VELEUČILIŠTE U KARLOVCU
Karlovac University of Applied Sciences

SYLLABUS PREDMETA

Sigurnost i zaštita – specijalistički diplomski stručni studij						
Oznaka kolegija	**ISVU oznaka**	**Predmet**	**Predmet ENG**	**Nastavnik**	**Semestar**	**ECTS**
RSPZOP16 SZ806	165910 83319	UPRAVLJANJE ZAŠTITOM OD POŽARA PRIMJENOM RAČUNALA	Managing fire protection using computers	Kralj, Damir	II.	6,0
SR303 SZ901	171332 83286	UPRAVLJANJE ZAŠTITOM NA RADU PRIMJENOM RAČUNALA	Managing safety at work using computers	Kralj, Damir	III.	7,0
SZ912	171402 83322	EKSPERTIZA POŽARA I EKSPLOZIJA	Expertise of Fire and Explosion	Jakšić, Lidija	III.	6,0
SZ701	171404 171333, 38465	KONTROLA KVALITETE	Quality Control	Jakšić, Lidija	III.	6,0

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General information

Course title:	Managing safety at work using computers
ISVU[1] course code:	171332, 83286
Studies in which the course is taught:	Specialist graduate professional study: Safety at work
Course Instructor:	Damir Kralj, PhD, college professor
Course Assistant:	-
ECTS credits:	7
Semester of the course execution:	III. semester
Academic year:	2022/2023
Exam prerequisites:	no
Lectures are given in a foreign language:	yes
Aims:	The aim of the course is to train students that through the analysis of the basic methods and procedures of introduction and / or expansion of computer supported information systems proactively acting within their future work environment.

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	attendance 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

Formation of the grade during the implementation of teaching: (Define from minimum 5 to maximum 10 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 main reasons for the introduction of a computer supported information systems in business systems.	Exam	Colloquium of exercises – 30 points Class attend activity – 10 points Term paper- 30 points Oral exam - 30 points
	I2: Present the basic methods for analysis and design of information systems	Colloquium	
	I3: Classify the possible risk and success factors in implementation of new information systems	Term paper	
	I4: Distinguish basic data modelling methods	Colloquium	
	I5: Estimate the types of harmful effects and the ways of their prevention	Term paper	
	I6: Illustrate the methods of selecting the software, computer and network support of information	Exam	

[1] ISVU – Information System of Higher Education Institutions in Croatia

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	system.		
Alternative formation of the grade (I 1 – I 10)	**or** alternative formation of the grade: I1 - I6 Successfully written midterm exam – up to 30% of the final grade (alternative for oral exam)		TOTAL: 100 points
Students' competencies	Students will be able to successfully apply the acquired knowledge for the user design and improvement of planned and / or started projects of computerization and identify possible risk factors and failure in their work environment. Based on the knowledge acquired in class and successfully worked out exercises tasks, students will gain general and professional competence for independent application of widely available software tools (MS Excel, MS Access, MS Visio) for the independent development of handy computer- driven records to help them work in their work environments where are still not introduced information subsystems for managing of safety at work (SW), environmental protection (EP) and fire protection (FP), as well as for preparation of the existing data to be more easily usable in the newly introduced information system. Students will become familiar with the capabilities of some of commercially available versions of the software for managing of SW, EP and FP (e.g. WebZNR, STPRO, EVIZ).		

Prerequisites for course approval (lecturer's signature):	Class and exercises 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) 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**
0.7	**2.1**				
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		2.1	**2.1**		

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1.	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**
2.	Analysis of the relationship between existing business (BS) and the planned information system (IS): **I1**	Microsoft Excel: making simple records, data formatting, sort and search and browsing of tables inside of workbook: **I1**
3.	Basic principles, methods and techniques of planning and designing the IS: **I2**	Microsoft Excel: automation of data entry, standardized data exchange with other software tools and databases: **I2**
4.	Comparison of the most commonlyused methodologies for planning and design of IS: **I2**	Microsoft Visio: presentation of the working environment, introduction of templates, design the work area (page): **I2**
5.	The roles and tasks of the participants in the planning and design of IS: **I2**	Microsoft Visio: designing of organizational charts: **I2**
6.	The analysis of potential risk and success factors in implementing of new IS: **I3**	Microsoft Visio: designing of E-R diagrams: **I2**
7.	The basics of workflow and data modelling methods; Comparison entity – object: **I4**	Microsoft Access: presentation of the working environment, organization and review of development tools: **I4**
8.	Design of E-R diagrams; Application of MS Visio software: **I4**	Microsoft Access: design of data tables (intension, extension): **I4**
9.	Analysis of the most common types of entities within an IS; Attributes and their domains: **I4**	Microsoft Access: import data from other software tools, normalization of the spreadsheet records imported from MS Excel: **I4**
10.	Basics of databases (relational, object, XML); Application MS Access software: **I4**	Microsoft Access: relationships and referential integrity: **I3**
11.	Methods of normalization of the relational databases: **I4**	Microsoft Access: design of screen forms for entering, viewing and deleting data: **I4**
12.	Selection of software, computer and network support of the new IS: **I6**	Microsoft Access: design of various types of SQL queries: **I4**
13.	Protection of information systems against data loss and external harmful influences: **I5**	Microsoft Access: formatting reports and printouts: **I4**
14.	Specifics of information subsystems for management of SW, EP and the FP inside of the information system of an company; Analysis of the strategic and tactical elements: **I2, I4, I6**	Training for preliminary exam: **I4**
15.	Review of the possibilities of some commercially available versions of the software for management of SW, EP and FP: **I6**	Coloquium: Preliminary exam: **I2, I3, I4**

References

REFERENCES (compulsory/additional):

Compulsory:
Kralj, D., Upravljanje ZNR i ZOP primjenom računala, Interna elektronička skripta, 2018.
Kralj. D., Primjena računala, Veleučilište u Karlovcu, Karlovac, 2018.
Strahonja, V., Varga, M., Pavlić, M., Projektiranje informacijskih sustava – Metodološki priručnik, Zavod za informatičku djelatnost Hrvatske i INA - INFO, Zagreb, 1992.
ITdesk.Info, Microsoft Office 2010, ODRAZI, Zagreb,
2011. ITdesk.Info, Računalna sigurnost, CARNET,
Zagreb, 2011.

Additional:
Fertalj, K., Kalpić, D., Projektiranje informacijskih sustava,Sveučilište u Zagrebu, FER – ZPR,
2006. Luić, Lj., Informacijski sustaviVeleučilište u Karlovcu, Karlovac, 2009.
EVIZ, www.zitel.hr, ZITEL, Zagreb
WebZNR, www.linijakoda.hr,Zagreb

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EVIDENKO, www.zirs.hr, Zavod za istraživanje i razvoj sigurnosti, Zagreb
Sinarm, www.sinarm.net, Web IT, Osijek

Exams for the academic year: 2022./ 2023.

Exam dates:	According to the schedule of exams for academic year.

Contact information

1. Course Instructor/Lecturer:	Damir Kralj, PhD, college professor
e-mail:	damir.kralj@vuka.hr
Office hours / Consultations:	after classes, with email announcement
2. Course Instructor/Lecturer:	-
e-mail:	-
Office hours / Consultations:	-

VELEUČILIŠTE U KARLOVCU
Karlovac University of Applied Sciences

SYLLABUS PREDMETA

General information

Course title:	Managing fire protection using computers
ISVU[2] course code:	165910, 83319
Studies in which the course is taught:	Specialist graduate professional study: Fire protection
Course Instructor:	Damir Kralj, PhD, college professor
Course Assistant:	-
ECTS credits:	6
Semester of the course execution:	II. semester
Academic year:	2022/2023
Exam prerequisites:	no
Lectures are given in a foreign language:	yes
Aims:	The aim of the course is to train students that through the analysis of the basic methods and procedures of introduction and / or expansion of computer supported information systems proactively acting within their future work environment.

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	attendance 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

	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**
Formation of the grade during the implementation of teaching: (Define from minimum 5 to maximum 10 learning outcomes)	**I1:** Explain the main reasons for the introduction of a computer supported information systems in business systems.	Exam	Colloquium of exercises – 30 points Class attend activity – 10 points Term paper- 30 points Oral exam - 30 points
	I2: Present the basic methods for analysis and design of information systems	Colloquium	
	I3: Classify the possible risk and success factors in implementation of new information systems	Term paper	
	I4: Distinguish basic data modelling methods	Colloquium	
	I5: Estimate the types of harmful effects and the ways of their prevention	Term paper	
	I6: Illustrate the methods of selecting the software, computer and network support of information	Exam	

[2] ISVU – Information System of Higher Education Institutions in Croatia

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	system.		
Alternative formation of the grade (I 1 – I 10)	**or** alternative formation of the grade: I1 - I6 Successfully written midterm exam – up to 30% of the final grade (alternative for oral exam)		TOTAL: 100 points
Students' competencies	Students will be able to successfully apply the acquired knowledge for the user design and improvement of planned and / or started projects of computerization and identify possible risk factors and failure in their work environment. Based on the knowledge acquired in class and successfully worked out exercises tasks, students will gain general and professional competence for independent application of widely available software tools (MS Excel, MS Access, MS Visio) for the independent development of handy computer- driven records to help them work in their work environments where are still not introduced information subsystems for managing of safety at work (SW), environmental protection (EP) and fire protection (FP), as well as for preparation of the existing data to be more easily usable in the newly introduced information system. Students will become familiar with the capabilities of some of commercially available versions of the software for managing of SW, EP and FP (e.g. WebZNR, STPRO, EVIZ), as well as the functionalities of applications in the e-HVZ system.		

Prerequisites for course approval (lecturer's signature):	Class and exercises 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) 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**
0.6	**1.8**				
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		1.8	**1.8**		

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**
2.	Analysis of the relationship between existing business (BS) and the planned information system (IS): **I1**	Microsoft Excel: making simple records, data formatting, sort and search and browsing of tables inside of workbook: **I1**
3.	Basic principles, methods and techniques of planning and designing the IS: **I2**	Microsoft Excel: automation of data entry, standardized data exchange with other software tools and databases: **I2**
4.	Comparison of the most commonlyused methodologies for planning and design of IS: **I2**	Microsoft Visio: presentation of the working environment, introduction of templates, design the work area (page): **I2**
5.	The roles and tasks of the participants in the planning and design of IS: **I2**	Microsoft Visio: designing of organizational charts: **I2**
6.	The analysis of potential risk and success factors in implementing of new IS: **I3**	Microsoft Visio: designing of E-R diagrams: **I2**
7.	The basics of workflow and data modelling methods; Comparison entity – object: **I4**	Microsoft Access: presentation of the working environment, organization and review of development tools: **I4**
8.	Design of E-R diagrams; Application of MS Visio software: **I4**	Microsoft Access: design of data tables (intension, extension): **I4**
9.	Analysis of the most common types of entities within an IS; Attributes and their domains: **I4**	Microsoft Access: import data from other software tools, normalization of the spreadsheet records imported from MS Excel: **I4**
10.	Basics of databases (relational, object, XML); Application MS Access software: **I4**	Microsoft Access: relationships and referential integrity: **I3**
11.	Methods of normalization of the relational databases: **I4**	Microsoft Access: design of screen forms for entering, viewing and deleting data: **I4**
12.	Selection of software, computer and network support of the new IS: **I6**	Microsoft Access: design of various types of SQL queries: **I4**
13.	Protection of information systems against data loss and external harmful influences: **I5**	Microsoft Access: formatting reports and printouts: **I4**
14.	Specifics of information subsystems for management of SW, EP and the FP inside of the information system of an company; Analysis of the strategic and tactical elements: **I2, I4, I6**	Training for preliminary exam: **I4**
15.	Analysis of the structure and review of the possibilities of IS HVZ. **I3**	Coloquium: Preliminary exam: **I2, I3, I4**

References

REFERENCES (compulsory/additional):

Compulsory:
Kralj, D., Upravljanje ZNR i ZOP primjenom računala, Interna elektronička skripta, 2018.
Kralj. D., Primjena računala, Veleučilište u Karlovcu, Karlovac, 2018.
HVZ, Dokumenti, hvz.gov.hr
Strahonja, V., Varga, M., Pavlić, M., Projektiranje informacijskih sustava – Metodološki priručnik, Zavod za informatičku djelatnost Hrvatske i INA - INFO, Zagreb, 1992.
ITdesk.Info, Microsoft Office 2010, ODRAZI, Zagreb,
2011. ITdesk.Info, Računalna sigurnost, CARNET,
Zagreb, 2011.

Additional:
Fertalj, K., Kalpić, D., Projektiranje informacijskih sustava,Sveučilište u Zagrebu, FER – ZPR, 2006.
Luić, Lj., Informacijski sustaviVeleučilište u Karlovcu, Karlovac, 2009.
EVIZ, www.zitel.hr, ZITEL, Zagreb
WebZNR, www.linijakoda.hr,Zagreb

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EVIDENKO, www.zirs.hr, Zavod za istraživanje i razvoj sigurnosti, Zagreb
Sinarm, www.sinarm.net, Web IT, Osijek

Exams for the academic year: 2022./ 2023.

Exam dates:	According to the schedule of exams for academic year: 2021/2022

Contact information

1. Course Instructor/Lecturer:	Damir Kralj, PhD, college professor
e-mail:	damir.kralj@vuka.hr
Office hours / Consultations:	after classes, with email announcement
2. Course Instructor/Lecturer:	-
e-mail:	-
Office hours / Consultations:	-

VELEUČILIŠTE U KARLOVCU
Karlovac University of Applied Sciences

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General information

Course title:	**Expertise of Fire and Explosion**
ISVU[3] course code:	171402, 83322
Studies in which the course is taught:	Specialist Graduate Study in Safety and Protection – Fire Safety and Protection
Course Instructor:	Lidija Jakšić, mag.ing.cheming., lecturer
Course Assistant:	-
ECTS credits:	6.0
Semester of the course execution:	III
Academic year:	2022/2023
Exam prerequisites:	No prerequisites
Lectures are given in a foreign language:	Teach a student about general structure, specific contents and the most useful elements of contemporary scientific, forensic and professional praxis for investigating and determining kinds/patterns, manners, causes, conditions, circumstances, effects and consequences of fires and explosions occurrences; about professional selection and application of most appropriate scientific/forensic methods and techniques in fire/explosion cause determination in different simple and complex fire/explosion cases and investigative situations; about system of effective measures, procedures and activities for timely and skilfully avoiding typical investigative omissions, oversights and mistakes which could jeopardize reliability and credibility of the results of forensic fire/explosion cause determination; about content and manners of preparing documents for court expert testimony and opinion testimony and, finally, about court rules and usual professional praxis of presenting and defending results of an fire/explosion expertise.
Aims:	6.0

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	attendance 80%
Tutorials:	2	30	attendance 100%
Practical (lab) sessions:	–	–	
Seminars:	–	–	
Field work:	–	–	
Other:	–	–	
TOTAL:	5	75	

Monitoring of students' work, knowledge evaluation and learning outcomes

Formation of the grade during the implementation of teaching: (Define from minimum 5 to maximum 10 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**
	LO1: List and explain role of all fields, branches and kinds of forensic sciences, different kinds of professions, handicrafts and skills especially useful for researching, testing and determining possible	Appropriate choice and use of adequate kinds of forensic sciences, professions, handicrafts and skills in student's case study analysis	A) Quality of seminar paper: 80

[3] ISVU – Information System of Higher Education Institutions in Croatia

	evidence of all most probable kinds/patterns, manners, causes, conditions, circumstances, effects and consequences of fires and explosions occurrences.		(maximum number of points)
	LO2: Recognize possible characteristic fire/explosion scene circumstantial and physical evidence in damaged or destroyed residential or public buildings and recommend appropriate kinds, techniques and purposes of testing of that evidence *in situ* and/or in forensic laboratory.	Quality of seminar paper, oral case study presentation, and individual activity of students during case study critical analysis	B) Quality of oral case study presentation, and activity during case study presentations of other students: 20 (maximum number of points)
	LO3: Recognize possible characteristic fire/explosion scene circumstantial and physical evidence in damaged or destroyed industrial buildings, process plants and process units and recommend appropriate kinds, techniques and purposes of testing of that evidence *in situ* and/or in forensic laboratory.	Quality of seminar paper, oral case study presentation, and individual activity of students during case study critical analysis	
	LO4: Recognize possible characteristic fire/explosion scene circumstantial and physical evidence in damaged or destroyed kinds of passenger and goods transport vehicles/objects and recommend appropriate kinds, techniques and purposes of testing of that evidence *in situ* and/or in forensic laboratory.	Quality of seminar paper, oral case study presentation, and individual activity of students during case study critical analysis	
	LO5: Recognize possible characteristic fire/explosion scene circumstantial and physical evidence of wood and wildland fires or fires in agricultural areas, and recommend appropriate kinds, techniques and purposes of testing of that evidence *in situ* and/or in forensic laboratory.	Quality of seminar paper, oral case study presentation, and individual activity of students during case study critical analysis	
	LO6: Search for information/data in available professional and scientific data bases, and	Quality of seminar paper, oral case study presentation, and individual activity of students	

	formulate, publicly present and defend results of his expertise about (un)determined fire/explosion cause, manner, conditions, circumstances, effects and consequences of the occurrence.	during case study critical analysis	
Alternative formation of the grade (I 1 – I 10)	**or alternative formation of the grade: LO 1 – LO 6**		TOTAL: 100 points
Students' competencies	Student will be able to classify fields, branches and kinds of forensic sciences, different kinds of professions, handicrafts and skills which can be especially useful or crucially important for researching, testing and determining possible evidence of all most probable kinds/patterns, manners, causes, conditions, circumstances, effects and consequences of fires and explosions occurrences. They will be also able to discover and recognize possible characteristic of a fire/explosion scene circumstantial and physical evidence in damaged or destroyed different kinds of buildings, transport vehicles, vessels, wood and wildland fires, to recommend appropriate kinds, techniques and purposes of testing of the evidence *in situ* and/or in forensic laboratory, and to formulate, publicly present and defend results of their expertise about fire/explosion cause, manner, conditions, circumstances, effects and consequences of the occurrence.		

Prerequisites for course approval (lecturer's signature):	Student's lecture and exercises attendance
Prerequisites for taking exams:	Lecturer's 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**
1,0	3,0	–	0,5	–	1,0
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
0,5	–	–	1,0	–	

Review of topics/units per week associated with learning outcomes

Week	Lectures topics/units and learning outcomes:	Tutorials topics/units and learning outcomes:
1	Methods and techniques in contemporary scientific, forensic and other professional praxis of investigating and determining kinds/patterns, manners, causes, conditions, circumstances, effects and consequences of fires and explosions occurrences: **LO1**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire occurrence in a typical kind of residential building: **LO2** and **LO6**
2	Fields, branches and kinds of forensic sciences, different kinds of professions, handicrafts and skills which can be especially useful or crucially important for researching, testing and determining possible evidence of all most probable kinds/patterns, manners, causes, conditions, circumstances, effects and consequences of fires and explosions occurrences: **LO1**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of gas explosion occurrence in a typical kind of residential building: **LO2** and **LO6**
3	Overview of kinds and general investigative possibilities of most often used methods and techniques in contemporary forensic chemistry, biochemistry, chemical engineering and technology, pyrotechnology, thermodynamics, ballistics, electrotechnics, electronics, mechanical engineering, civil engineering, medicine, toxicology, ecology etc., for performing forensic analysis of investigative relevant kinds, shapes and patterns of physical and circumstantial evidence at fire/explosion scene and in forensic lab: **LO1**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire or gas explosion occurrence in a typical kind of small handicraft buildings: **LO2** and **LO6**
4	Possible specific forensic issues and methods/techniques for expert fire or explosion cause investigation in the cases of typical kinds of residential and small handicraft buildings: **LO2** and **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire occurrence in a typical kind of hotel, hostel, college/students' boarding-house or night club: **LO2** and **LO6**
5	Possible specific forensic issues and methods/techniques for expert fire or explosion cause investigation in the cases of typical kinds of public buildings for trading, tourism, culture, amusement and sport: **LO2** and **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire occurrence in a typical kind of department store or a kind off city market centre: **LO2** and **LO6**
6	Possible specific forensic issues and methods/techniques for expert fire or explosion cause investigation in the cases of typical kinds of public buildings for education, health and social care: **LO2** and **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire occurrence in a typical kind of building for health or social care: **LO2** and **LO6**
7	Possible specific forensic issues and methods/techniques for expert fire or explosion cause investigation in the cases of some typical kinds of industrial buildings, process plants and	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire and/or explosion

	process units (operations) in oil, petrochemical and pharmaceutical industry: **LO3** and **LO6**	occurrence in a typical kind of industrial building, process plant or process unit (operation) in oil industry: **LO3** and **LO6**
8	Possible specific forensic issues and methods/techniques for expert fire or explosion cause investigation in the cases of some typical kinds of industrial buildings, process plants and process units (operations) in wood-processing, textile, food and alcohol beverage industry: **LO3** and **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire and/or explosion occurrence in a typical kind of industrial building, process plant or process unit (operation) in petrochemical industry: **LO3** and **LO6**
9	Possible specific forensic issues and methods/techniques for expert fire or explosion cause investigation in the cases of typical kinds of passenger and goods transport vehicles, vessels and transport structures (tunnels and pipelines): **LO4** and **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire and/or explosion occurrence in a typical kind of industrial building, process plant or process unit (operation) in pharmaceutical industry: **LO3** and **LO6**
10	Possible specific forensic issues and methods/techniques for expert fire cause investigation in the cases of wood and wildland fires: **LO5** and **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire and/or explosion occurrence in a typical kind of industrial building, process plant or process unit (operation) in wood-processing or in food or alcohol beverage industry: **LO3** and **LO6**
11	Usual investigative omissions, oversights and mistakes which could jeopardize reliability and credibility of the results of fire/explosion cause determination and forensic expertise and system of appropriate measures, procedures and activities for timely avoiding them: **LO1** – **LO5**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire and/or explosion occurrence in a typical kind of industrial building, process plant or process unit (operation) in textile industry: **LO3** and **LO6**
12	Addresses and contents of world famous publicly available and internal professional data basis for forensic laboratories and for individual forensic experts: **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire or explosion occurrence in a typical kind of passenger or goods road/railway transport vehicle or transport structure (tunnel or pipeline): **LO4** and **LO6**
13	Contemporary commercial computer software and expert systems for forensic simulation tests and for comparative investigations and analysis of probable causes, conditions and cases of fire/explosion initiation, development, dynamics, effects and consequences in different kinds of spaces and environments: **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of fire or explosion occurrence in a typical kind of passenger or goods maritime transport, or in a typical kind of port, marina or ship repairing yard: **LO4** and **LO6**
14	Rules, manners, means and techniques for preparing documents for court expert testimony and opinion testimony (written documents and photo, video, animated and	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects

	graphic appendices of expertise about (un)determined fire/explosion cause, manner, conditions, circumstances, effects and consequences of the occurrence): **LO2 – LO6**	and consequences of wood or wildland fire: **LO5** and **LO6**
15	Rules and manners of presenting and defending results of fire/explosion expertise at court: **LO6**	Case study and critical analysis of results and used methods and techniques in a case of investigation and determination of possible kind/pattern, manner, cause, conditions, circumstances, effects and consequences of agricultural crops/plants fire: **LO5** and **LO6**

References

REFERENCES (compulsory/additional):

Compulsory for Croatian speaking students:

1) Kulišić, D. (2003). *Metodika istraživanja požara i eksplozija*, Samoizdat (Nastavnik), Zagreb.
2) Pačelat, R., Zorić, Z. (2003). *Istraživanje uzroka požara*, Zavod za istraživanje i razvoj sigurnosti (ZIRS), Zagreb.
3) Kulišić, D. (2011). The benefits from using professionally developed models of possible hazardous materials accident scenarios in crime scene investigation, Gl. 9, U: *Managing Global Environmental Threats to Air, Water and Soil - Examples from South Eastern Europe*, pp. 151-186., Springer (NATO Science for Peace and Security Series - C: Environmental Security). Meško, G., Dimitrijević, D. & Fields, C.B. (Eds.), Dordrecht.
4) Kulišić, D. (2015). Prepoznatljiva i dokazno važna obilježja praktičkih izvora energije paljenja u sklopu sustava s brojnijim i/ili složenijim požarnim i eksplozijskim opasnostima, *Zbornik radova IV. međunarodne znanstveno-stručne konferencije „Istraživački dani Visoke policijske škole u Zagrebu"*, Butorac, K. (ur.), str. 586.-612., Zagreb, 23.-24. travnja 2015., Zagreb: Visoka policijska škola MUP-a RH. (dostupno na: http://www.policija.hr/211645.aspx).
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Compulsory for English speaking students:

1) NFPA (2014). *NFPA 921: Guide for Fire and Explosion Investigations*, National Fire Protection Association, Inc. (NFPA), Quincy (MA).
2) Redsicker, D.R. (1997). *Practical Fire and Arson Investigation*, 2nd Ed., CRC Press, Boca Raton (FL).
3) Lentini, J.J. (2006). *Scientific Protocols for Fire Investigation*, CRC Press, Boca Raton (FL).
4) DeHaan, J.D. (2007). *Kirk's Fire Investigation*, 6th Ed., Pearson Prentice-Hall, Inc., Upper Saddle River (NJ).
5) TWG FASI (June 2000). *Fire and Arson Scene Evidence: A Guide for Public Safety Personnel* (*NIJ Research Report*), U.S. Department of Justice, Technical Working Group on Fire/Arson Scene Investigation (TWG FASI), Rockville (MD).
6) Bouquard, T.J. (2004). *Arson investigation: The Step-by-Step Procedure*, 2nd Ed., Charles C. Thomas Publisher, Ltd., Springfield (IL).
7) Swab, S.E. (1983). *Incendiary Fires: A Reference Manual for Fire Investigators*, Robert J. Brady Co. / Prentice-Hall Publishing and Communications Co., Bowie (MD).
8) Kästle, H. (1992). *Brandstiftung Erkennen, Aufklären, Verhüten*, Richard Boorberg Verlag GmbH & Co., Stuttgart.

FEMA/USFA (January 1993). *Basic Tools and Resources for Fire Investigators: A Handbook* (FA-127, U.S. Fire Administration/USFA), Federal Emergency Management Agency (FEMA), Washington (DC).

Exams for the academic year: 2022./2023.

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

Contact information

1. Course Instructor/Lecturer:	Lidija Jakšić, mag.ing.cheming., lecturer
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Office hours / Consultations:	According to schedule of the Department of Safety and Protection
2. Course Instructor/Lecturer:	
e-mail:	
Office hours / Consultations:	

VELEUČILIŠTE U KARLOVCU
Karlovac University of Applied Sciences

SYLLABUS PREDMETA

General information

Course title:	**Quality Control**
ISVU[4] course code:	171333, 171404
Studies in which the course is taught:	Specialist Graduate Study in Safety and Protection
Course Instructor:	Lidija Jakšić, mag.ing.cheming., lecturer
Course Assistant:	-
ECTS credits:	6,0
Semester of the course execution:	III
Academic year:	2022/2023
Exam prerequisites:	/
Lectures are given in a foreign language:	English
Aims:	The aim of the course is to familiarize students with the establishment, development and application of quality system and quality control, as well with the basics in the area of quality control of the environment, and with parameters related to the quality of air, water and soils.

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 100%
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:Define key quality and quality control concepts.	Written exam	2 Preliminary exams/ written exam -60 points Oral exam - 30 points Class attendance and activity – 10 points
	I2:Explain the concepts and definitions of air, water and soil and regulate man's behavior through the Environmental Protection Act.	Written exam	
	I3: Explain protection against environmental pollution by analyzing air, water and soil	Written exam	
	I4: Understand the role of statistical methods in the quality control system and know how to apply the appropriate method	Written exam	
	I5: Evaluate the cost-effectiveness of quality control	Written exam	
	I6: Organize the implementation of product quality control and quality control in the industry	Written exam	

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Karlovac University of Applied Sciences

SYLLABUS PREDMETA

Alternative formation of the grade (I1 – I6)	**or** alternative formation of the grade: I1 - I6 Class attendence and activity 10 points 2 Preliminary exams/written exam 60 points Oral exam 30 points	TOTAL: 100 points
Students' competencies	Students will be able to understand the role of quality control and understand the application and importance of quality control in the environment 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) 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**
0,5					0,5
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		3	2		

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. Quality definitions with an explanation of basic concepts. Quality system: establishing, documenting, implementing, maintaining and improving quality. Overview of Historical Development.	Introduction to laboratory exercises, general instructions, laboratory protection rules.
2.	Terms and definitions related to air, water, and soil.	Sampling errors for testing samples.
3.	Environmental Protection Act. Air Protection Act. Water Act. Agricultural Land Act. Pollution of air, soil and water by technological processes.	Measurement errors and sample testing.

4.	The relationship between human and environmental protection regulated by the Law.	Examination of physical water quality indicators (visual color determination, determination of odor, temperature of air and water).
5.	Quality Management Principles. Quality system elements. External and internal quality control.	Determination of chemical water quality indicators: determination of pH of the water (determination of acidity using indicators, determination of pH with pH meter).
6.	Input control, interoperability control, final control.	Determination of chemical water quality indicators: Determination of electrical conductivity.
7.	Quality Control Methods.	Chemical water analysis: determination of water hardness (determination of carbonate hardness, determination of calcium hardness, determination of magnesium hardness, determination of total hardness)
8.	Quality Costs and Quality Cost Analysis.	Determination of chemical water quality indicators: determination of chloride.
9.	Statistical methods of qualification control.	Determination of chemical water quality indicators: determination of sulfate.
10.	Control Diagrams. Interpretation of control charts.	Determination of the amount of organic matter in water.
11.	Quality management system.	Determination of dissolved oxygen in water.
12.	Ensuring quality of production process. Ensuring the quality of the measurement process.	Determination of CO_2 in water, alkalinity.
13.	Applying seven basic quality improvement tools. Quality Improvement: Diagram-Cause Effect, Paret Diagram, Dispersion Diagram.	Determination of nitrite, nitrite and ammonia in water. Qualitative demonstration of carbonate in soil. Determination of pH of soil.
14.	Identify the use of other tools and methods to improve quality.	Processing of the results by statistical methods analysis.
15.	Standards and standardization.	Interpretation of test results using control charts.

References

REFERENCES (compulsory/additional):
1) J.M.Juran, Juran's Quality Handbook, McGraw-Hill, 1999 2) Z. Jurac, Otpadne vode, Veleučilište u Karlovcu, 2009 3) N. Popović, I. Čupor, Tehnologija zaštite okoliša, Priručnik za vježbe, Veleučilište u Karlovcu, 2011.

Exams for the academic year: 2022/2023

Exam dates:	According to the schedule of exams for academic year 2022/2023

Contact information

1. Course Instructor/Lecturer:	Lidija Jakšić, mag.ing.cheming., lecturer
e-mail:	lidija.brckovic@vuka.hr
Office hours / Consultations:	According to schedule of the Department of Safety
2. Course Instructor/Lecturer:	
e-mail:	
Office hours / Consultations:	

VELEUČILIŠTE U KARLOVCU
Karlovac University of Applied Sciences

SYLLABUS PREDMETA

General information

Course title:	**Quality Control**
ISVU[5] course code:	38465
Studies in which the course is taught:	Specialist Graduate Study in Safety and Protection
Course Instructor:	Lidija Jakšić, mag.ing.cheming., lecturer
Course Assistant:	-
ECTS credits:	6,0
Semester of the course execution:	III
Academic year:	2022/2023
Exam prerequisites:	/
Lectures are given in a foreign language:	English
Aims:	The aim of the course is to familiarize students with the establishment, development and application of quality system and quality control, as well with the basics in the area of quality control of the environment, and with parameters related to the quality of air, water and soils.

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 60%
Tutorials:	-	-	-
Practical (lab) sessions:	3	45	attendance 100%
Seminars:	-	-	-
Field work:	-	-	-
Other:	-	-	-
TOTAL:	5	75	

Monitoring of students' work, knowledge evaluation and 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**
Formation of the grade during the implementation of teaching: (Define from minimum 5 to maximum 10 learning outcomes)	**I1:Define key quality and quality control concepts.**	Written exam	Written exam - 60 points Oral exam - 30 points Class attendance and activity – 10 points
	I2: Explain the concepts and definitions of air, water and soil and regulate man's behavior through the Environmental Protection Act.	Written exam	
	I3: Explain protection against environmental pollution by analyzing air, water and soil	Written exam	
	I4: Understand the role of statistical methods in the quality control system and know how to apply the appropriate method	Written exam	
	I5: Evaluate the cost-effectiveness of quality control	Written exam	

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SYLLABUS PREDMETA

	I6: Organize the implementation of product quality control and quality control in the industry	Written exam	
Alternative formation of the grade (I 1 – I 10)	**or alternative formation of the grade: LO 1 – LO 6** Class attendence and activity 10 points 2 Preliminary exams/written exam 60 points Oral exam 30 points		TOTAL: 100 points
Students' competencies	Students will be able to understand the role of quality control and understand the application and importance of quality control in the environment 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) 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**
0,5					0,5
Independent work	**Project**	**Written exam**	**Oral exam**	**Other**	
		3	2		

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. Quality definitions with an explanation of basic concepts. Quality system: establishing, documenting, implementing, maintaining and improving quality. Overview of Historical Development.	Introduction to laboratory exercises, general instructions, laboratory protection rules.
2.	Terms and definitions related to air, water, and soil.	Sampling errors for testing samples.
3.	Environmental Protection Act. Air Protection Act. Water Act. Agricultural Land Act. Pollution of air, soil and water by technological processes.	Measurement errors and sample testing.

4.	The relationship between human and environmental protection regulated by the Law.	Examination of physical water quality indicators (visual color determination, determination of odor, temperature of air and water).
5.	Quality Management Principles. Quality system elements. External and internal quality control.	Determination of chemical water quality indicators: determination of pH of the water (determination of acidity using indicators, determination of pH with pH meter).
6.	Input control, interoperability control, final control.	Determination of chemical water quality indicators: Determination of electrical conductivity.
7.	Quality Control Methods.	Chemical water analysis: determination of water hardness (determination of carbonate hardness, determination of calcium hardness, determination of magnesium hardness, determination of total hardness)
8.	Quality Costs and Quality Cost Analysis.	Determination of chemical water quality indicators: determination of chloride.
9.	Statistical methods of qualification control.	Determination of chemical water quality indicators: determination of sulfate.
10.	Control Diagrams. Interpretation of control charts.	Determination of the amount of organic matter in water.
11.	Quality management system.	Determination of dissolved oxygen in water.
12.	Ensuring quality of production process. Ensuring the quality of the measurement process.	Determination of CO_2 in water, alkalinity.
13.	Applying seven basic quality improvement tools. Quality Improvement: Diagram-Cause Effect, Paret Diagram, Dispersion Diagram.	Determination of nitrite, nitrite and ammonia in water. Qualitative demonstration of carbonate in soil. Determination of pH of soil.
14.	Identify the use of other tools and methods to improve quality.	Processing of the results by statistical methods analysis.
15.	Standards and standardization.	Interpretation of test results using control charts.

References

REFERENCES (compulsory/additional):
1) J.M.Juran, Juran's Quality Handbook, McGraw-Hill, 1999 2) Z. Jurac, Otpadne vode, Veleučilište u Karlovcu, 2009 3) N. Popović, I. Čupor, Tehnologija zaštite okoliša, Priručnik za vježbe, Veleučilište u Karlovcu, 2011.

Exams for the academic year: 2022/2023

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