KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	**English Language I (1/2), English language I (2/2)**
ISVU[1] course code:	170165 SZ108 and 170167 SZ208
Studies in which the course is taught:	Safety and Protection
Course Instructor:	Davorka Rujevčan, mag.educ., senior lecturer
Course Assistant:	Mirjana Cibulka, mag. educ. assistant
ECTS credits:	3.0
Semester of the course execution:	I & II
Academic year:	2018 / 2019
Exam prerequisites:	/
Lectures are given in a foreign language:	English
Aims:	Development of productive and receptive language skills (listening, speaking, reading and writing) and expansion of language and grammatical structures (vocabulary, communication samples, phonological and orthographic characteristics) as well as development of general vocabulary and phraseology related to Safety and Protection; learning competencies necessary for life-long learning, that is, learning to communicate in the conditions of increased international mobility and unstable labour market, motivating independent learning and raising awareness of intercultural aspects

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	1	15	attendance 80%
Tutorials:	1	15	attendance 80%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	2	30	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Extract required information from written and/or listened speech of the related profession	Term paper I and II*	Term paper I – 30 points Term paper II – 30 points Oral examination – 40 points
	I2: Form a simple text on the subject-matter related to the profession and/or personal interest on the basis of given information	Term paper I and II*	
	I3: Discuss on subject-matter related to the profession as well as personal interest	Term paper I and II*	
	I4: Distinguish word types and grammatical structures in English	Term paper I and II*	

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	I5: Explain simpler terms and definitions related to the profession and language	Term paper I and II*	
	I6: Connect appropriate language and grammatical structures in mother tongue and in English	Term paper I and II*	
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Written exam 60 points Oral exam 30 points Cooperation** 10 points		TOTAL: 100 points
Students' competencies	Being able to use the English language to communicate in a personal and professional environment; knowledge of specific terminology and its use in written and spoken language. Independent application of the source of knowledge for the purpose of further education and meeting one's personal and professional needs; independent use of professional literature in a foreign language and application of the acquired know-how in unfamiliar situations.		

***Note:** Due to the specific nature of the course the related learning outcome should be continuously monitored.
****Note:** The lecturer holds the right to, partially or in full, exempt certain students from the oral part of the examination if the students have shown a high level of motivation for the course; if they were always prepared, discussed content, brought or commented additional material.

Prerequisites for course approval (lecturer's signature):	Attendance 80%
Prerequisites for taking exams:	Signature of the course instructor
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 60 to 64.9 - sufficient (2) (D) 50 to 59.9 - sufficient (2) (E) 0 to 49.9 – fail (1) (F)

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0.50					
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1.50	1		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Safety I1, I3	Safety – introduction, course presentation, definitions of safety, measures and risks I2, I5

2.	Safety at Work I1, I3	Safety at Work – reading and translating, analysis of unfamiliar words, Word Families I2, I5, I6
3.	Machine Safety I1, I4	Machine Safety – asking questions, answering questions, reading and analysis, synonyms and antonyms, I5, I6
4.	Noise Protection, Tenses I – active form I1, I4	Noise Protection – translation, highlighting language structures in professional texts, forming dialogues, tense revision, I2, I3, I5, I6
5.	Vibration I1, I2	Vibration – vocabulary, reading new words and expressions, explaining their meaning, I4, I5
6.	Heating I I1, I3	Heating – reading and translating, possessives', I4, I5, I6
7.	Heating II, Noun plural I1, I4	Heating II - Outdoor and Indoor Heating, noun plural, I2, I3, I6
8.	Lighting I1, I3	Lighting – reading and translating, types of lighting systems, discussion on the importance of good lighting, I2, I6
9.	Ventilation I1, I2	Ventilation – vocabulary, explaining words and expressions, I3, I5
10.	Electricity Safety, Tenses II – active form I1, I4	Electricity Safety – reading and translating, introducing a dialogue on protection against electric shock, tense revision, I2, I3, I5, I6
11.	Explosions I I1, I3	Explosions – reading and translating, vocabulary, I4, I5, I6
12.	Explosions II I1	Explosions II – questions and answers in oral and written form I2
13.	Safety in Transportation I, Tenses III – active form I1	Safety in Transportation – discussion on safety in transportation, types of car accidents, tense revision, I2, I3, I4
14.	Safety in Transportation II I1, I3	Safety in Transportation II – analysing traffic signs, developing a dialogue on pedestrian and cyclists safety in traffic, I2, I5
15.	Revision I1, I2, I3	Revision of the covered chapters and content, I4, I5, I6
16.	Safety at Home I1, I3	Safety at Home –reading, asking and answering questions in written and spoken form, I2, I4
17.	E-mail, Tenses I – passive form I1, I3, I4	E-mail, revision of the passive form I1 I3, I4
18.	Safety in the Bathroom, Tenses II – passive form I1	Safety in the Bathroom – reading and translating, passive form revision, I2, I4, I6
19.	Safety at School I1, I5	Safety at School – text elaboration, analysis of unfamiliar words, discussion on safety at school and possible sources of hazards, I2, I3
20.	Safety in the Yard I1, I6	Safety in the Yard – reading and translating, analysis of unfamiliar words, introducing various types of tools, I3, I5
21.	Special Workplace Safety Rules, Tenses III – passive form I1, I3	Special Workplace Safety Rules – reading and translating, analysis of unfamiliar words, writing a summary of special rules of safety, passive form revision, I2, I6
22.	Chemical and Biological Hazards I I1, I2	Chemical and Biological Hazards I – reading and translating – asking questions to initiate a discussion, I3, I6
23.	Chemical and Biological Hazards II I1, I2	Chemical and Biological Hazards II – analysis of danger signs, vocabulary, I3, I5
24.	Properties of Harmful Substances I1	Properties of Harmful Substances – categorising

		harmful substances, translating unfamiliar terminology, comprehension check I2, I6
25.	Effects of Harmful Substances, Comparative adjectivesI1, I3	Effects of Harmful Substances, Comparative – discussion on text, reading and vocabulary analysis, comparison exercises, I2, I5, I6
26.	Nuclear Hazards and Safety	Nuclear Hazards and Safety – vocabulary, reading new words and expressions, explaining their meaning
27.	Nuclear Accidents I1, I4	Nuclear Accidents – informing on nuclear accidents, I3
28.	Sewage I I1, I2	Sewage – reading and translating, explaining new terminology, I3, I5, I6
29.	Sewage II I1, I3	Sewage II – practical use of the acquired vocabulary, discussion on environmental impact, I2, I5
30.	Revision I1, I2, I3	Revision of the covered chapters and grammar I4, I5, I6

References

REFERENCES (compulsory/additional):
1 Compulsory: Horvatić, Miroslav, English for Safety Engineers, Karlovac University of Applied Sciences, 2008 2 Suggested: authentic texts related to the area of safety and protection 3 Dictionaries

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Davorka Rujevčan, mag.educ., senior lecturer
e-mail:	davorka.rujevcan@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	Mirjana Cibulka, mag. educ., assistant
e-mail:	mirjana.cibulka@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	**English Language I (1/2), English language I (2/2)**
ISVU[1] course code:	170225 ISZ107 and 170226 ISZ207
Studies in which the course is taught:	Safety and Protection
Course Instructor:	Davorka Rujevčan, mag.educ., senior lecturer
Course Assistant:	Mirjana Cibulka, mag.educ. assistant.
ECTS credits:	3.0
Semester of the course execution:	I & II
Academic year:	2018 / 2019
Exam prerequisites:	/
Lectures are given in a foreign language:	English
Aims:	Development of productive and receptive language skills (listening, speaking, reading and writing) and expansion of language and grammatical structures (vocabulary, communication samples, phonological and orthographic characteristics) as well as development of general vocabulary and phraseology related to Safety and Protection; learning competencies necessary for life-long learning, that is, learning to communicate in the conditions of increased international mobility and unstable labour market, motivating independent learning and raising awareness of intercultural aspects

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	1	15	attendance 60%
Tutorials:	1	15	attendance 60%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	2	30	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Extract required information from written text and/or speech of the related profession	Written exam Oral exam*	Written exam 60 points Oral examination – 30 points Cooperation** - 10 points
	I2: Form a simple text on the subject-matter related to the profession and/or personal interest on the basis of given information	Written exam Oral exam*	
	I3: Discuss on subject-matter related to the profession as well as personal interest	Written exam Oral exam*	
	I4: Distinguish word types and grammatical structures in English	Written exam Oral exam*	

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	I5: Explain simpler terms and definitions related to the profession and language	Written exam Oral exam*	
	I6: Connect appropriate language and grammatical structures source language and target language	Written exam Oral exam*	
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6		TOTAL: 100 points
Students' competencies	Being able to use the English language to communicate in a personal and professional environment; knowledge of specific terminology and its use in written and spoken language. Independent application of the source of knowledge for the purpose of further education and meeting one's personal and professional needs; independent use of professional literature in a foreign language and application of the acquired know-how in unfamiliar situations.		

***Note:** Due to the specific nature of the course the related learning outcome should be continuously monitored.
****Note:** The lecturer holds the right to, partially or in full, exempt certain students from the oral part of the examination if the students have shown a high level of motivation for the course; if they were always prepared, discussed content, brought or commented additional material.

Prerequisites for course approval (lecturer's signature):	Attendance 60%
Prerequisites for taking exams:	Signature of the course instructor
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 60 to 64.9 - sufficient (2) (D) 50 to 59.9 - sufficient (2) (E) 0 to 49.9 – fail (1) (F)

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0.50					
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1.50	1		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Safety I1, I3	Safety – introduction, course presentation, definitions of safety, measures and risks I2, I5

2.	Safety at Work I1, I3	Safety at Work – reading and translating, analysis of unfamiliar words, Word Families I2, I5, I6
3.	Machine Safety I1, I4	Machine Safety – asking questions, answering questions, reading and analysis, synonyms and antonyms, I5, I6
4.	Noise Protection, Tenses I – active form I1, I4	Noise Protection – translation, highlighting language structures in professional texts, forming dialogues, tense revision, I2, I3, I5, I6
5.	Vibration I1, I2	Vibration – vocabulary, reading new words and expressions, explaining their meaning, I4, I5
6.	Heating I I1, I3	Heating – reading and translating, possessives', I4, I5, I6
7.	Heating II, Noun plural I1, I4	Heating II - Outdoor and Indoor Heating, noun plural, I2, I3, I6
8.	Lighting I1, I3	Lighting – reading and translating, types of lighting systems, discussion on the importance of good lighting, I2, I6
9.	Ventilation I1, I2	Ventilation – vocabulary, explaining words and expressions, I3, I5
10.	Electricity Safety, Tenses II – active form I1, I4	Electricity Safety – reading and translating, introducing a dialogue on protection against electric shock, tense revision, I2, I3, I5, I6
11.	Explosions I I1, I3	Explosions – reading and translating, vocabulary, I4, I5, I6
12.	Explosions II I1	Explosions II – questions and answers in oral and written form I2
13.	Safety in Transportation I, Tenses III – active form I1	Safety in Transportation – discussion on safety in transportation, types of car accidents, tense revision, I2, I3, I4
14.	Safety in Transportation II I1, I3	Safety in Transportation II – analysing traffic signs, developing a dialogue on pedestrian and cyclists safety in traffic, I2, I5
15.	Revision I1, I2, I3	Revision of the covered chapters and content, I4, I5, I6
16.	Safety at Home I1, I3	Safety at Home –reading, asking and answering questions in written and spoken form, I2, I4
17.	E-mail, Tenses I – passive form I1, I2	E-mail, revision of the passive form, I1, I2 I3, I4
18.	Safety in the Bathroom, Tenses II – passive form I1	Safety in the Bathroom – reading and translating, passive form revision, I2, I4, I6
19.	Safety at School I1, I5	Safety at School – text elaboration, analysis of unfamiliar words, discussion on safety at school and possible sources of hazards, I2, I3
20.	Safety in the Yard I1, I6	Safety in the Yard – reading and translating, analysis of unfamiliar words, introducing various types of tools, I3, I5
21.	Special Workplace Safety Rules, Tenses III – passive form I1, I3	Special Workplace Safety Rules – reading and translating, analysis of unfamiliar words, writing a summary of special rules of safety, passive form revision, I2, I6
22.	Chemical and Biological Hazards I I1, I2	Chemical and Biological Hazards I – reading and translating – asking questions to initiate a discussion, I3, I6
23.	Chemical and Biological Hazards II I1, I2	Chemical and Biological Hazards II – analysis of danger signs, vocabulary, I3, I5
24.	Properties of Harmful Substances I1	Properties of Harmful Substances – categorising

		harmful substances, translating unfamiliar terminology, comprehension check I2, I6
25.	Effects of Harmful Substances, Comparative adjectivesI1, I3	Effects of Harmful Substances, Comparative – discussion on text, reading and vocabulary analysis, comparison exercises, I2, I5, I6
26.	Nuclear Hazards and Safety	Nuclear Hazards and Safety – vocabulary, reading new words and expressions, explaining their meaning
27.	Nuclear Accidents I1, I4	Nuclear Accidents – informing on nuclear accidents, I3
28.	Sewage I I1, I2	Sewage – reading and translating, explaining new terminology, I3, I5, I6
29.	Sewage II I1, I3	Sewage II – practical use of the acquired vocabulary, discussion on environmental impact, I2, I5
30.	Revision I1, I2, I3	Revision of the covered chapters and grammar I4, I5, I6

References

REFERENCES (compulsory/additional):
1 Compulsory: Horvatić, Miroslav, English for Safety Engineers, Karlovac University of Applied Sciences, 2008 2 Suggested: authentic texts related to the area of safety and protection 3 Dictionaries

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Davorka Rujevčan, mag.educ., senior lecturer
e-mail:	davorka.rujevcan@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	Mirjana Cibulka
e-mail:	mirjana.cibulka@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	**English Language II (1/2), English language II (2/2)**
ISVU[1] course code:	170168 SZ308 and 170170 SZ408
Studies in which the course is taught:	Safety and Protection
Course Instructor:	Davorka Rujevčan, mag.educ., senior lecturer
Course Assistant:	Mirjana Cibulka, mag. educ. assistant
ECTS credits:	3.0
Semester of the course execution:	III & IV
Academic year:	2018 / 2019
Exam prerequisites:	/
Lectures are given in a foreign language:	English
Aims:	Development of productive and receptive language skills (listening, speaking, reading and writing) and expansion of language and grammatical structures (vocabulary, communication samples, phonological and orthographic characteristics) as well as development of general vocabulary and phraseology related to Safety and Protection; learning competencies necessary for life-long learning, that is, learning to communicate in the conditions of increased international mobility and unstable labour market, motivating independent learning and raising awareness of intercultural aspects

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	1	15	attendance 80%
Tutorials:	1	15	attendance 80%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	2	30	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Analyse written text and/or speech of the related profession	Term paper I and II*	Term paper I – 30 points Term paper II – 30 points Oral examination – 40 points
	I2: Write a clear and detailed text on the subject-matter related to the profession and/or personal interest	Term paper I and II*	
	I3: Interpret themes related to the profession as well as personal interest	Term paper I and II*	
	I4: Apply certain grammatical structures in English	Term paper I and II*	
	I5: Use terms and collocations related to the profession	Term paper I and II*	

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	I6: Compare language and grammatical structures in source language and target language	Term paper I and II*	
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Written exam 60 points Oral exam 30 points Cooperation** 10 points		TOTAL: 100 points
Students' competencies	Being able to use the English language to communicate in a personal and professional environment; knowledge of specific terminology and its use in written and spoken language. Independent application of the source of knowledge for the purpose of further education and meeting one's personal and professional needs; independent use of professional literature in a foreign language and application of the acquired know-how in unfamiliar situations.		

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Prerequisites for course approval (lecturer's signature):	Attendance 80 %
Prerequisites for taking exams:	Signature of the course instructor
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 60 to 64.9 - sufficient (2) (D) 50 to 59.9 - sufficient (2) (E) 0 to 49.9 – fail (1) (F)

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0.50			0,50		
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1	1		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Personal Protective Equipment I1	Personal Protective Equipment – reading and translating, vocabulary analysis I5, I6
2.	General Hand Protection I1	General Hand Protection – reading and translating, collocations I4, I5, I6

3.	Ecology I1, I5	Ecology – text analysis, discussion on environmental protectionI2, I3
4.	Environmental Engineering I I1, I2	Environmental Engineering I – text analysis, vocabulary analysis, I4, I5,
5.	Environmental Engineering II I1	Environmental Engineering II – written and oral discussion on the subject matter, I2, I3
6.	Basics of Power Point Presentation I1 I2	How to compose and present PPT, basics, rules, examples I1, I2
7.	Environmental Pollution II I1, I3	Environmental Pollution II – Conditional exercises, I4, I6
8.	Air Pollution I I1, I5	Air Pollution I – text analysis, discussion on air pollution, I3
9.	Air Pollution II I1	Air Pollution II – conditional exercises, I4, I6
10.	Air Pollution III I1	Air Pollution III– vocabulary revision, presentation on pollution, I2, I3
11.	Water Pollution I I1, I3	Water Pollution I – reading and translating, vocabulary, I5
12.	Water Pollution II I1, I2	Water Pollution II – conditional exercises I4
13.	Writing an abstract I1, I2	How to write an abstract, bad/good examples, rules, writing I1, I2
14.	Soil Pollution I1	Soil Pollution – reading, translating discussion on pollution, I3, I6
15.	Revision I1, I2, I3	Revision, I4, I5, I6
16.	Pollution Control I1, I2	Pollution Control – reading, text analysis, I3, I5
17.	Waste Disposal I1, I2	Waste Disposal – reading, text analysis, discussion on the methods of waste disposingI3, I5
18.	Fire I1	Fire – vocabulary analysis, idioms, I4, I5
19.	Fire Properties I I1, I5	Fire Properties I – analysis of unfamiliar words, written translation, I6
20.	Fire Properties II I1	Fire Properties II– direct/indirect speech exercises, I4, I6
21.	Fire Fighting I1, I2	Fire Fighting – text analysis, questions and answers on the subject matter, I3
22.	Fire Department I1	Fire Department – reading and translating –I5, I6
23.	Safety from Fire I I1, I5	Safety from Fire I – direct/indirect speech revision, I4
24.	Safety from Fire II I1	Safety from Fire II – vocabulary exercises I5, I6
25.	Fire Prevention I1, I2	Fire Prevention – reading and translating, I5, I6
26.	Fire Extinguisher I1, I3	Fire Extinguisher – direct/indirect speech revision, I4, I6
27.	First Aid I1, I2	First Aid –text analysis, discussion on first aid, I3, I5
28.	Flood I I1, I3	Flood I – text analysis, I4, I5, I6
29.	Flood II I1	Flood II –, discussion on floods, experience in Croatia or on a global level I2, I3
30.	Revision I1, I2, I3	Revision I4, I5, I6

References

REFERENCES (compulsory/additional):
1 Compulsory: Horvatić, Miroslav, English for Safety Engineers, Karlovac University of Applied Sciences, 2008 2 Suggested: authentic texts related to the area of safety and protection 3 Dictionaries

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SYLLABUS

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Davorka Rujevčan, mag.educ., senior lecturer
e-mail:	davorka.rujevcan@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	Mirjana Cibulka
e-mail:	mirjana.cibulka@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	**English Language II (1/2), English language II (2/2)**
ISVU[1] course code:	170227 ISZ307 and 170228 ISZ407
Studies in which the course is taught:	Safety and Protection
Course Instructor:	Davorka Rujevčan, mag.educ., senior lecturer
Course Assistant:	Mirjana Cibulka, mag.educ., assistant
ECTS credits:	3.0
Semester of the course execution:	III & IV
Academic year:	2018 / 2019
Exam prerequisites:	/
Lectures are given in a foreign language:	English
Aims:	Development of productive and receptive language skills (listening, speaking, reading and writing) and expansion of language and grammatical structures (vocabulary, communication samples, phonological and orthographic characteristics) as well as development of general vocabulary and phraseology related to Safety and Protection; learning competencies necessary for life-long learning, that is, learning to communicate in the conditions of increased international mobility and unstable labour market, motivating independent learning and raising awareness of intercultural aspects

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	1	15	attendance 60%
Tutorials:	1	15	attendance 60%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	2	30	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Analyse written text and/or speech of the related profession	Written exam Oral exam*	Written exam 60 points Oral exam 30 points Cooperation** 10 points
	I2: Write a clear and detailed text on the subject-matter related to the profession and/or personal interest	Written exam Oral exam*	
	I3: Interpret themes related to the profession as well as personal interest	Written exam Oral exam*	
	I4: Apply certain grammatical structures in English	Written exam Oral exam*	
	I5: Use terms and collocations related to the profession	Written exam Oral exam*	
	I6: Compare language and grammatical	Written exam	

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	structures in source language and target language	Oral exam*	
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6		TOTAL: 100 points
Students' competencies	Being able to use the English language to communicate in a personal and professional environment; knowledge of specific terminology and its use in written and spoken language. Independent application of the source of knowledge for the purpose of further education and meeting one's personal and professional needs; independent use of professional literature in a foreign language and application of the acquired know-how in unfamiliar situations.		

***Note:** Due to the specific nature of the course the related learning outcome should be continuously monitored.
****Note:** The lecturer holds the right to, partially or in full, exempt certain students from the oral part of the examination if the students have shown a high level of motivation for the course; if they were always prepared, discussed content, brought or commented additional material.

Prerequisites for course approval (lecturer's signature):	Attendance 60%
Prerequisites for taking exams:	Signature of the course instructor
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 60 to 64.9 - sufficient (2) (D) 50 to 59.9 - sufficient (2) (E) 0 to 49.9 – fail (1) (F)

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0.50					
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1.50	1		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Personal Protective Equipment I1	Personal Protective Equipment – reading and translating, vocabulary analysis I5, I6
2.	General Hand Protection I1	General Hand Protection – reading and translating, collocations I4, I5, I6
3.	Ecology I1, I5	Ecology – text analysis, discussion on environmental

		protectionI2, I3
4.	Environmental Engineering I I1, I2	Environmental Engineering I – text analysis, vocabulary analysis, I4, I5,
5.	Environmental Engineering II I1, Power Point Presentation Basics I1	Environmental Engineering II – written and oral discussion on the subject matter, I2, I3, PPT examples, rules, bad/good examples I1
6.	Environmental Pollution I I1, I3	Environmental Pollution I – reading, translation, vocabulary analysis, I4, I5, I6
7.	Environmental Pollution II I1, I3	Environmental Pollution II – Conditional exercises, I4, I6
8.	Air Pollution I I1, I5	Air Pollution I – text analysis, discussion on air pollution, I3
9.	Air Pollution II I1	Air Pollution II – conditional exercises, I4, I6
10.	Air Pollution III I1	Air Pollution III– vocabulary revision, presentation on pollution, I2, I3
11.	Water Pollution I I1, I3	Water Pollution I – reading and translating, vocabulary, I5
12.	Water Pollution II I1, I2	Water Pollution II – conditional exercises I4
13.	Water Pollution III I1, Abstract Basics I1	Water Pollution III –discussion on water pollution, I3, I5, how to write an abstract, rules, examples I1
14.	Soil Pollution I1	Soil Pollution – reading, translating discussion on pollution, I3, I6
15.	Revision I1, I2, I3	Revision, I4, I5, I6
16.	Pollution Control I1, I2	Pollution Control –reading, text analysis, I3, I5
17.	Waste Disposal I1, I2	Waste Disposal – reading, text analysis, discussion on the methods of waste disposingI3, I5
18.	Fire I1	Fire – vocabulary analysis, idioms, I4, I5
19.	Fire Properties I I1, I5	Fire Properties I –analysis of unfamiliar words, written translation, I6
20.	Fire Properties II I1	Fire Properties II– direct/indirect speech exercises, I4, I6
21.	Fire Fighting I1, I2	Fire Fighting – text analysis, questions and answers on the subject matter, I3
22.	Fire Department I1	Fire Department – reading and translating –I5, I6
23.	Safety from Fire I I1, I5	Safety from Fire I – direct/indirect speech revision, I4
24.	Safety from Fire II I1	Safety from Fire II – vocabulary exercises I5, I6
25.	Fire Prevention I1, I2	Fire Prevention – reading and translating, I5, I6
26.	Fire Extinguisher I1, I3	Fire Extinguisher – direct/indirect speech revision, I4, I6
27.	First Aid I1, I2	First Aid –text analysis, discussion on first aid, I3, I5
28.	Flood I I1, I3	Flood I – text analysis, I4, I5, I6
29.	Flood II I1	Flood II –, discussion on floods, experience in Croatia or on a global level I2, I3
30.	Revision I1, I2, I3	Revision I4, I5, I6

References

REFERENCES (compulsory/additional):
1 Compulsory: Horvatić, Miroslav, English for Safety Engineers, Karlovac University of Applied Sciences, 2008 2 Suggested: authentic texts related to the area of safety and protection 3 Dictionaries

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Davorka Rujevčan, mag.educ., senior lecturer
e-mail:	davorka.rujevcan@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	Mirjana Cibulka, mag. educ., assistant
e-mail:	mirjana.cibulka@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	Application of computers
ISVU[1] course code:	38438, 115147
Studies in which the course is taught:	Professional study: Safety and protection – part-time study
Course Instructor:	Damir Kralj, PhD, senior lecturer
Course Assistant:	Vedran Jurac, M.Inf., instructor
ECTS credits:	5
Semester of the course execution:	II. semester
Academic year:	2018/2019
Exam prerequisites:	no
Lectures are given in a foreign language:	yes
Aims:	The aim of the course is to train students that thru the analysis of the development of information and communication technology appreciate and understand the importance of the use of computers as a necessary and unavoidable means of work as generally in various fields of human activities, but also for their own business and personal use.

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	2	30	attendence 80%
Tutorials:			
Practical (lab) sessions:	3	45	attendance 80%
Seminars:			
Field work:			
Other:			
TOTAL:	5	75	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Explain the historical and technological development of computers, and its impact on modern computer systems	Short tests/Exam	Coloquium of exercises I&II – 30 points Class att.and activity – 10 points Term paper- 30 points Short test - 30 points
	I2: Describe the functional concept of the personal computer, and the type and purpose of peripheral devices	Short tests/Exam	
	I3: Present the classification and organization of modern computer networks	Short tests/Exam	
	I4: Distinguish types of software and their application areas	Term paper	
	I5: Distinguish the types of harmful effects and the ways of their prevention	Term paper	

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	I6: Demonstrate acquired knowledge, to independently operate the office and graphics software support	Coloquium	
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Oral exam in the case of no accession or unsuccessfully solved the short tests – up to 30% of the final grade		TOTAL: 100 points
Students' competencies	Students will be able to successfully apply the acquired knowledge in their future work environments ranging from the use of computers and program support in their daily work, to the active participation and independent decision-making during the introduction of new or expansion of existing forms of computer support. Based on the knowledge acquired in class and successfully worked out laboratory exercises tasks, students will gain general and professional competencies for independent use of office software tools (word processing, spreadsheet, presentation material production), use of basic tools for engineering graphics (MS Visio), and the use of Internet services and data exchange computer networks in a secure manner.		

Prerequisites for course approval (lecturer's signature):	Class attendance a minimum of 80%, passed the colloquium of exercises and rated term paper.
Prerequisites for taking exams:	Passed colloquium of exercises and rated term paper
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 60 to 64.9 - sufficient (2) (D) 50 to 59.9 - sufficient (2) (E) 0 to 49.9 – fail (1) (F)

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0.5	1.5			**1.5**	
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1.5	(1.5)		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Introduction to the course, definitions of basic terms: **I1**	Introduction to equipment in the computer cabinet and the rules of behaviour while performing the exercises, content analysis exercises, the basics of using the available hardware and software support: **I1, I2**
2.	Technological development of the computers: calculative machines, the	Microsoft Word: presentation of the operating environment, formatting pages, text formatting:

	beginnings of computers, computer systems: **I1**	**I4**
3.	Characteristics of modern computer systems: the properties of the 5th generation of computers: **I2**	Microsoft Word: inserting and formatting of tables, figures, symbols and formulas: **I4**
4.	Stages of development of the computer systems on the Croatian territory: **I1**	Microsoft Word: advanced text formatting, mail merge, print design: **I4**
5.	Classification of modern computers according to: processor type, operation purpose: **I3**	Microsoft Excel: presentation of the working environment, constant arrays, formating of tables: **I4**
6.	Structure of the personal computer and the types of peripheral devices: **I2**	Microsoft Excel: addressing cells, insertion and relocation, formulas and functions: **I4**
7.	Basics of computer networks and open systems: **I3**	Microsoft Excel: conditional formatting of the cells, types and formatting of the charts, printing: **I4**
8.	Software support: types, classification, rights and conditions of use, education, certification: **I4**	Repetition of the first unit of exercises: **I6**
9.	Operating systems: OS based on command prompt, OS with GUI: **I4**	Microsoft PowerPoint: introduction, slide master, design and animation: **I4**
10.	The integrated office packages: types, content and possibilities: **I4**	Microsoft Access: The presentation of the working environment, organization and review of development tools: **I4**
11.	Computer graphics: software support for design and engineering graphics: **I4**	Microsoft Access: creating database tables, keys and relationships, referential integrity, import data from Excel and text files: **I4**
12.	Data compression on digital media: types and file formats: **I4**	Microsoft Access: designing queries, relationships, reports, printouts: **I4**
13.	Internet services, use of email, data exchange via computer networks: **I4**	Microsoft Visio: presentation of the working environment, introduction to templates, design the work area (page): **I4**
14.	Protection of the computer data against loss and external harmful influences: **I5**	Microsoft Visio: organizational diagrams, engineering drawings, construction and architectural drawings, electrical and electronic schemes, printouts: **I4**
15.	Ergonomic considerations and possibilities of improving the human-computer communication: **I1**	Continuous knowledge assessment: Preliminary exam (coloquium): **I6**

References

REFERENCES (compulsory/additional):

Compulsory:
Kralj, D., Primjena računala - Interna elektronička skripta, 2013.
Roller, D., Informatički priručnik, Informator, Zagreb, 1996.
Smiljanić, G., Osnove digitalnih računala, Šolska knjiga, Zagreb, 1990.
ITdesk.Info, Microsoft Office 2010, ODRAZI, Zagreb, 2011.
ITdesk.Info, Računalna sigurnost, CARNET, Zagreb, 2011.
Additional:
Grbavac, V., Informatika, kompjuteri i primjena, HDZP, Zagreb,1995.
Ribarić, S., Arhitektura računala pete generacije, Tehnička knjiga, Zagreb, 1986

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Damir Kralj, PhD, senior lecturer
e-mail:	damir.kralj©vuka.hr
Office hours / Consultations:	Thursdays 17.00-18.00, kab. 223
2. Course Instructor/Lecturer:	Vedran Jurac, M.Inf., instructor
e-mail:	jurac.vedran@gmail.com
Office hours / Consultations:	-

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	Fire extinguishing systems and equipment
ISVU[1] course code:	38454, 115363
Studies in which the course is taught:	Professional Study of Safety and Protection
Course Instructor:	Dr. sc. Zvonimir Matusinović, lecturer
Course Assistant:	Robert Hranilović, dipl.ing.
ECTS credits:	5.5
Semester of the course execution:	IV.
Academic year:	2018/2019
Exam prerequisites:	No
Lectures are given in a foreign language:	English
Aims:	The course objective is to familiarize students with the types, characteristics, method of use and maintenance of fire extinguishers and fire-fighting equipment used in fighting fires and other accidents. The student will know the characteristics of internal and external hydrant network and the application of radio and FM connections in the Fire Service.

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	3	45	attendence 80%
Tutorials:			
Practical (lab) sessions:			
Seminars:			
Field work:	2	30	attendance 100%
Other:			
TOTAL:	5	75	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Describe the types, characteristics, usage and maintenance of initial fire extinguishers and fire alarm systems.		Written exam 55 points. Oral exam 35 points.
	I2: Explain the purpose and operation of stable fire extinguishing systems (water, foam, halon, CO_2, „drencher").		
	I3: Describe the types, purposes, features, usage and maintenance of fire armatures, fire pumps and fire-fighting wehicles.		
	I4: Explain characteristics of indoor and outdoor hydrants.		
	I5: Calculate the required capacity of fire pumps, water stations and hydrant.		
	I6: Describe the process of testing initial fire extinguishing devices and		

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	equipment used for the fire fighting.		
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Seminar 10 points Written exam 55 points Oral exam 35 points Total: 100 points		TOTAL: 100 points
Students' competencies	The students will be able to define the types, characteristics, method of use and maintenance of fire extinguishers and fire-fighting equipment used in fighting fires and other accidents. The student will know the characteristics of internal and external hydrant network and the application of radio and FM connections in the Fire Service.		

Prerequisites for course approval (lecturer's signature):	Lecture and field work attendance
Prerequisites for taking exams:	Lecturer signature
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 50 to 64.9 - sufficient (2) (D) 0 to 49.9 – fail (1) (F) Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade.

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0,5	0,5	-	1		
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1	2,5		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Fire extinguishers.	1. Extinguish apparatus testing.
2.	Fire alarm systems.	2. Extinguish apparatus testing: CO_2
3.	Stable fire extinguishers: water, foam and calculation.	3. Extinguish apparatus testing: Dry powder.
4.	Stable fire extinguishers: CO_2, halons and calculation	4. Equipment testing: Climbing ropes.
5.	„Drencher" fire extinguishers and calculation.	5. Equipment testing: Ladders.
6.	Steam fire extinguishers (stable).	6. Equipment testing: Isolation apparatus.

7.	Types, purpose, characteristics, usage and maintenance of fire armature.	7. Equipment testing: Monitors.
8.	Types and allocation of fire pumps and fire-fighting vehicles.	8. Equipment testing: Foam throwers.
9.	Characteristics and operating mode of fire pumps and fire vehicles.	9. Equipment testing: Foam generators.
10.	Maintenance of fire pumps and fire-fighting vehicles.	10. Equipment testing: Nozzle.
11.	Features and operating of internal hydrants.	11. Equipment testing: Hydrants.
12.	Features and operating of external hydrants.	12. Equipment testing: Stability of the fire extinguisher.
13.	Devices and equipment for foam – calculation.	13. Equipment testing: Sprinklers and „Drencher“ apparatus.
14.	Semi-stable fire extinguishers with air foam.	14. Equipment testing: Fire detection sensors.
15.	Water station calculation, water hydrants.	15. Equipment testing: Proportioners.

References

REFERENCES (compulsory/additional):

Compulsory:

Zdenko Šmejkal, Uređaji, oprema i sredstva za gašenje i zaštitu od požara, STKH-Kemija u industriji, 1991.

Grupa autora, Tehnički priručnik za zaštitu od požara, Zagrebinvest, 2002.

Additional:

Group of authors, Priručnik za osposobljavanje vatrogasaca, Hrvatska vatrogasna zajednica, 2010.

Group of authors, Priručnik za osposobljavanje vatrogasnih dočasnika i časnika, Hrvatska vatrogasna zajednica, 2006.

Matusinovic, Z., Course materials.

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Dr. sc. Zvonimir Matusinović, lecturer
e-mail:	zvonimir.matusinovic@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	Robert Hranilović, dipl.ing.
e-mail:	zzapovjednik@jvp-karlovac.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	**Fire and explosion protection technology**
ISVU[1] course code:	39245, 115364
Studies in which the course is taught:	Professional Study of Safety and Protection
Course Instructor:	Dr. sc. Zvonimir Matusinović, lecturer
Course Assistant:	-
ECTS credits:	5.0
Semester of the course execution:	IV.
Academic year:	2018/2019
Exam prerequisites:	No
Lectures are given in a foreign language:	English
Aims:	The aim of the course is to give students basic knowledge and skills to identify possible emergent types and shapes of risks of fire and explosion in the areas of economic and social activities for the sake of enabling effecting planning, programming, monitoring, coordination and executive management assignments and tasks to ensure the safety and protection from fire and explosion including from the (malicious) dangerous actions endangering the internal technological, procedural, technical, operational and commercial fire and explosion safety and security. Students will be able to independently recognize typical threatening fire and explosion risk of internal and external nature and to estimate, explain and suggest the need to change/introduce the necessary procedural, operational and technical measures and actions in the field of engineering SiZoPiE. They will be able, as well, to plan and manage simple jobs and tasks of the SiZoPiE in accordance with general and special regulations governing the area of safety and security, including the necessary cooperation with companies authorized for diagnostics and maintenance of technical systems of SiZoPiE, with the competent inspection services, the fire department, with the police and with other national and internal security services and protection.

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	2	30	Attendence 80%
Tutorials:	2	30	Attendance 100%
Practical (lab) sessions:	–	–	
Seminars:	–	–	
Field work:	–	–	
Other:	–	–	
TOTAL:	4	60	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Enumerate and describe the main characteristics of the basics features of each of the possible manifestations of	Preliminary exam I	3 Preliminary exams/Writt

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	types and forms of fire and explosion in closed and open spaces depending on the typical characteristic of the space/acitivites/processes.		en exam 60 points. Oral exam 40 points.
	I2: Explain the characterizing types and forms of apperance of the risk of fire and explosion in the moste vunerable economic and assorted activities and possibilities (places, conditions and circumstances) of their realisation.	Preliminary exam I	
	I3: Distinguish prescribed systems of general and special safety and protection from fire and explosions (SiZoPiE) at national, regional and local level and in the framework of individual fire and/or explosion especially vulnerable activities/company/production of work processes (their indicative structure and content).	Preliminary exam II	
	I4: Classify and describe the characteristics of the general and specific regulations and activities of SiZoPiE in companies that handle the large quantities of fire and explosion hazardous substances.	Preliminary exam II	
	I5: Enumerate and describe how it works and compare the effectiveness of modern technical systems and available technical solutions in the field of engineering SiZoPiE.	Preliminary exam III	
	I6: Propose optimal types of technical systems of fire and explosion safety and security and the regulations established appropriate operational measures, activities and actions of SiZoPiE,depending on the types and forms of the present fire and/or explosion hazards and characteristics of available system.	Preliminary exam III	
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Three (3) preliminary exams will be held during the course so students will have possibility to became free of the written exam. In order to became free of the written exam, student should access to all three preliminary exams and get positive grade (sufficient to excellent). If student does not acces to only one preliminary exam or one of them is graded insufficient, student is obliagated to attend the written exam. 3 Preliminary exams/written exam 60 points Oral exam 40 points Total: 100 points		TOTAL: 100 points
Students' competencies	Students will be given basic knowledge and skills to identify possible emergent types and shapes of risks of fire and explosion in the areas of economic and social activities for the sake of enabling effecting planning, programming, monitoring, coordination and executive management assignments and tasks to ensure the safety and protection from fire and explosion including from the (malicious) dangerous actions endangering the internal technological, procedural, technical, operational and commercial fire and explosion safety and security. Students will be able to independently recognize typical threatening fire and explosion risk of internal and external nature and to estimate, explain and suggest the need to change/introduce the necessary procedural,		

	operational and technical measures and actions in the field of engineering SiZoPiE. They will be able, as well, to plan and manage simple jobs and tasks of the SiZoPiE in accordance with general and special regulations governing the area of safety and security, including the necessary cooperation with companies authorized for diagnostics and maintenance of technical systems of SiZoPiE, with the competent inspection services, the fire department, with the police and with other national and internal security services and protection.

Prerequisites for course approval (lecturer's signature):	Lecture and tutorials attendance.
Prerequisites for taking exams:	Lecturer signature.
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 50 to 64.9 - sufficient (2) (D) 0 to 49.9 – fail (1) (F) Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade.

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0,5					
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
0.5		2.5	1,5		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Definition and classification of fire and explosion and fire and explosion hazards.	Determination of the possible height of the flame of inital fire.
2.	The terms and classification of the conditions, manners and causes of fire and explosion and the factors that affecting their formation.	Determination of the possible rate of heat release of inital fire.
3.	Properties, effects and possible consequences of the fire depending on the type and place of origin.	Determinaton of possible fire hazdardous levels of radiation of the flame and overheated areas..
4.	Properties, effects and possible consequences of the explosion depending on type and place of origin.	Determination of the possible release rate of initial fire smoke.
5.	The components, structure and contents of modern systems of security and protection from fire and explosions (SiZoPiE) at the	Determination of opportunities of developement of initial fire into „flame attack".

	national, regional and local level.	
6.	The components, structure and contents of modern systems of SiZoPiE within individual fire and/or explosion especially vulnerable activities/companies.	Determination of possible impacts, consequences and prevention measures in case of a „fireball“.
7.	The basics of effective technological fire and explosion prevention.	Determination of the possible impacts and consequences in the case of a physical explosion.
8.	The process, procedural and technological solutions to control fuel and explosives.	Determination of the zones of possible impacts and consequences in the case of a chemical explosion substance in condensed phase.
9.	The process, procedural and technological solutions to control strong oxidizing agents.	Determination of the zones of possible impacts and consequences in the case of a chemical explosion substance in dilute phase.
10.	The process, procedural and technological solutions to control possible sources of ignition.	Determination of the insurance and evacuation zones around the possible danger of explosion..
11.	Systems for fire detection and for evacacuation of toxic fire gases, heat and for the prevention of smoking through confined spaces.	Determination of fire and explosive hazards and appropriate technical and operational measures of SiZoPiE in the example of storage of large quantities of flammable fluids.
12.	Systems for danger detection and for the prevention, damping and venting explosions.	Determination of fire and explosive hazards and appropriate technical and operational measures of SiZoPiE in the example of storage of large quantities of explosives.
13.	Systems for protection and to migitate the effects and consequences of fire and explosion.	The case and the ways of checking the validity of different types of technical systems for fire alarm.
14.	Methods, techniques and procedures for certification, testing, control and monitoring components of the SiZoPiE system.	The case and the ways of checking the validity of different types of technical systems for reporting the occurrence of flammable gas/vapor in the atmosphere.
15.	The basic components of the plan and program of technological and fire and explosion prevention.	The case and the ways of checking the validity of different types of technical systems for automatic fire fighting or the prevention/development of physical or chemical explosion.

References

REFERENCES (compulsory/additional):

Compulsory:

Kulišić, D. (1998). Uzroci nezgoda, nesreća, požara, eksplozija i havarija, *Sigurnost*, **4**, 2: 95.-121.

Gulan, I. (1997). *Protupožarna tehnološka preventiva*, Biblioteka NADING, Zagreb.

Kulišić, D. (>2011). *Tehnologija zaštite od požara i eksplozija*, Course materials..

Additional (only parts, according to subject):

Currently appliciable laws, regulations, decisions and technical standards in the field of active engineering of SiZoPiE, *Narodne novine*, >1991. g.

EN/CFPA-E (>2002). *European standards for fire safety and protection/CFPA-E Guidelines*, European standards/Confederation of Fire Protection Associations Europe (CFPAE), Brussels/Zurich.

NFPA (>2007). *NFPA Codes & Standards Handbook*, National Fire Protection Association, Quincy (MA).

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

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Contact information

1. Course Instructor/Lecturer:	Dr. sc. Zvonimir Matusinović, lecturer
e-mail:	zvonimir.matusinovic@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	
e-mail:	
Office hours / Consultations:	

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SYLLABUS

General information

Course title:	WASTE WATERS
ISVU[1] course code:	40201, 115286
Studies in which the course is taught:	safety and protection
Course Instructor:	Igor Peternel, PhD
Course Assistant:	
ECTS credits:	5
Semester of the course execution:	V
Academic year:	2018/2019
Exam prerequisites:	
Lectures are given in a foreign language:	yes
Aims:	To familiarize students with the basics of environmental protection in terms of the problem of waste disposal and processing of highly wastewater originating from a variety of industries. Process detail methods for waste water treatment

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	2	30	attendence 80%
Tutorials:	2	30	attendance 80%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	4	60	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Familiar generally water in nature, water cycle, impurities in the water, energy and water protection		
	I2: describe the problem of solid waste, landfill plan, define the technology of deposit		
	I3: Explain and compare the industrial sources of water pollution, waste explain galvanic water purification		
	I4: Explain the waste water in the food industry, sugar, beer, describe the purification device		
	I5: Clarify the concept of small-grain plants		
	I6: Explain the biological treatment of waste water with oxygen, to clarify the technological characteristics of the system for waste water treatment		

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Alternative formation of the grade (I1 – I6)	The final written exam = 70% of the final grade - I1, I2, I3, I4, I5, I6 Seminar to 20% of the final grade During the semester, students write 10 unannounced short (flash) tests, which relate to material from recently attended courses	TOTAL: 100 points
Students' competencies	Students will acquire professional competence in the field of environmental protection in terms of treatment of industrial waste water laden Pollutants hazardous to human health and the environment	

Prerequisites for course approval (lecturer's signature):	Class attendance a minimum of 60%
Prerequisites for taking exams:	Signature
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 60 to 64.9 - sufficient (2) (D) 50 to 59.9 - sufficient (2) (E) 0 to 49.9 – fail (1) (F) Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade.

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0.3	0.2			**0.5**	1.0
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1.0	2.0		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Introduction - Water in nature - water cycle	Field monitoring and sampling
2.	The division of natural water - additives in water	Testing the physical properties of water, temperature, color
3.	The use and consumption of water - a necessity water protection	Designate odor in cold and warm void, taste, smell
4.	The problem of solid waste	Chemical analysis of water - the total impurities in the water
5.	Planning landfills and technology of	Electrical conductivity

	deposit	
6.	Landfill management, control and protection	Determination of pH and alkalinity of the water
7.	Industrial pollution sources	carbonic acid
8.	Wastewater - galvanization	Determination of water hardness
9.	Cleaning device - ionic columns	Determination of the chloride
10.	Waste water in food production	Determination of sulphates
11.	The device for the treatment and recycling of industrial sugar, beer	Designation of iron
12.	The concept of small-grain plants	Field Training Exercise
13.	Biological wastewater treatment with oxygen	Field Training Exercise
14.	Purification device with oxygen	Chemical Oxygen Demand
15.	The technological characteristics of the device	Proving nitrite, nitrate

References

REFERENCES (compulsory/additional):

B. Tušar, Ispuštanje i pročišćavanje otpadne vode s zakonskom regulativom, Croatia knjiga, Zagreb, I. 2004.

Z. Jurac, Otpadne vode, Veleučilište u Karlovcu, I. 2009.

Dopunska literatura

B. Beraković, Gospodarenje vodama, Hrvatske vode, Zagreb, I., 1993.

M. Jahić Deponija i zaštita voda, Institut zaštite, Sarajevo, I., 1980.

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Igor Peternel
e-mail:	ipeternel@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	
e-mail:	
Office hours / Consultations:	

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	**Construction and fire prevention**
ISVU[1] course code:	40191, 115378
Studies in which the course is taught:	Professional Study of Safety and Protection
Course Instructor:	Dr. sc. Zvonimir Matusinović, lecturer
Course Assistant:	-
ECTS credits:	4.0
Semester of the course execution:	V.
Academic year:	2018/2019
Exam prerequisites:	No
Lectures are given in a foreign language:	English
Aims:	The course objective is to give students basics knowledge and skills to recognize key features of buildings, constructions, construction components and constructive materials of concern for the safety and protection of internal and external fire or explosion. Students will be able to independently recognize and estimate the possible fire and explosion hazards for the buildings, people, material goods in the buildings and for environment. They will also be able to estimate if any necessary technical and operational steps and activities for their removal should be taken. Aswell, they will be able to plan and manage simple tasks and tasks of construction of fire and explosion prevention in accordance with general and special regulations for that area of protection and safety, including the necessary cooperation with authorized companies for the technical maintenance of the buildings and their installations with the competent inspection and utilites, with the fire department, the police and other state, local and internal security services for protection and rescue.

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	2	30	Attendence 80%
Tutorials:	1	15	Attendance 100%
Practical (lab) sessions:	–	–	
Seminars:	–	–	
Field work:	–	–	
Other:	–	–	
TOTAL:	3	45	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Enumerate and describe the main characteristics of: the place of accomodation of buildings, types of constructions, construction components and construction materials of importance for passive fire and explosion safety and	Preliminary exam I	3 Preliminary exams/Written exam 60 points. Oral exam 40

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	protection.		points.
	I2: Explain indicative types and forms of fire and explosion hazards to bearing constructions and necessery steps to conserve capacity until a certain time required by special regulations.	Preliminary exam I	
	I3: Distinguish types, explain policies and propose optimal passive fire protection systems to prevent the spread of fire, heat, and smoke fire gases inside the building and fire spread to neighboring buildings.	Preliminary exam II	
	I4: Distinguish types, explain policies and propose optimal passive explosion explosion systems to prevent and to moderate explosion effects inside the building and domino effects of explosion to the neighboring buildings.	Preliminary exam II	
	I5: Integrate PP and PE prevention with process, technology, building and construction projects.	Preliminary exam III	
	I6: Propose optimal types of construction and other technical solutions that enable: safe evacuation, rescue people, valuable property and protect rescuers in case of fire or the direct danger of explosion.	Preliminary exam III	
Alternative formation of the grade (I1 – I6)	Exam score obtained during the course: Three (3) preliminary exams will be held during the course so students will have possibility to became free of the written exam. In order to became free of the written exam, student should access to all three preliminary exams and get positive grade (sufficient to excellent). If student does not acces to only one preliminary exam or one of them is graded insufficient, student is obliagated to attend the written exam. 3 Preliminary exams/written exam 60 points Oral exam 40 points Total: 100 points		TOTAL: 100 points
Students' competencies	Students will be given basics knowledge and skills to recognize key features of buildings, constructions, construction components and constructive materials of concern for the safety and protection of internal and external fire or explosion. Students will be able to independently recognize and estimate the possible fire and explosion hazards for the buildings, people, material goods in the buildings and for environment. They will also be able to estimate if any necessary technical and operational steps and activities for their removal should be taken. Aswell, they will be able to plan and manage simple tasks and tasks of construction of fire and explosion prevention in accordance with general and special regulations for that area of protection and safety, including the necessary cooperation with authorized companies for the technical maintenance of the buildings and their installations with the competent inspection and utilites, with the fire department, the police and other state, local and internal security services for protection and rescue.		

Prerequisites for course approval (lecturer's signature):	Lecture and tutorials attendance.
Prerequisites for taking exams:	Lecturer signature.
Grading scale:	(According to the Regulations on student assessment of Karlovac University of

	Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 50 to 64.9 - sufficient (2) (D) 0 to 49.9 – fail (1) (F) Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade.

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0,5					
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		2	1,5		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	The concepts, types and general characteristics of buildings, construction components and construction materials.	Determination of the net calorific values of fuel contents/interiors of residential, commercial, industrial or warehouse buildings.
2.	The concept, contents, role and special tasks of the passive fire and explosion prevention.	Determination of the possible density of the fire load of the building and its benchmark level of fire risk.
3.	Basic principles, types and forms of the fire and explosion safety and security of the buildings and the constructions depending on application and use.	Determination of thermal conductivity of certain types of construction materials based on the known parameters of their species, density and temperature.
4.	Construtcional and technical solutions of protecting people, buildings and constructions, premises and their contents from fire and explosion impacts.	Determination of the impact of moisture on the thermal conductivity of construction materials non resistant to moisture.
5.	Regulatory methods of classification, labeling and testing of construction materials and construction elements for the sake of determing their behaviour and quality in terms of fire or explosion.	Determination of specific heat capacity of certain types of construction materials at elevated temperatures based on the known parameters of theri species and density..
6.	Regulatory criteria of conditions of performance, maintenance, technical and administrative supervision as well as regulatory check of construction materials and construction components.	Determination of thermal diffusivity for certain types of building materials on the basis of known relevant parameters of influence.
7.	Types and characteristics of fire resistance and conditions of use certain types of construction materials.	Determining the themral inertia of certain types of constructive materials on the basics of known relevant paramterers of influence..
8.	Types and characteristics of fire resistance and	Determination of fire development and creation of

	conditions of use certain types of construction components.	direct fire atack within closed interior with known density of the fire load and its partitions.
9.	Types, characteristics, conditions and application of fire blocking agents.	Determining the size of the hazardous thermal expansion (dilatation) for demolition of construction for certain types of construction materials which are components of the supporting structures under the fire heat.
10.	Types, characteristics, conditions and application of construction solutions for abduct smoke and heat of the fire**.**	Detrmination of optimum size of fire sections and the position and necessary parameters of fire resistance of fire walls and barriers on examples of special types of construcions.
11.	Types, characteristics, conditions and application of zoning and construction solutions for protection and moderation of impact of air shock wave of explosion.	Interpretation of types and time of fire resistance of individual componenst of constructions based on the combination of prescribed label properties of their fire resistance.Evaluation of possible types and levels of resistance and protective action of some construction components to the effects of air shock wave and debris predictable power technological explosion.
12.	Types, characteristics, conditions and application of zoning and construction solutions for the protection of the explosion debris.	Determination of the length of evacuation,the width of the exit, (temprary) safe location and the time of exacution of evacuation in accordance with the nature and purpose of the construction and the characteristics of its users.
13.	Types and characteristics construction measures for safe evacuation of buildings in case of fire or explosion.	The content and method of verifying validity of components of provided evacuation routes and their necessary technical equipment..
14.	The key features of fire and explosion safety of acceptable paths, exits and safe zones for evacuation of buildings of different types and purposes.	Identifying types of threats that can protract/prevent the execution of evacuation plan of certain types of construction.
15.	The Basics components of the evacuation plan in case of fire or explosion.	The appliciability analysis of the evacuation plan of one type of building in case of fire and explosion .

References

REFERENCES (compulsory/additional):

Compulsory:

Matusinović, Z. (2016). *Konstrukcijska protupožarna i protueksplozijska preventiva* (Prezentacija gradiva).

Fišter, S., Kopričanec-Matijevac, Lj. (2001). *Zaštita od požara u graditeljstvu*, Centar za stručno obrazovanje vatrogasnih kadrova, Zagreb.

Kopričanec-Matijevac, Lj. (2001). *Zaštita od požara i zaštita na radu: Vatrootpornost građevnih elemenata i konstrukcija na požar, ispitivanje vatrootpornosti, protupožarna zaštita konstrukcija.* U: *Program stručnog usavršavanja ovlaštenih inženjera arhitekture i građevinarstva*, D. Arbutina (ur.) Tehničko Veleučilište u Zagrebu – Graditeljski odjel, Zagreb, 2008., str. 9-44.

Additional (samo parcijalno, sukladno temi kolegija):

Kopričanec-Matijevac, Lj., *Zatvaranje otvora u protupožarnim konstrukcijama koje omeđuju požarne sektore.* (Internet PDF dokument).

Propisi RH (>1991). Aktualno važeći zakoni, pravilnici, uredbe, odluke i tehničke norme iz područja pasivnog inženjerstva sigurnosti i zaštite od požara i eksplozija (SiZoPiE), *Narodne novine*, Zagreb.

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Dr. sc. Zvonimir Matusinović, lecturer
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Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	
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Office hours / Consultations:	

KARLOVAC UNIVERSITY OF APPLIED SCIENCES

SYLLABUS

General information

Course title:	Flammable and explosive materials
ISVU[1] course code:	40190, 115380
Studies in which the course is taught:	Professional Study of Safety and Protection
Course Instructor:	Dr. sc. Zvonimir Matusinović, lecturer
Course Assistant:	-
ECTS credits:	4.5
Semester of the course execution:	V.
Academic year:	2018/2019
Exam prerequisites:	No
Lectures are given in a foreign language:	English
Aims:	To familiarize students with the procedures of dealing with explosive and flammable substances. Division of explosives and the ADR Convention on Explosive Substances. Terms and conditions of storage of explosive materials. The mechanisms of detonation, deflagration and detonation thermodynamic theory. Chain reactions and mechanisms.

Course

Course structure	Number of contact hours per week:	Number of contact hours per semester:	Student's requirements by type of teaching:
Lectures:	2	30	attendence 80%
Tutorials:	2	30	attendance 100%
Practical (lab) sessions:			
Seminars:			
Field work:			
Other:			
TOTAL:	4	60	

Monitoring of students' work, knowledge evaluation and learning outcomes

(Define exactly six learning outcomes)	**LEARNING OUTCOMES** (upon completion of the course the student should be able to:)	**FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...)	**MAXIMUM NUMBER OF POINTS PER FACTOR**
	I1: Being able to define flammable and explosive substances. Know the difference between explosives and explosive agents.		Written exam 55 points. Oral exam 30 bodova
	I2: Understand the concept and basics of explosion as a special type of oxidation.		
	I3: Classify certain types of explosives and get acquainted with their properties and application.		
	I4: Distinguish chain reactions and mechanisms of action of certain types of explosives.		
	I5: Compare the intensity explosion and learn to determine the necessary amount of explosives for destruction in the construction industry.		
	I6: Recognize hazards and precautions for		

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	handling explosive substances.		
Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Seminar 10 points Written exam 55 points Oral exam 35 points Total: 100 points		TOTAL: 100 points
Students' competencies	Students will be familiar with the procedures of dealing with explosive and flammable substances. They will know the difference between explosives and explosive agents Terms and conditions of storage of explosive materials. They will be able to classify certain types of explosives and get acquainted with their properties and application. They will know mechanisms of detonation, deflagration and detonation thermodynamic theory, chain reactions and mechanisms.		

Prerequisites for course approval (lecturer's signature):	Lecture and field work attendance
Prerequisites for taking exams:	Lecturer signature
Grading scale:	(According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5) 90-100 - excellent (5) (A) 80 to 89.9 - very good (4) (B) 65 to 79.9 - good (3) (C) 50 to 64.9 - sufficient (2) (D) 0 to 49.9 – fail (1) (F) Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade.

ECTS structure

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

Attendance (active participation)	**Term paper**	**Composition**	**Presentation**	**Continuous assessment and evaluation**	**Practical work**
0,5					
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
0,5		2	1,5		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	Introduction to explosives	Calculation of explosives to demolish a residential building (size 100 x 40)
2.	Division of explosives	Calculation of explosives to demolish the chimney (100m)
3.	ADR - Convention of explosive substances	Calculation of explosives to demolish the basement (60x20)
4.	Terms and conditions for storing explosive substances	Tour of the Fire Services Association of Karlovac
5.	The mechanism of deflagration	Professional visit Mirnovec pyrotechnics

6.	The mechanism of detonation	Presentation of seminar papers Group 1
7.	Thermodynamics - the theory of detonation	
8.	Chain Reaction and mechanism	
9.	Explosives (types and obtaining)	
10.	Safety when handling the initial explosives	
11.	Transportation of explosives (road, sea and rail through)	
12.	Detonation parameters and budget for explosives	
13.	Determination of explosives for destruction	
14.	Gunpowders.	
15.	Fireworks and firework equipment.	

References

REFERENCES (compulsory/additional):
Compulsory: M. Sućeska, *Eksplozije i eksplozivi*, Brod.institut, Zagreb, 2001. V. Pavelić, *Zapaljive i eksplozivne tvari*, Zagreb, P.V. Maksimović, *Tehnologija eksplozivnih materija*, GZH, Zagreb, 1972.

Exams for the academic year: 2018/2019

Exam dates:	According to the schedule of exams for academic year 2018/2019

Contact information

1. Course Instructor/Lecturer:	Dr. sc. Zvonimir Matusinović, lecturer
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2. Course Instructor/Lecturer:	
e-mail:	
Office hours / Consultations:	