Sciences Department of Economics								
Name of Mandatory Preliminary Study										
Number of Lessons								Requirements	Credits (ECTS)	Language of Education
		Theoretical		Practice		Lab				
Full-time			1		0		0	Signature	-	English
Correspondence			5		0		0			
Teacher responsible for the course		Name		Dr. Anita Varga				Position	Collegue Professor	
Educational goals		The goal of the course is to develop the essential research skills required to thesis writing, that is a compulsory task for graduation. The course enables students to find comprehensive solutions to practical problems, as well as to present the findings of their thesis research in a clear and convincing way, both in oral and in writing. The course familiarizes students with various ways of conducting a research, making a questionnaire, carrying out a qualitative interview research. The course will teach students to note down their research results either in a descriptive or numerical way.								
Typical delivery methods		Theoretical		group activity						
		Practice								
		Lab								
Requirements (expressed in learning outcomes/competencies to be acquired)		Knowledge Students as potential graduates know: how to create a questionnaire how to analyze and critically evaluate secondary literature the most important terminology and definition required for a successful thesis writing the most important scientific interconnections within the field of economics								
		Ability Students will be able to: analyze the knowledge system that characterizes economic research learn, understand and apply the library resources and the scientific literature of the field of economics								
		Attitude Successful researchers have an open-minded and impartial attitude towards newest findings, are good listeners and thinkers at the same time. Have an opinion on newest trends and a critical view on old findings of economy.								
		Autonomy and responsibility Independently analyze professional questions and think through scientific findings. In professional questions is characterized by cooperation and responsibility towards the members of professional sphere. Students can tackle problems alone they encounter throughout the research phase.								
Brief description of the subject content		The course familiarizes students with news trends of research methodology. The course presents the available thesis writing regulations, norms and criteria in complience with University requirements. The course contains a thorough description and explanation of sampling, research question types, open ended questions and research scales. The planning and structuring of qualitative interview research. Data analysis, research evaluation.								
Activity forms of students		Research data analysis								

	Frontal work Individual or group work Weekly consultations
Compulsory reading and its availability	Babbie, Earl (2013) The Practice of Social Research. Wadsworth 13th edition
Recommended reading and its availability	MURRAY, Rowena (2011): How to Write a Thesis. 3rd ed. Milton Keynes: Open Univ. Press 384 p. ISBN 978 0 335 24428 7.
Hand-in Assignments/ measurement reports	Weekly personal consultation with the supervisor Discussion about each prepared chapter Submission of thesis until the deadline required in the University's exam schedule Preparation of the research questionnaire. Defining the hypothesis.
Description of midterm tests	During week 13 a presentation about a chosen topic.

Project Management

<table>
<tr><td colspan="2" rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Projektmenedzsment</td><td colspan="2">Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Project Management</td><td colspan="2">Code</td><td>DUEN-TVV-116</td></tr>
<tr><td colspan="3">Subject code</td><td colspan="7"></td></tr>
<tr><td colspan="3">Responsible educational unit</td><td colspan="7">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="3">Name of Mandatory Preliminary Study</td><td colspan="7"></td></tr>
<tr><td colspan="5">Number of Lessons per semester</td><td rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td></td><td>Theoretical</td><td></td><td>Practice</td><td></td><td>Lab</td></tr>
<tr><td>Full-time</td><td>150/39</td><td></td><td>1</td><td></td><td>2</td><td></td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td></td><td>5</td><td></td><td>10</td><td></td><td>0</td></tr>
<tr><td colspan="3">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="3">Dr. Mohamad Saleh</td><td>Position</td><td></td></tr>
<tr><td colspan="3">Educational goals</td><td colspan="7">The goal is to develop the following student skills:
Project oriented leadership
Construction project organizations
Project configuration
Management of project phases
Process skills
Project documentation system development
Project controlling and monitoring system configuration
Change management
Project culture to achieve organizational
System approach</td></tr>
<tr><td colspan="3" rowspan="3">Typical delivery methods</td><td colspan="2">Theoretical</td><td colspan="5">In a classroom with the use of projector and computer in each lecture.</td></tr>
<tr><td colspan="2">Practice</td><td colspan="5">In a classroom with the use of projector and computer in each seminar.</td></tr>
<tr><td colspan="2">Lab</td><td colspan="5"></td></tr>
<tr><td colspan="3" rowspan="4">Requirements</td><td colspan="7">Knowledge
Students as potential project member or manager know:
the scope of project management is essential, comprehensive facts, directions and boundaries
the project management professional vocabulary
techniques and methods used in project management
the project life cycle phases</td></tr>
<tr><td colspan="7">Ability
Students will be able to:
group collaboration and cooperative problem solving
approach multilateral professional issues
use and understand the literary sources of the project management field
manage a variety of resources</td></tr>
<tr><td colspan="7">Attitude
Good negotiators are patient, well-educated and have empathy, i.e. they can identify with the representatives of the other side and accept their opinion.
Open to accommodate new innovative approaches
Avoid using schemes
Susceptible to development opportunities for exploitation
Consider all of the professional issues
An equal partner in co-operation with professional</td></tr>
<tr><td colspan="7">Autonomy and responsibility
In professional questions negotiators can play the role of a decision-maker and are able to solve problems alone. They can tackle problems as responsible persons, i.e. can decide if it is a need in a certain negotiation phase or situation</td></tr>
</table>

	to cooperate with others.
Brief description of the subject content	The course familiarizes students with different between project and routine work. Learning about the project design and realization methods. The features of project management.
Activity forms of students	Max 10% for one individual presentation during the semester Max 20% for group work Max 30% for midterm test Max 40% for final test
Compulsory reading and its availability	Samuel J. Mantel (2008) Project Management in Practice,, International Student Version, 4th Edition, John Wiley & Sons, Inc. 2011. 4th Edition, DUE Library Materials on MOODLE
Recommended reading and its availability	Kerzner, Harold (2013) Project management: a system approach to planning, scheduling and controlling, 11th ed Hoboken: John Wiley & Sons, DUE Library A Guide to the Project Management Body of Knowledge (PMBOK® Guide) Project Management Institute 2013. 5th Edition (e-book)
Hand-in Assignments/ measurement reports	Group work presentation, individual presentation
Description of midterm and final tests	Multi choice questions

Environmental Protection and Energy Management

Subject name		Hungarian		Környezetvédelem és energiagazdálkodás					Level		A
		English		Environmental Protection and Energy Management					Code		DUEN(L)-MUT-110
Responsible educational unit				Institute of Engineering							
Name of prerequisite subject											
Type		Class hours / week						Requirements	ECTS		Language of instruction
		Theoretical		Practice		Lab					
Full time course	150/39		2		0		1	M	5		English
Long distance course	150/15	per Semester	10	per Semester	0	per Semester	5				
Teacher responsible for subject				Name		Dr.Endre Kiss			Position		College Teacher
Educational goal (competencies to be acquired)				Students will get acquainted with the basic principles and general issues of environmental protection, the technologies of abatement and the elimination of pollutants.							
Typical transfer ways				Theoretical		In a classroom with the use of projector or computer in each lecture.					
				Practice		In a classroom with the use of projector or computer in each seminar with max. 20 students					
				Lab		Presentations and exercises in a workshop					
				Other							
Requirements (expressed in educational results)				**Knowledge** Students will know the basic terms of cutting processes know the type and features of cutting able to do calculation of machining time and cost analysis able to do calculation of dimensional chain							
				Ability They are able to use the obtained skills even few years later, in real situations							
				Attitude Open-minded for the mechanical innovation on their field.							
				Autonomy and Responsibility Responsible for their results.							
Brief description of the subject content				Basics of ecology. The purpose and fundamental issues of environment protection. The biological and geological environment. Cycles. The athmosphere. The most important pollutants of air. The properties of dust pollution in the air. The general properties of dust collection. Settling chambers and collectors with flow direction transformation. Cyclones. Basics of bag filters. Operating and cleaning of bag filters. Introduction of electrostatic precipitators. Bag filters with electrostatic charging and their possibilities of applications. Electrostatic precipitation with pulse energisation, abatement and decomposition of gases. Absorption and absorption processes. Scrabbers. Oxidation methods. Burning technologies. Odor abatement. The measurement of air pollution. The properties of natural waters and their pollution, self cleaning. Water treatment technologies and their equipments. The pollution of soil. Waste and waste treatment. Noise and vibration as environmental pollution. Radioactive pollution. Basics of energy management. Renewable energies.							
Forms of student activity				Assimilation of the theoretical material with assistance: 5 % Assimilation of the theoretical material without assistance: 40 % Problem solving with assistance: 15 %							

	Problem solving without assistance: 40 %
Compulsory reading and its availability	1. Ecology and Environmental Protection, selected chapters (on O drive) 2. Environmental Science Toward a Sustainable Future Richard T. Write, Bernard J. Nebel, Prentice Hall
Recommended reading and its availability	3. The Biosphere, Ian Bradbury, Belhaven Press 4. Air Pollution, Its Origin and Control, Kenneth Wark and Cecil F. Warner, Harper and Row 5. Hazardous Waste Management Michael D. LaGrega, McGraw Hill 6. Drinking Water Quality, N.F. Gray, Wiley

Thesis writing- MMENBSC

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="3">Szakdolgozat MMENBSC</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="3">Thesis writing MMENBSC</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="5">DUEN-TVV-091</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="5">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="5">Thesis research – research methodology TVV-090</td></tr>
<tr><td colspan="3" rowspan="2">Number of Lessons</td><td colspan="3" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td>Theoretical</td><td>Practice</td><td>Lab</td><td></td><td></td></tr>
<tr><td>Full-time</td><td>150/13</td><td>1</td><td>0</td><td>0</td><td></td><td rowspan="2">S (signature)</td><td rowspan="2">15</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/5</td><td>5</td><td>0</td><td>0</td><td></td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="3">Dr. Anita Varga</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">To enable the students to the practical approach to complex problems, relieve stress, and awareness of written and oral, persuasive presentation, presentation. By the end of the semester, students should be able to: - identify problems, the main problem is the selection - to discover the cause of the problem analysis, - Set the target to be achieved, and the award criteria - alternatives / solutions of preliminary proposals drawn up - to evaluate selected alternatives / recommendations of the "best", decision to initiate, and to demonstrate the expected effects of the proposals - the decision is made in the export plan - manage the changes.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">-</td></tr>
<tr><td>Lab</td><td colspan="5">-</td></tr>
<tr><td colspan="2" rowspan="3">Requirements</td><td colspan="6">Knowledge

Students as future managers know by the end of course:
• how to describe a firm from managerial aspect
• how to analyse complex situation and problem
• the most important manager tools for analyses
• how to present their results and ideas so as to convince their future bosses</td></tr>
<tr><td colspan="6">Ability

Students will be able:
• to plan their work,
• to take the necessary steps,
• to evaluate their results,
• to finish their tasks by deadline,
• to identify and solve the problems of organizations
• to apply the learning materials in practice
• to communicate effectively with their supervisors
• to work individually
• to report their work both verbally and orally with presentations as well</td></tr>
<tr><td colspan="6">Attitude

They are open and willing to discuss all points of the cases, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They have sensibility to find potentials for development.</td></tr>
</table>

	Autonomy and responsibility Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.
Brief description of the subject content	Preparation for practical work. Bibliography research. Methods of data and information collection (document analysis interview, questionnaires) and their presentation and interpretation. Introduction of work organisation and the organisation having the problem with managerial approach. Presentation of the effect of the selected alternative, implementation as change. Formal requirements, supervisor's report.
Activity forms of students	Individual or group work: 60% Others: 40%
Compulsory reading and its availability	• Earl R. Babbie (2013) The Practice Of Social Research. 13th Edition, Cengage, DUE Library • Evans, David, Gruba, Paul, Zobel, Justin (2014) How to Write a Better Thesis. Springer, DUE Library • Materials on MOODLE
Recommended reading and its availability	• Don E. Ethridge (2004) Research Methodology in Applied Economics 2nd Edition, Wiley, DUE Library

Internship MMENBSC

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Szakmai gyakorlat MMENBSC</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Internship MMENBSC</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TVV-093</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">TVV-090 Thesis writin 1. Thesis research TVV</td></tr>
<tr><td colspan="2" rowspan="2">Number of Lessons</td><td colspan="6" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td colspan="2">Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td><td colspan="2"></td></tr>
<tr><td>Full-time</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="2">S (signature)</td><td>0</td><td>English</td></tr>
<tr><td>Correspondence</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="2"></td><td></td><td></td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="3">Dr. Anita Varga</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">Introduction of general rules of research work and relevant regulations of the University.
By the end of the course the student will be able to:
- make a work plan, evaluating the discrepancies, and take the necessary measures, timely performance of tasks,
- work in organizations to identify problems and resolve,
- do the proper application of lessons learned, professionals to communicate effectively,
- to edit a questionnaire, a survey conducted, and evaluated the questionnaires;
- to determine the proper sample, group to organize a group and apply the methods of identifying problems, exploring the causes, ideas, suggestions for the collection;
- get to know the message of professional, managerial style, drawn, the practice / preparation process of the thesis statement made;
- do processes and activities to represent - awareness, compliance and convincing presentation.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">-</td></tr>
<tr><td>Lab</td><td colspan="5">-</td></tr>
<tr><td colspan="2" rowspan="2">Requirements</td><td colspan="6">Knowledge

Students as future managers know by the end of course:
• how to describe a firm from managerial aspect
• how to analyse complex situation and problem
• the most important manager tools for analyses
• how to present their results and ideas so as to convince their future bosses</td></tr>
<tr><td colspan="6">Ability

Students will be able:
• to plan their work,
• to take the necessary steps,
• to evaluate their results,
• to finish their tasks by deadline,
• to identify and solve the problems of organizations
• to apply the learning materials in practice
• to communicate effectively with their supervisors
• to work individually and in team
• to report their thesis writing process in professional way and style about the detected mistakes and problems so as to suggest developing opportunities</td></tr>
</table>

	Attitude They are open and willing to discuss all points of the cases, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They have sensibility to find potentials for development.
	Autonomy and responsibility Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.
Brief description of the subject content	The student fulfils his/her internship according to his/her study program and specialisation. The internship place has to guarantee the necessary human and technological conditions, which fits the position of student's specialisation.
Activity forms of students	Individual work
Compulsory reading and its availability	-
Recommended reading and its availability	-

Human Resource Management

<table>
<tr><td colspan="2" rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Emberi erőforrás menedzsment</td><td>Level</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Human Resource Management</td><td></td><td>DUEN-TVV-111</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6"></td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Economics</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">-</td></tr>
<tr><td colspan="3">Number of Lessons per semester</td><td colspan="4" rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td></tr>
<tr><td>Full-time</td><td>150/ 39</td><td></td><td>1</td><td></td><td>2</td><td></td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/ 15</td><td></td><td>5</td><td></td><td>10</td><td></td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="3">Dr. habil Mónika Rajcsányi-Molnár</td><td>Position</td><td colspan="2">College Teacher</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="7">The goal of the course is to develop the essential skills required of employees at the workplace and to expand students' HR management skills.
The course broadens the students' knowledge and gives abilities to manage the labor market institutions and policies, workplace and labor market characteristics, the system of labor relations, competence and motivation management, personnel management activities, organizational behavior, organizational communication, human resource management case studies, occupational safety and health project management.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="6">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="6">In a classroom with the use of projector or computer in each seminar.</td></tr>
<tr><td>Lab</td><td colspan="6"></td></tr>
<tr><td colspan="2" rowspan="3">Requirements</td><td colspan="7">Knowledge
The students know the basic facts, relationships, boundaries, limitations in human resource management (HRM) system of knowledge and activity.
They know and understand the processes and procedures for the modalities of human activities.
They familiar with the business of manufacturing and service processes, human and social relationships, their impact on human resources.
knows that a key element in the prosperity of the people working successfully</td></tr>
<tr><td colspan="7">Ability
The students can apply the analyzing methods and tasks (planning, organizing, and thinking in alternatives, inspection) on theoretical and practical grounds.
They are able to achieve the tasks assigned to them without control and inspection. They can plan, schedule and complete the tasks within their scope of responsibility.
They can make the suggestions and decisions and take measures required for successfully solving a task within their own scope of competence.
They are capable of understanding the cause-result relationship and using analyzing skills in the activity chain of planning-organizing-decision preparing-decision-making
They can c apply the roles connected to employment and use and utilize managerial competences.
They are able to formulate an opinion of their own, deliver and defend it.</td></tr>
<tr><td colspan="7">Attitude
Good negotiators are patient, well-educated and have empathy, i.e. they can identify with the representatives of the other side and accept their opinion.
Good, future-oriented bargainers respect their counterpart, are trustworthy and not aggressive.
It takes into account the employment practices of legal, ethical and professional rules.
Susceptible to accommodate new information, new tasks that require collaboration.</td></tr>
</table>

	Considers it important for individual career planning. It strives to lifelong learning and help the staff as well.
	Autonomy and responsibility In professional questions negotiators can play the role of a decision-maker and are able to solve problems alone. They can tackle problems as responsible persons, i.e. can decide if it is a need in a certain negotiation phase or situation to cooperate with others. Ability to select its own staff, taking into account the specified criteria. Ability to independently supply the areas it controls human processes. Sense of responsibility for subordinates working fellow.
Brief description of the subject content	Evolution of the human resource management. Environmentally determination of HRM. The HRM place in the organizational structure. The HRM's activities and tasks. Job planning, analysis, competency models. Career management, career planning alignment of individual and organizational career opportunities. The workforce training and development opportunities. Performance evaluation and feedback management. Compensation and incentive systems. Industrial relations system. Management of organizational changes. New trends in HRM practice.
Activity forms of students	Pair work presentation Group work (case study analysis)
Compulsory reading and its availability	David Campbell & Tom Craig (2011): Organisation and the Business Environment, Second edition, Routledge Publishing, USA Materials on Moodle Handouts from the lecturer
Recommended reading and its availability	TORRINGTON, Derek – HALL, Laura – TAYLOR, Stephen (2005): Human Resource Management. Pearson Education Limited, Essex, England.810 p. ISBN 978-0-273-68713-9 ARMSTRONG, Michael (2009): A handbook of Human Resource Management Practice, 11th ed. London: Kogan Page 1062 p. ISBN 0-7494-4631-5 http://www.academia.edu/1418840/ARMSTRONGS_HANDBOOK_OF_HUMAN_RESOURCE_MANAGEMENT_PRACTICE)
Hand-in Assignments/ measurement reports	Students have to take a final test
Description of final test	Multi-choice questions

Basics of energy saving and conservation

<table>
<tr><td colspan="2" rowspan="2">Name of the subject</td><td>in Hungarian</td><td colspan="4">Gazdaságos energiafelhasználás alapjai</td><td>Level</td><td>Spec</td></tr>
<tr><td>in English</td><td colspan="4">Basics of energy saving and conservation</td><td>Code</td><td>DUEN-MGT-153
DUEL-MGT-153</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="7">Technical Institute, Department of Energy and Mechanical Engineering</td></tr>
<tr><td colspan="2">Name of compulsory prior learning</td><td colspan="7"></td></tr>
<tr><td colspan="2">Type</td><td>Presentation</td><td colspan="2">Practice</td><td colspan="2">Laboratory</td><td>Requirement</td><td>Credit</td><td>Language of education</td></tr>
<tr><td>Full time</td><td>150/39</td><td>per week</td><td>2</td><td>per week</td><td>1</td><td>per week</td><td>0</td><td rowspan="2">E(Exam)</td><td rowspan="2">5</td><td rowspan="2">english</td></tr>
<tr><td>Part time</td><td>150/15</td><td>per term</td><td>10</td><td>per term</td><td>5</td><td>per term</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the subject</td><td colspan="2">Name</td><td colspan="3">Dr. Éva Kovács-Bokor</td><td>schedule</td><td>associate professor</td></tr>
<tr><td colspan="2">Training objective and justification of the course (content, output, location in the curriculum)</td><td colspan="7">Goals, development objectives
To introduce students to the field of energy management and to familiarise them with the operation, use and development of the necessary high-efficiency and safe equipment.</td></tr>
<tr><td colspan="2" rowspan="4">Typical delivery methods</td><td>Presentation</td><td colspan="6">For all students in a large lecture hall with a blackboard presentation.
Use of projector.</td></tr>
<tr><td>Practice</td><td colspan="6">Supervised and independent solution of numerical examples and case studies in the form of small-scale exercises.</td></tr>
<tr><td>Laboratory</td><td colspan="6"></td></tr>
<tr><td>Other</td><td colspan="6"></td></tr>
<tr><td colspan="2" rowspan="3">Requirements (expressed in terms of learning outcomes)</td><td colspan="7">Knowledge
Have a comprehensive knowledge of the basic facts, directions and limits of the subject area of engineering.
Knowledge of the general and specific rules, contexts and procedures necessary for the operation of the field of engineering.
Knowledge of the terminology, key concepts and theories related to the field.
Comprehensive knowledge of the main theories in the field of knowledge acquisition and problem solving
methods of problem solving.
Basic knowledge of machine design principles and methods, control procedures and operational processes.
Has an applied knowledge of measurement procedures, their tools, instruments and measuring equipment used in mechanical engineering.
Understand, characterise and model the structure and operation of the structural units and elements of mechanical systems, the design and interrelationship of the system components used.</td></tr>
<tr><td colspan="7">Ability
The ability to analyse at a basic level the disciplines that make up the knowledge base of the technical field, to synthesise relationships and to make appropriate evaluations.
Ability to apply the most important terminologies, theories and procedures of the technical discipline in the performance of related tasks.
Ability to plan, organise and conduct independent learning.
Ability to identify routine technical problems and to apply the principles and techniques needed to solve them
to identify, formulate and implement (standard operations in practice)
(using standard procedures).</td></tr>
<tr><td colspan="7">Attitude
It assumes and authentically represents the social role of its profession and its fundamental relationship with the world.
Open to learning about, accepting and authentically communicating professional and technological developments and innovations in the field of engineering.
Seeks to solve problems, preferably in cooperation with others.
Have the stamina and tolerance of monotony to carry out practical activities
has the ability to
Applies his/her acquired technical knowledge to gain a thorough understanding of observable phenomena, to describe and explain their laws.
In his/her work, he/she observes and complies with the relevant safety, health,</td></tr>
</table>

	environmental, quality assurance and control requirements.
	Autonomy and responsibility In unexpected decision situations, he/she independently thinks through and develops comprehensive, substantiating professional questions on the basis of given sources. In the performance of his/her professional duties, he/she will also cooperate with qualified professionals from other disciplines (primarily technical, economic and legal). He/she will share his/her experience with his/her colleagues in order to support their development. Assumes responsibility for the consequences of his/her technical analyses, the resulting proposals and the decisions taken.
Short description of the subject content	Introduction to energy management. Areas of energy and energy management. Overview of the world energy economy, main trends and macro-relationships. Overview of national energy management in Hungary. National energy structure and energy balance. Main energy needs of each economic sector. Energy demand and energy use of the population. Energy carriers and sources I: Energy carriers and energy sources of our planet. Exhaustible, renewable and renewable resources. Physical and chemical properties of different energy carriers. Extraction, transport and storage of energy carriers. Fossil fuels. Coal, oil, natural gas. Energy carriers and resources II: Exhaustible energy sources: nuclear energy. Renewable energy sources: solar, wind, hydro and geothermal, biomass, biogas. Waste-to-energy options. Conversion processes of energy carriers: combustion, combustion products. Energy conversion l. Thermal energy: stove, convector, hot water boiler, steam boiler. Electricity: thermal power plants, gas engines, gas and steam turbines, steam cycles, condensing power plants, combined cycle power plants. Treatment, storage, disposal and use of pollutants. Remediation, maintenance. Energy transport. Storage facilities. Water, gas, hot water, steam and electricity networks. Energy use I. Meeting heat demand, heating and hot water supply. Energy use in industrial processes. Electricity and heat consumption. Energy requirements of agriculture, transport and services. Ways of meeting demand. Legal environment, strategic approach. Legal environment of energy supply, laws and regulations. Corporate energy management. Tasks of the energy manager. Strategic approach. Energy management. Systematic description of energy use. Understanding of system and system boundary. Mass and energy balances. Effectiveness and efficiency. Energy use lI . Nature of use, performance and duration diagram. Estimation of expected consumption. Optimal control, monitoring of consumption, equipment operating in parallel. Energy storage options, storage. Energy use in residential, government, industry and agriculture. The energy mix. Energy use llI Transport of energy carriers. Transport planning. Optimal means and routes of transport. Recovery of losses. Safety considerations. Environmental constraints, emissions of pollutants during energy use Energy use lV . Description of energy conversion and consumption processes. Balance equations: mass, energy and waste balance. Identification of losses.
Types of student activities	Presentation: Processing of lectures with notes 40%, independent processing of theoretical material 20%, preparation of a seminar presentation 40%
Required literature and contact details	• Endre Kiss: The Basics of Economical Energy Use, Electronic handbook, 2023, Moodle system
Recommended literature and contact details	• Y. Mizuta: Energy Saving Technology kézikönyv, JICA-DEED kiadásában, 2003
Description of tasks to be submitted/measurement reports	Full-time: student seminar presentations Part-time: student seminar presentations
Description and timetable of the workshops	During the semester, for correspondence students in the 2nd and 4th consultation, and for day students in the 6th and 13th week, five theoretical questions from the lectures. The papers are 100-100 marks, with a maximum of 20 marks for each question. The marks for the essay will be calculated according to the mark limits given in the Regulations.

ESG approach for businesses

Name of the subject	in Hungarian	ESG szemlélet a vállalkozásoknál							Level	Spec	
	in English	ESG approach for businesses							Code	**TGT-110**	
Responsible educational unit		Institute for Social Sciences Department of Economics									
Name of compulsory prior learning											
Type	Presentation	Practice		Laboratory		Requirement			Credit	Language of education	
Full time	per week 2	per week	1	per week	0	M(Midterm Exam)			5	english	
Part time	per term 10	per term	5	per term	0						
Teacher responsible for the subject		Name		Dr. Andrea Keszi-Szeremlei					schedule	college professor	
Training objective and justification of the course (content, output, location in the curriculum)		**Goals, development objectives** After mastering the individual ESG strategic goals, the student is able to consciously apply the knowledge and apply the principles necessary for economic and environmental sustainability at home and at work.									
Typical delivery methods		Presentation	For all students in a large lecture hall with a blackboard presentation. Use of projector.								
		Practice	Supervised and independent solution of numerical examples and case studies in the form of small-scale exercises.								
		Laboratory									
		Other									
Requirements (expressed in terms of learning outcomes)		**Knowledge** • Knows the concept and strategy of ESG • Can interpret the elements belonging to each group of ESGs									
		Ability • Able to independently apply the provisions of ESG • He/She is able to consciously influence his environment and protect it • Able to apply the acquired knowledge at home and at work based on the ESG strategy									
		Attitude • Open to environmental protection and the resulting economic knowledge • Interested in new methods and tools related to the field. • Lives consciously using the knowledge he has acquired									
		Autonomy and responsibility • In the course of performing his/her professional tasks, he/she also cooperates with qualified professionals from other fields. • Take responsibility for your consumer decisions and encourage others to be aware									
Short description of the subject content		Climate change trends, main data, expected effects Basics of sustainable development The importance of environmental protection Results of climate change summits Basics of ESG strategy The content and possible steps of individual points of the ESG strategy Consideration of the ESG strategy in business operations									
Types of student activities		• Lecture: Processing of the heard text with note-taking 60%, independent processing of theoretical material 30%, independent research work 10%. • Practise: Processing of the heard text with note-taking 10%, independent preparation for the laboratory measurement 20%, active participation in the laboratory measurement 70%.									
Required literature and contact details		• Brendan Bradley: ESG Investing, https://download.e-bookshelf.de/download/0016/1914/26/L-G-0016191426-0052605701.pdf									

Recommended literature and contact details	• ESG Scores V2.6.3. -ESG book – 2022 https://www.esgbook.com/docs/marketing/userguides/USERGUIDE_ESGBook_SCO_ESG_262.pdf • wbcsd: ESG Disclosure Hangbook, 2019https://docs.wbcsd.org/2019/04/ESG_Disclosure_Handbook.pdf

Analysis of Business Cases

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Üzleti esettanulmányok elemzése</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Analysis of Business Cases</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TVV-119</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">-</td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="3"></td><td rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td colspan="2">Practice</td><td colspan="2">Lab</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td colspan="2">2</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td colspan="2">10</td><td>0</td></tr>
<tr><td colspan="3">Teacher responsible for the course</td><td>Name</td><td colspan="2">Dr. Erzsébet Szász</td><td>Position</td><td colspan="2">Collgege Professor</td></tr>
<tr><td colspan="3">Educational goals</td><td colspan="6">By the end of the course the students have more knowledge in social sciences. They will collect methodological skills and will have the necessary professional and general education. With their economic, business, management and sociological skills they will be able to analyse different markets and maintain a company’s competitive advantage.</td></tr>
<tr><td colspan="3" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work</td></tr>
<tr><td>Lab</td><td colspan="5">-</td></tr>
<tr><td colspan="3" rowspan="4">Requirements</td><td colspan="6">Knowledge
Students will
have the necessary knowledge both in professional and general fields,
know how to combine their economic, business, management and sociological skills,
know the domestic business models and some special types of innovation.</td></tr>
<tr><td colspan="6">Ability
Students will be able
to investigate business problems with a board view,
to identify the synergy structure of business activity,
to apply both theoretical and practical analysing systems and tasks (planning, managing, using alternatives, control),
to use in practice the process of planning – managing –preparation of decision – decision-making – control and handle its cause-effect relation in competitive situation.</td></tr>
<tr><td colspan="6">Attitude
They are open and willing to discuss all points of the cases, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They have sensibility to find potentials for development.</td></tr>
<tr><td colspan="6">Autonomy and responsibility
Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.</td></tr>
<tr><td colspan="3">Brief description of the subject content</td><td colspan="6">The value chain and creation of double value both for buyers and suppliers. The technical and economic connections of value chain. The customer value and logistic buyer satisfaction. The customer value and the internet. The supply chain: system (network) of business relationships. The role of suppliers. Potential suppliers and the internet. Evaluation of suppliers, the criteria of supplier evaluation in internet. Strategic procurement. The methods and importance of demand anticipation in production logistics. Resource planning</td></tr>
</table>

	systems with buyer's cooperation. Management of customer relationship (CRM). The criteria of CRM systems (soft wares). The importance of services and its logistic problems. International transport. Competitiveness and supply chain management. Integration of supply chain. Measurement of supply chains. Tendencies in supply chain management.
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Essay writing
Compulsory reading and its availability	Foley, James F. (2013) The global entrepreneur: taking your business international. 3rd ed. Jamric Press Internat, DUE Library Thierry Burger-Helmchen (ed) (2012) Entrepreneurship - Creativity and Innovative Business Models. InTech. ISBN 978-953-51-0069-0 Materials on MOODLE
Recommended reading and its availability	W. Chan Kim – Renee A. Mauborgne (2015) Blue Ocean Strategy, Expanded Edition: How to Create Uncontested Market Space and Make the Competition Irrelevant. Harvard Business Review Press Marc A. Annacchino, P.E. (2003) New Product Development From Initial Idea to Product Management. Elsevier Inc. ISBN: 978-0-7506-7732-5 Peter Thiel - Blake (2014) Master Zero to One: Notes on Startups, or How to Build the Future. Crown Business, DUE Library
Hand-in Assignments/ measurement reports	Processing and analysis of 2 case studies with suggestions as well. The teams choose the cases. (On week 8th and 10th)
Description of midterm tests	Midterm test on week 12th. Supplementary test on week 13th.

Basics of Logistics

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Logisztika alapjai</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Basics of Logistics</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TVV-212</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6"></td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="3" rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td>Practice</td><td>Lab</td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td>10</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="3">Dr. Lajos Veres</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">The goal of the course is to provide a broad overview on the basic mechanisms and processes of logistics and supply chain management, material flow and warehousing. The course enables students to gain both practical and theoretical knowledge on the logistics processes of procurement, production and distribution, and to become familiar with the mechanisms of material handling, information technology and transportation management.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">Flipchart, blackboard and other multimedia equipment in auditorium</td></tr>
<tr><td>Practice</td><td colspan="5">Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work.</td></tr>
<tr><td>Lab</td><td colspan="5"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements</td><td colspan="6">Knowledge

By the end of the course, students will
• understand the basic concepts of logistics
• know the necessary operation mechanisms to successfully manage logistics activities
• know the main laws and regulations applied in contemporary logistics
• know the main strategies and techniques applied in logistics</td></tr>
<tr><td colspan="6">Ability

Students will be able to:
• Use and apply the basic terms and vocabulary of the profession with confidence
• Synthetize and organize their knowledge and apply it in the appropriate situations
• Identify the main resources and activities in logistics
• Apply the strategic planning tools used in contemporary logistics
• Use and apply the literature of the profession with confidence</td></tr>
<tr><td colspan="6">Attitude

Students should be:
• Open to classroom case studies, and to the active interpretation of discussed situations.
• Sensitive and critical towards theoretical and practical innovation
• Susceptible to development opportunities for exploitation.</td></tr>
<tr><td colspan="6">Autonomy and responsibility

Responsible for his/her own development.</td></tr>
</table>

	Cooperate with the instructor and fellow students, seeks to solve the discussed problems. Feel responsible for the development of his/her working environment
Brief description of the subject content	Basic logistics concepts and phenomena. Lgistics systems and modules. The flow of materials and information. Procurement and distribution. Warehousing, storing and inventory management. Production management, Transportatio systems. Supply chain management and the bullwhip effect. Simulations and planning in logistics
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Group work, role play
Compulsory reading and its availability	• Jacobs, R.F. – Chase, R.B.: Operations and supply chain management, McGraw Hill, 2011, DUE Library, ISBN-10: 0071220909 ISBN-13: 978-0071220903 • Gourdin, K: Global Logistics management: A competitive advantage for the 21st century, 2nd edition, Wiley-Blackwell, 2006, DUE Library, ISBN-13: 978-1405127134, ISBN-10: 1405127139 • Materials on MOODLE
Recommended reading and its availability	• Mangan, J. – Lalwani, C. – Butcher, T.: Global logistics and supply chain management, Wiley, 2008, DUE Library, ISBN-13: 978-0470066348, ISBN-10: 0470066342

Novel techniques of enviromental protection

Name of the subject		in Hungarian		Új környezetvédelmi technikák					Level	Spec	
		in English		Novel techniques of enviromental protection					Code	DUEN-MGT-226 DUEL-MGT-226	
Responsible educational unit				Technical Institute, Department of Energy and Mechanical Engineering							
Name of compulsory prior learning											
Type		Theoretical		Practice		Lab		Requirement	Credit	Language of education	
Full time	150/39	per week	2	per week	0	per week	1	M	5	english	
Part time	150/15	per term	10	per term	0	per term	5				
Teacher responsible for the subject				Name		Dr. Éva Kovács-Bokor			schedule	associate professor	
Training objective and justification of the course (content, output, location in the curriculum)				**Goals, development objectives** Introduce students to the latest environmental techniques and their application, recycling of used lithium batteries.							
Typical delivery methods				Theoretical	For all students in a large lecture hall with a blackboard presentation. Use of projector.						
				Practice							
				Lab	Measurements in laboratories						
				Other							
Requirements (expressed in terms of learning outcomes)				**Knowledge** Knowledge of the general and specific rules, contexts and procedures for the operation of the technical field. Familiarity with the terminology, the main contexts and theories related to the field. Comprehensive knowledge of the main theories of the field in terms of knowledge acquisition and problem solving methods of problem solving. Basic knowledge of machine design principles and methods, control procedures and operational processes. Has an applied knowledge of measurement procedures, their tools, instruments and measuring equipment used in mechanical engineering. Understand, characterise and model the structure and operation of the structural units and elements of mechanical systems, the design and interrelationship of the system components used.						
				Ability Ability to apply the most important terminology, theories and procedures of the technical field in the performance of related tasks. Ability to plan, organise and conduct independent learning. Ability to identify routine technical problems and to apply the necessary principles and techniques to solve them to identify, formulate and implement (standard operations in practice) (using standard procedures).						
				Attitude It is open to learning about, embracing and authentically communicating professional, technological development and innovation in engineering. Seeks to solve problems, preferably in cooperation with others. Have the stamina and tolerance of monotony to carry out practical activities has the ability to Applies his/her acquired technical knowledge to gain a thorough understanding of observable phenomena, to describe and explain their laws. In his/her work, he/she observes and complies with the relevant safety, health, environmental, quality assurance and control requirements.						
				Autonomy and responsibility In carrying out his/her professional duties, he/she will also cooperate with qualified professionals in other fields (primarily technical, economic and legal). He/she shares his/her experience with his/her colleagues, thus contributing to their development. He/she is responsible for the consequences of his/her technical analyses, the proposals he/she makes and the decisions he/she takes.						

Short description of the subject content	The expected construction of new types of equipment in line with Chinese emission reduction plans (aimed at developing emission reduction processes and equipment that meet a tenth of the EU limit). Possibilities to improve the efficiency of conventional electrostatic precipitators in coal and other fossil-fired power plants. Electrostatic precipitators with increased efficiency, Bag filters with improved electrostatic charge. Electrostatic cyclones. Venturi high efficiency filters. Design principles for separators using a combination of the above options. Design guidelines. New trends in water treatment. Newer principles and options for biological water purification. Theory and practice of endocrine disruptor removal from water. New noise reduction techniques (interference, new types of attenuation. New methods of odour control, modern methods of odour measurement. Dioxin and PCB abatement. New radioactivity reduction techniques. Processing of red mud, extraction of rare earths and scandium.
Types of student activities	Presentation: Processing of lectures with notes 40%, independent processing of theoretical material 20%, preparation of lab notes 40%
Required literature and contact details	• Endre Kiss: New environmental techniques, Electronic note, 2023, Moodle system
Recommended literature and contact details	• Y. Mizuta: Energy New Environmental Technologies Technology Handbook, JICA-DEED publication, 2003 Proceeding Publication of the Wroclaw International World Conference on Electrostatic Discharge Elimination
Description of tasks to be submitted/measurement reports	Full-time: preparation of 5 measurement reports Part-time: 3 measurement reports
Description and timetable of the workshops	During the semester, for correspondence students in the 2nd and 4th consultation, and for day students in the 6th and 13th week, five theoretical questions from the lectures. The papers are 100-100 marks, with a maximum of 20 marks for each question.

Enterprise Information Systems

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="3">Vállalati információs rendszerek</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="3">Enterprise Information Systems</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="5">DUEN-TVV-120</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="5">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="5">DUEN-TVV-220 Business Economics
DUEN-ISF-010 Informatics</td></tr>
<tr><td colspan="3" rowspan="2">Number of Lessons</td><td colspan="3" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td>Theoretical</td><td>Practice</td><td>Lab</td><td></td><td></td></tr>
<tr><td>Full-time</td><td>150/39</td><td>0</td><td>2</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>0</td><td>10</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td>Name</td><td colspan="2">Anita Mihálovicsné Kollár</td><td>Position</td><td></td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="5">The target of this course is to introduce the students to the enterprise information systems in basic business process approach. The course contains the types, role, and tasks of enterprise information systems and basic knowledge of selecting, implementing, operating and extending these systems.
The course enforces the students in the knowledge of system approach, highlights the importance of information management in the business processes.
Performing the course, students will be able to navigate in the operative information flow and information management of enterprises and work in teams for implementation, development and connection to other internal and external enterprise information systems.</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="4">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="4">In a classroom project work, small team and cooperative work with the use of projector or computer in each seminar.</td></tr>
<tr><td>Lab</td><td colspan="4"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements</td><td colspan="5">Knowledge
overviews the functionalities, architecture, data and process model of standard ERP systems,
has a strategic and system-oriented thinking,
knows the principles, policies and processes in extended enterprise information systems and related business and logistic processes.</td></tr>
<tr><td colspan="5">Ability:
applies the theoretical knowledge systematically in practice,
manages the system components individually and in system,
can work and support team in implementation projects of enterprise information systems,
regulates basic-level business processes by enterprise information systems,
overviews the documentation of enterprise information systems and the related software,
understands the professional literature,
applies the definitions of the specialization professionally.</td></tr>
<tr><td colspan="5">Attitude
opened for the innovations of the specialization,
pursue continuous self-improvement,
able to solve problems alone,
can tackle problems as responsible persons,
self-training ability,
opened for cooperation with professionals on other related fields.</td></tr>
<tr><td colspan="5">Autonomy and responsibility
responsible for self-training,</td></tr>
</table>

	• co-operates with colleagues, • search the solutions for problems, • responsible for the development of work environment, • takes responsible part in forming professional opinions and its explanations.
Brief description of the subject content	The role, place, history, types, integration and general requirements of enterprise information systems in the enterprise. Introduction to a certain enterprise information system and the basic use of it. General system architectures, technologies, functions, data structures and data manipulation. ERP systems, standard systems. SRM, CRM, SCM systems. Functional structure of ERP systems. Organizational structure, Master data, Transactional data and Document flow concept. Type, hierarchy, state and life cycle of the documents. The sales and distribution, procurement, production planning and execution, financial and human capital management functional modules. Order-to-Cash case, Procure-to-Pay, Plan-to-Produce. Controlling and operative decision support. Office automation systems. Management information systems. Selecting and customizing standard ERP systems. Business modelling techniques.
Activity forms of students	Theoretical knowledge acquiring with tutor 30% Individual knowledge acquiring 25% Practical tasks and complex work with tutors 15% Individual practical tasks and complex work 30%
Compulsory reading and its availability	[1] Simha R. Magal (Author), Jeffrey Word (Author): Integrated Business Processes with ERP Systems 1st Edition, ISBN-13: 978-0470478448, Wiley&Sons, 2012 [2] SAP University Alliances: Introduction to the ERP system by GBI, version 3.0, 2016
Recommended reading and its availability	-

Logistic Management

<table>
<tr><td colspan="2" rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Logisztikai menedzsment</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Logistic Management</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TVV-214</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">Business logistics DUEN-TVV-121</td></tr>
<tr><td colspan="3">Number of Lessons</td><td colspan="4" rowspan="2">Requirements</td><td rowspan="2">Credits (ECTS)</td><td rowspan="2">Language of Education</td></tr>
<tr><td></td><td>Theoretical</td><td>Practice</td><td>Lab</td></tr>
<tr><td>Full-time</td><td>150/39</td><td>2</td><td>1</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>10</td><td>5</td><td>0</td></tr>
<tr><td colspan="3">Teacher responsible for the course</td><td>Name</td><td colspan="3">Dr. Levente Rádai</td><td>Position</td><td>College Pfrofessor</td></tr>
<tr><td colspan="3">Educational goals</td><td colspan="6">Today one of the strategic important aspects of organizational competitiveness is the management of actors in supply chain. That’s why the basic aim of this course is to develop a certain attitude. After the course the students will be able to approach and understand supply chains as a whole. They will understand that the base of logistic service is awareness of the buyer’s value and to apply for this value. This correspondence is the key of business success and in most cases it can be realised only with cooperation with other firms. The supply chain can ensure a frame for this cooperation, if the members of supply chain realize this and have the competences to use this possibility. The learning material enable the students to analyse and identify the connections in supply chains; to define the criteria of supply chains and networks in different sectors; to avoid or decrease the negatives of bullwhip effect.
The course is the last course of the Logistic Specialisation, which gives a board view because it focuses on logistic activities among organisations.</td></tr>
<tr><td colspan="3" rowspan="3">Typical delivery methods</td><td>Theoretical</td><td colspan="5">In a classroom with the use of projector or computer in each lecture.</td></tr>
<tr><td>Practice</td><td colspan="5">-</td></tr>
<tr><td>Lab</td><td colspan="5">-</td></tr>
<tr><td colspan="3" rowspan="3">Requirements</td><td colspan="6">Knowledge

Students will
• understand and learn the basic terms of logistic management,
• know the difference between supply chain and value chain,
• know the basic methods and interrelationships of logistic management,
• get to know the most important characteristics of supply chains in different sectors.</td></tr>
<tr><td colspan="6">Ability

Students will be able
• to investigate business challenges from a logistic management aspect,
• to determine the features of network,
• to avoid or decrease the losses due to bullwhip effect,
• recognize and evaluate the synergy effects of tools of logistic management.</td></tr>
<tr><td colspan="6">Attitude

They are open and willing to discuss all points of the cases, as well as express their opinion, but without disclosing any important information about the circumstances of their own company. They have sensibility to find potentials for development.</td></tr>
</table>

	Autonomy and responsibility Students feel responsibility for both their development and environment. They cooperate with each other. They have sensibility to find possible resolving opportunities for problems.
Brief description of the subject content	The value chain and creation of double value both for buyers and suppliers. The technical and economic connections of value chain. The customer value and logistic buyer satisfaction. The customer value and the internet. The supply chain: system (network) of business relationships. The role of suppliers. Potential suppliers and the internet. Evaluation of suppliers, the criteria of supplier evaluation in internet. Strategic procurement. The methods and importance of demand anticipation in production logistics. Resource planning systems with buyer's cooperation. Management of customer relationship (CRM). The criteria of CRM systems (soft wares). The importance of services and its logistic problems. International transport. Competitiveness and supply chain management. Integration of supply chain. Measurement of supply chains. Tendencies in supply chain management.
Activity forms of students	Individual work
Compulsory reading and its availability	• Mangan, John [et al.] (2012) Global logistics and supply chain management. 2nd ed Hoboken: John Wiley & Sons, DUE Library
Recommended reading and its availability	• Blanchard, David (2007) Supply chain management: best practices. Hoboken, N.J.: Wiley & Sons, DUE Library

Business Logistics

<table>
<tr><td rowspan="2">Subject name</td><td>In Hungarian</td><td colspan="4">Vállalati logisztika</td><td>Szintje</td><td>A</td></tr>
<tr><td>In English</td><td colspan="4">Business Logistics</td><td>Level</td><td>A</td></tr>
<tr><td colspan="2">Subject code</td><td colspan="6">DUEN-TVV-121</td></tr>
<tr><td colspan="2">Responsible educational unit</td><td colspan="6">Institute for Social Sciences
Department of Management and Enterprise Sciences</td></tr>
<tr><td colspan="2">Name of Mandatory Preliminary Study</td><td colspan="6">Basics of Logistics DUEN-TVV-212</td></tr>
<tr><td colspan="3" rowspan="2">Number of Lessons</td><td colspan="4" rowspan="2">Requirements</td><td>Credits (ECTS)</td><td>Language of Education</td></tr>
<tr><td>Theoretical</td><td>Practice</td><td>Lab</td><td></td><td></td></tr>
<tr><td>Full-time</td><td>150/39</td><td>1</td><td>2</td><td>0</td><td rowspan="2">M</td><td rowspan="2">5</td><td rowspan="2">English</td></tr>
<tr><td>Correspondence</td><td>150/15</td><td>5</td><td>10</td><td>0</td></tr>
<tr><td colspan="2">Teacher responsible for the course</td><td colspan="2">Name</td><td colspan="2">Dr. Lajos Veres</td><td>Position</td><td>College Professor</td></tr>
<tr><td colspan="2">Educational goals</td><td colspan="6">The goal of the course is to highlight the importance of business logistics within an organization, and to provide a broad overview of the main processes, methodologies and strategies applied in business logistics. By the end of the course, students will able to plan, operate and analyse information and material management processes, and they will be able to recognize and apply strategic and operational tools during planning and execution of logistics activities</td></tr>
<tr><td colspan="2" rowspan="3">Typical delivery methods</td><td colspan="2">Theoretical</td><td colspan="4">Flipchart, blackboard and other multimedia equipment in auditorium</td></tr>
<tr><td colspan="2">Practice</td><td colspan="4">Flipchart, blackboard and other multimedia equipment in smaller seminar rooms suitable for group work.</td></tr>
<tr><td colspan="2">Lab</td><td colspan="4"></td></tr>
<tr><td colspan="2" rowspan="4">Requirements</td><td colspan="6">Knowledge

By the end of the course, students will
• understand the basic concepts of business logistics
• know the necessary operation mechanisms to successfully manage business logistics activities
• be familiar with the internal and external factors influencing logistics activities
• know the main strategies and techniques applied in business logistics</td></tr>
<tr><td colspan="6">Ability

Students will be able to:
• Use and apply the basic terms and vocabulary of the profession with confidence
• Synthetize and organize their knowledge and apply it in the appropriate situations
• Identify the main resources in business logistics
• Apply the strategic planning tools used in business logistics
• Use and apply the literature of the profession with confidence</td></tr>
<tr><td colspan="6">Attitude

Students should be:
• Open to classroom case studies, and to the active interpretation of discussed situations.
• Sensitive and critical towards theoretical and practical innovation
• Susceptible to development opportunities for exploitation.</td></tr>
<tr><td colspan="6">Autonomy and responsibility

Responsible for his/her own development.</td></tr>
</table>

	Cooperate with the instructor and fellow students, seeks to solve the discussed problems. Feel responsible for the development of his/her working environment
Brief description of the subject content	Concepts and strategic value of business logistics. Information flow within the company. Logistics and production planning. Warehousing, purchasing, inventory management. Inbound and outbound logistics. Information and ICT in logistics
Activity forms of students	Case study analysis, Presentations, Individual work, Frontal class work, Group work, role play
Compulsory reading and its availability	• Gourdin, K: Global Logistics management: A competitive advantage for the 21st century, 2nd edition, Wiley-Blackwell, 2006, DUE Library, ISBN-13: 978-1405127134, ISBN-10: 1405127139 • Ghiani,G. – Laporte, G. – Musmano, R.: Introduction to logistics systems management, Wiley, 2013, DUE Library, ISBN-13: 978-1119943389, ISBN-10: 1119943388 • Materials on MOODLE
Recommended reading and its availability	• Blanchard, D.: Supply chain management best practices, Wiley, 2008, DUE Library, ISBN-10: 0470531886, ISBN-13: 978-0470531884 • Szegedi, Z.: Case studies to logistics management, Kossuth, 2008, DUE Library, ISBN: 9789630957922