

DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	Fundamentals of Mechanical Engineering				
Head of course	PhD Marko Kršulja, Lecturer				
Study programme	Professional undergraduate study Transport				
Status of a course	Obligatory				
Year of study	2.	Semester	III	ECTS credits	4
Teaching plan (L + E + S+ Pr)	2+2+0+0				
Goals of a course					
To acquaint students with mechanical properties of materials, basic materials in mechanical engineering and the possibility of applying certain materials in practice. Students will learn about complex machine loads, deformation, fatigue and basic stresses (pressure, train). They will get acquainted with the basic laws of hydrodynamics, thermodynamics and technology of joining materials.					
Conditions for enrolling course					
No conditions					
Learning outcomes on a level of a study programme which includes course					
Outcome 1: Use mathematical and statistical methods in traffic engineering and traffic research. Outcome 3: Use standards that cover the subject area when designing transport projects and implementing technological and service processes in the field of road/ railroad transport. Outcome 9: Link engineering principles and technical principles in transport systems.					
Expected learning outcomes on a level of a course					
<ol style="list-style-type: none"> 1. Identify and comment on materials used in road transport. 2. Assess and recommend the use of materials in road transport based on the load on its physical properties. 3. Select and calculate the method of joining materials for specific machine elements. 4. Calculate the dependence of forces and motion created by the action of liquids. 5. Calculate the transfer of gas energy and its transformation into mechanical operation when moving pistons of an internal combustion engine 					
Content of a course					
Structure of matter. Mechanical properties of materials. Basic materials in mechanical engineering. Basic testing of materials. Basic procedures and improvements of technical features. Possibility of application of particular materials in engineering. Basic and complex loads. Encumber ability of machine components. Strain fundamentals: tension, pressure, bending stress, torsion and buckling strain. Material deformation. Overall and complex strains. Fatigue of material. Strain concentration. Admissible strain. Structural parts: Containers under pressure and pipelines. Welded, soldered, pasted and riveted joints. Bolted joints, bolts, pins, wedges and binding joints. Springs. Sliding and roll bearings. Power gearings: toothed gearings, frictional gearings, clutches, Cardan joints and axes.					
Teaching modes	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> auditory exercises <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> distance learning <input type="checkbox"/> field classes		<input checked="" type="checkbox"/> individual assignments <input type="checkbox"/> multimedia and network <input type="checkbox"/> laboratory <input type="checkbox"/> supervisor's work <input type="checkbox"/> other _____		
Comments					
Students' obligations					
Fulfil obligations in accordance with the Rules of Study and Rules on the assessment of students.					
Grading, evaluation and monitoring of students' work continuously during lectures and exams					

Grading is based upon evaluation of course's learning outcomes' adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.

Continuous check-up:

Outcomes	Pre-exam I	Pre-exam 2	Test	Home assignment	Threshold	Max
Outcome 1	5%		10%		7,50%	15%
Outcome 2	10%		5%		7,50%	15%
Outcome 3	10%		5%	10%	12,50%	25%
Outcome 4		15%		10%	12,50%	25%
Outcome 5		10%		10%	10,00%	20%
Percentage of ECTS	1,5	1,5	1,2	1,8	3	6
Total	25%	25%	20%	30%	50%	100%

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Exam term:

Outcomes	Written exam	Oral exam	Max
Outcome 1	10%	10%	20%
Outcome 2	10%	10%	20%
Outcome 3	10%	10%	20%
Outcome 4	10%	10%	20%
Outcome 5	10%	10%	20%
Percentage of ECTS	3	3	6
Total	50%	50%	100%

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Grading:

A student has passed the exam if he has acquired at least 50% of anticipated credits of a specific learning outcome. If a student has passed learning outcomes of all courses, the accomplished credits (percentages) of all passed learning outcomes are being added, while the final grade is defined upon following table:

Range of credits (percentages)	Numerical grade	ECTS grade
90,00 – 100,00	Excellent (5)	A
75,00 – 89,99	Very good (4)	B
60,00 – 74,99	Good (3)	C
50,00 – 59,99	Sufficient (2)	D
0,00 – 49,99	Insufficient (1)	F

Obligatory literature

1. Bognolo,D.: Predavanja OS , Web stranice Veleučilišta u Rijeci.
2. Kraut, B.: Strojarski priručnik, Sajema, Zagreb, 2009.
3. Maković, B. i drugi: Strojarsstvo i osnove strojarstva 1. i 2. dio, Neodidacta, Zagreb, 2008.
4. Inženjerski priručnik IP1, Školska knjiga, Zagreb, 1996.
5. Inženjerski priručnik IP4, Školska knjiga, Zagreb, 1998.

Additional literature

1. Inženjerski priručnik IP1, Školska knjiga, Zagreb, 1996.
2. Pečornik,M.: Zbirka zadataka iz mehanike fluida, Rijeka, 1992.

