DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	**Basic Elements of Telematics II**				
Head of course	**MSc Vesna Krajčí, Lecturer**				
Study programme	**Professional undergraduate study Telematics**				
Status of a course	Obligatory				
Year of study	1.	**Semester**	II	**ECTS credits**	3
Teaching plan (L + E + S+ Pr)	2+1+0+0				

Goals of a course

Acquisition of specific competencies in the fields of measurement in telematics, electronics and electrical machinery. From general competences, developing the ability to analyze and synthesize, work independently and work in small groups (team work) and present the achieved results.

Conditions for enrolling course

No conditions

Learning outcomes on a level of a study programme which includes course

Outcome 1: Explain the basic mathematical, physical and technical principles of operation of electrotechnical, electronic and computer elements and circuits, measuring devices and electrical machines used in telematics systems.
Outcome 2: Link mathematical methods, engineering principles and computer simulations from the signal and system theory with applications in telematics systems.
Outcome 3: Conduct experiments and measurements in the laboratory and real telematics systems, and interpret the collected data and measurement results with the preparation of appropriate documentation.
Outcome 13: Design and develop solutions for components, circuits and software for application in regulation systems and production processes, with the preparation of supporting project documentation.
Outcome 15: Participate in teamwork and independently present professional content in written and spoken form in Croatian and English.

Expected learning outcomes on a level of a course

1. Use measuring methods and laboratory measuring equipment in telematics.
2. Explain the most important semiconductor components and circuits, and their application in telematics.
3. Analyse the operation of different types of amplifiers in telematics.
4. Describe the basic types of energy converters.
5. Distinguish the operation of different types of rotary and linear electric machines.

Content of a course

Electric machines – application and work principles. Direct generator and motor. Synchronous and asynchronous machines. Measuring procedures in electrotechnics. Measurement errors, Modern digital measuring instruments, oscilloscopes – comparison between digital and analogue. Measuring resistance, voltage, electricity, power. Measuring amplifiers and attenuators. Disturbances and standard measuring signals. AD transformer. Importance of semiconductors and their application. Diode, transistor, thyristor. Photoelectric elements – solar cells, lasers, LED technologies. Optic cables and accompanying technologies of data transfer. SM and MM technology. Some features of amplifying circuits – frequency characteristics, negative feedback. Managing and non-managing semi-conductor valves. Thyristors. Transformers of electricity and voltage. AC-AC, DC-DC, AC-DC and DC-AC transformers – importance and working mode. Managing switches. Sensory and introduction to measuring converters. Measuring converters – examples in practice. Basics of wireless communication.

Teaching modes	☒ lectures ☐ auditory exercises ☒ seminars and workshops ☐ distance learning ☐ field classes	☒ individual assignments ☐ multimedia and network ☐ laboratory ☐ supervisor's work ☐ other _____

Comments	

Students' obligations

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	Laboratory exercises	Threshold	Max
Outcome 1	14 %	-	2 %	**8 %**	**16 %**
Outcome 2	24 %	-	12 %	**18 %**	**36 %**
Outcome 3	-	14 %	6 %	**10 %**	**20 %**
Outcome 4	-	14 %	-	**7 %**	**14 %**
Outcome 5	-	14 %	-	**7 %**	**14 %**
Percentage of ECTS	1.14	1.26	0.6	**-**	**-**
Total	**38 %**	**42 %**	**20 %**	**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	12 %	4 %	**16 %**
Outcome 2	32 %	4 %	**36 %**
Outcome 3	16 %	4 %	**20 %**
Outcome 4	10 %	4 %	**14 %**
Outcome 5	10 %	4 %	**14 %**
Percentage of ECTS	2.4	0.6	**-**
Total	**80 %**	**20 %**	**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. Brodić T.: Fizikalne osnove telematike, 1. svezak, Veleučilište u Rijeci, Rijeka, 2010. 2. Brodić T.: Osnove primijenjene elektrotehnike i elektronike, Veleučilište u Rijeci, Rijeka, 2009.
Additional literature
1. Biljanović P.: Poluvodički elektronički elementi, Školska knjiga, Zagreb, 2004. 2. Biljanović P.: Elektronički sklopovi, Školska knjiga, Zagreb, 2005. 3. Skalicki B., Grilec J., Lesar M.: Električni strojevi i pogoni, Fakultet strojarstva i brodogradnje, Zagreb, 2005.