STUDY PROGRAMME ACCREDITATION MATERIAL:

DISASTER RISK MANAGEMENT AND FIRE SAFETY

DOCTORAL ACADEMIC STUDIES

Novi Sad

2018.

Content

Content

Programme name	Disaster Risk Management and Fire Safety
Independent higher education institution where the programme is being executed	University of Novi Sad
Higher education institution where the programme is being executed	Faculty of Technical Sciences
Educational-scientific/educational-art field	Interdisciplinary
Scientific, proffesional or art field	Civil Engineering, Engineering Management, Environmental Engineering
Type of studies	Doctoral Academic Studies
Study scope, expressed in ECTS	180
Academic degree, abbreviation	Doctor of Science - Disaster Risk Management and Fire Safety, Ph.D
Study length	3
Programme implementation starting year	
Future course implementation starting year (for new programme)	2019
Number of students attending this programme	0
Planned number of students to be enrolled in this programme	36
Programme approval date (state the approval issuer)	05.09.2018 - Science Education Council 20.09.2018 - University of Novi Sad Senat
Programme language	Serbian, English
Programme accreditation year	
Web address containing programme information	http://www.ftn.uns.ac.rs

Standard 00. Higher Education Institution Competence for the Implementation of PhD Studies

The Faculty is fully prepared in terms of academic staff, classroom capacity and other facilities for administering doctoral studies in all the fields studied at the Faculty based on indicators related to scientific and research work. The Faculty has a short-term and long-term plan and is accredited as a scientific and research institution, as required by law.

The ability of the Faculty to administer doctoral studies can be indicated by the following criteria:

•the number of Ph.D. and Master theses defended at the higher education institution which are in the area for which the study programme is accredited, in terms of the ratio of the doctoral and master theses and the number of students who have graduated from the programme and the number of professors.

•the ratio between the number of professors and the number of professors involved in scientific and research projects.

•the ratio between publications in the Ministry of Science acclaimed international journals in the last 10 years and the number of professors.

•cooperation with institutions in the country and abroad

•the Faculty employs a number of tenured teachers who have acted as doctoral thesis supervisors.

The capability of the Faculty to administer doctoral studies is obvious from the references which are enclosed with the accreditation material.

Standard 01. Programme Structure

The Doctoral Study Programme Disaster Risk Management and Fire Safety is an integral part of doctoral studies organized at the Faculty of Technical Sciences, University of Novi Sad. Study Programme multidisciplinarity is provided through a great number of elective courses in the field of Civil Engineering, Industrial Engineering and Management, Electrical Engineering and Security Science. Individual adaptation to the students' needs and their selection in the framework of Disaster Risk Management and Fire Safety is enabled through elective courses, study research work and doctoral dissertations. The outcome of the learning process is the knowledge which enables students to become capable of independent scientific research. The acquired academic degree is a Doctor of Science - Disaster Risk management and Fire Safety (Ph.D.).

Doctoral studies in Disaster Risk Management and Fire Safety last for three years (six semesters) and they are worth at least 180 ECTS. Out of it, 68 ECTS is obtained through examination at the subjects, 12 ECTS is obtained by laying theoretical basis for doctoral dissertation, 70 ECTS by realization of study research work in the field of doctoral dissertation and by publication of research results, 20 ECTS is acquired by elaborating the doctoral dissertation and 10 ECTS is based on technical design of the doctoral dissertation and its defense.

Student`s research interest is profiled by selecting teaching subjects which will be studied and taken; and thus, contributing to their in-depth knowledge and understanding of areas (themes) of their doctoral dissertation. Elective courses are selected from the group of proposed subjects on the study programme. Additionally, students have the ability to choose a certain number of courses from the set of teaching subjects at doctoral studies at FTN UNS or at some other university in the country or abroad with the mentor` s consent. Prerequisites determined for attending classes for the chosen subject must be fulfilled. Studying at doctoral studies is organized through lectures, research and scientific work, elaboration and defense of doctoral dissertation. Teaching activity for the subjects (compulsory or optional) is group or individual (mentoring) activity. Group classes are held if the subject was chosen by five or more students or if this type of lecturing is necessary to be organized due to the nature (character) of the subject.

Standard 03. Programme Goals

The aim of the study programme is to enable students to achieve scientific competences and academic skills in the field of Disaster Risk Management and Fire Safety. This also includes the development of creative abilities in considering problems and the ability of critical thinking, the development of teamwork skills and the mastering of specific practical skills necessary to perform complex tasks in this area. Another goal of the study programme is to educate an expert who has sufficient scientific and professional knowledge from different areas of Disaster Risk Management and Fire Safety. Education is aligned with the contemporary development trends of appropriate scientific disciplines in the world. Special emphasis is on raising students` awareness of the need for a personal contribution to the development of a society in general through involvement in the development of society's preparedness and resilience to hazard and risk prevention, as well as through reduction of the natural disaster and fire hazard consequences. Additionally, skills for independent scientific research, communication and presentation of results to scientific public are defined in the area of teamwork.

Standard 04. Graduates' Competencies

PhD graduates of the academic study programme in Disaster Risk Management and Fire Safety are competent to conduct research and solve problems in real life practice activities. Competencies include, above all, the development of critical thinking skills, problem analysis capabilities, the synthesis solution, predicting the behaviour of selected solutions with a clear representation of what is good and what is bad by the selected solution.
Qualifications that indicate the completion of doctoral academic studies are gained by students:
• who have demonstrated systematic knowledge and understanding in the field ofisaster Risk Management and Fire Safety that complements the knowledge gained at graduate academic studies, being the basis for developing critical thinking and application of knowledge;
• who have mastered the skills and methods of research in the field of isaster Risk Management and Fire Safety
;
• who have shown the ability of making concepts, design and application
• who have shown ability to adapt the research process with the necessary level of academic integrity;
• who have performed original research and work, extending the boundaries of knowledge, which is verified by publishing papers in the appropriate scientific journal and by the references in national and international levels;
• who are capable of critical analysis, evaluation and synthesis of new and complex ideas;
• who are capable of knowledge and ideas transfer to their colleagues, wider academic community and society in general
• who are capable of promoting technological, social and cultural progress in the academic and professional environment.

These competences are realized through monitoring study processes and individual results of students.

After graduation, PhD programme Disaster Risk Management and Fire Safety allows students to have the knowledge, skills, developed abilities and competencies to :
• independently solve practical and theoretical problems and organize and realize developing activities and research;
• be involved in international scientific projects
• be able to implement the development of new technologies and procedures in the field of civil engineering and to understand and use modern knowledge;
• think critically, work creatively and independently;
• respect the code of ethics and principles of good scientific practice;
• be capable to present scientific research results at scientific conferences and publish in scientific journals, verifying them through patents and new technical solutions;
• contribute to the development of scientific disciplines in science generally.

After this study programme completion, the student obtains the following subject-specific competences:
• thorough knowledge and understanding of the disciplines that are the subject of their involvement;
• ability to solve problems using scientific methods and procedures;
• linking basic knowledge in various fields and their application;
• ability of modern developments in the field of profession;
• necessary skills and ability in applying knowledge in the field of Risk and Fire Protection Management;
• mastering information and communication technologies.

Students will be enabled to design, organize and manage the construction of specific and complex structures. During their education, students acquire the knowledge to independently perform experiments, process statistic data, as well as formulate and make adequate conclusions.
Students who obtain their Doctoral degree in Disaster Risk Management and Fire Safety acquire knowledge on how to economically utilize natural resources of the Republic of Serbia in accordance with the sustainable development principles. In particular, attention is paid to the development of skills in team work and development of professional ethics.
Acquired competence are verified by scientific papers. Before obtaining the Doctoral Diploma a candidate must publish (or to prove that the papers are accepted for publication) at least one paper in the SCI listed journal.

Standard 05. Curriculum

Total number of active teaching hours at doctoral academic studies Disaster Risk Management and Fire Safety is 600 hours during the school year, i.e. 20 hours a week. The study programme includes active teaching and preparation of doctoral dissertation. Active teaching is divided into two categories: lectures and study research work, which are numerically expressed as classes. Study research work includes all forms of teaching aimed to enable students to research, to write scientific papers and prepare doctoral dissertation. Within the study programme, lectures represent 25% of the total number of active classes. In the final year of doctoral studies, active teaching includes only study research work directed toward a doctoral dissertation development. Active teaching is expressed by the number of lessons and the number of ECTS credits.

The curriculum contains a list and structure of mandatory and optional subjects with a description, as well as doctoral dissertation as a final part of doctoral academic study programme Disaster Risk Management and Fire Safety. The curriculum provides insight into knowledge, skills and competences which students acquire during the studies and contains defined basics for independent research work of a student. The curriculum of the doctoral academic study programme Disaster Risk Management and Fire Safety is made to meet all the set goals. The structure of the study programme enables the students to choose elective courses which will be worth at least 50% of ECTS credits. During the studies students are encouraged to specialize in the specific field of study they are most interested in. Through elective courses they are able to take further interest in the scientific and research areas studied during the course of their graduate academic studies. The curriculum defines courses by scope and content, as well as by method of realization. All courses last one semester and are worth a certain number of ECTS credits. The curriculum defines every course of the study programme which states the following: the course name, type, the year and semester when the course is lectured, the number of ECTS credits, the name of the lecturer, the course objective with the expected outcome, the knowledge and competences the student will acquire, the prerequisites for taking the course, the course content, the recommended literature, the methods of lecturing, the knowledge tests and evaluation. Each course is designed so that approximately half of the classes are lectures and the other half is scientific and research work. Study and research work is student`s independent work on research area as defined with subject lecturer. The study programme is created in accordance with the European standards concerning the enrolment requirements, the duration of studies, the terms of enrolling into the next year of studies, the acquisition of a diploma and the mode of study.

The doctoral dissertation is the final part of doctoral studies. The doctoral dissertation is independent original scientific work of the student from this doctoral academic study programme. Procedure, registration, preparation and defense of the doctoral dissertation is determined by the general act of the Faculty of Technical Science - Rulebook on enrollment, studying at doctoral academic studies and obtaining a ‘Doctor of science’ degree, that is, Doctor of art.

The preparation of the doctoral dissertation is shown only by ECTS credits. The number of credits for doctoral studies enters the total number of credits required for the completion of doctoral academic studies. More of the half of the ECTS credits envisaged for the realization of doctoral academic studies relates to doctoral dissertation and courses related to the topic of doctoral dissertation.

Table 5.1 Courses schedule by semester and year of study

Study programme: Disaster Risk Management and Fire Safety

No.	Course ID	Course name		S	Type	Status	Active lessons				Other classes	ECTS
							Lec	Pra	SRW	OTT		
FIRST YEAR												
1	06.DZ001	Scientific Research Method		1	TM	M	1	0	6	0	0.00	8
2	17.RDO01	Selected Chapters in Disaster Risk Management and Fire Safety		1	NS	M	5	0	2	0	0.00	10
3	17.URI01	Elective Course 1 (select 2 out of 6)		1		EB	4	0	2	0	0.00	10
		17.DZ01M	Selected Chapters in Mathematics 1	1	NS	E	2	0	1	0	0	5
		17.DZ02M	Selected Chapters in Mathematics 2	1	NS	E	2	0	1	0	0	5
		17.RDZ01F	Selected Chapters in Physics	1	NS	E	2	0	1	0	0	5
		17.ZRDH1	Selected Chepters of Chemistry	1	NS	E	2	0	1	0	0	5
		17.RDI04	Selected Chapers In Qualitative Risk Assessment Methods	1	NS	E	2	0	1	0	0	5
		17.RDI109	Theory of Security Systems	1	NS	E	2	0	1	0	0	5
4	17.URI02	Elective Course 2 (select 1 out of 10)		2		EB	5	0	2	0	0.00-2.00	10
		17.IMDR72	Advanced risk assessment methods	2	NS	E	5	0	2	0	0	10
		17.RDI11R	Selected Topics in Modern Methods of Data Collection and Processing	2	NS	E	5	0	2	0	0	10
		17.RDI01	Selected Chapters in Seismic Hazard Assessment and Vulnerability of Civil Engineering Structures	2	NS	E	5	0	2	0	0	10
		17.IMDR36	Advanced data models and database systems	2	NS	E	5	0	2	0	0	10
		17.GD027	Process, principles and techniques of scientific research - selected chapters	2	TM	E	5	0	2	0	2	10
		17.RDI013	Security and Resilience of Critical Infrastructures	2	NS	E	5	0	2	0	0	10
		17.RDI014	Public Health in Emergency and Crisis	2	NS	E	5	0	2	0	0	10
		17.RDI015	Hazards and Protection from Electrostatic Discharges	2	NS	E	5	0	2	0	0	10
		17.RDI016	Selected Chapters in Flood Prevention and Protection	2	NS	E	5	0	2	0	0	10
		17.IMDR71	Selected topics of project management	2	NS	E	5	0	2	0	0	10
5	17.URI03	Elective Course 3 (select 1 out of 10)		2		EB	5	0	2	0	0.00-2.00	10
		17.GD027	Process, principles and techniques of scientific research - selected chapters	2	TM	E	5	0	2	0	2	10
		17.IMDR36	Advanced data models and database systems	2	NS	E	5	0	2	0	0	10
		17.IMDR71	Selected topics of project management	2	NS	E	5	0	2	0	0	10
		17.IMDR72	Advanced risk assessment methods	2	NS	E	5	0	2	0	0	10
		17.RDI01	Selected Chapters in Seismic Hazard Assessment and Vulnerability of Civil Engineering Structures	2	NS	E	5	0	2	0	0	10
		17.RDI013	Security and Resilience of Critical Infrastructures	2	NS	E	5	0	2	0	0	10
		17.RDI014	Public Health in Emergency and Crisis	2	NS	E	5	0	2	0	0	10
		17.RDI015	Hazards and Protection from Electrostatic Discharges	2	NS	E	5	0	2	0	0	10
		17.RDI016	Selected Chapters in Flood Prevention and Protection	2	NS	E	5	0	2	0	0	10
		17.RDI11R	Selected Topics in Modern Methods of Data Collection and Processing	2	NS	E	5	0	2	0	0	10

Table 5.1 Courses schedule by semester and year of study

Study programme: Disaster Risk Management and Fire Safety

No.	Course ID	Course name	S	Type	Status	Active lessons				Other classes	ECTS
						Lec	Pra	SRW	OTT		
6	17.RSIR01	Introduction to Scientific and Research Work	2	NS	M	0	0	6	0	0.00	12
					Active lessons - total:	40					
										Total ECTS:	60

Table 5.1 Courses schedule by semester and year of study

Study programme: Disaster Risk Management and Fire Safety

No.	Course ID	Course name		S	Type	Status	Active lessons				Other classes	ECTS
							Lec	Pra	SRW	OTT		
SECOND YEAR												
7	17.URI04	Elective Course 4 (select 1 out of 10)		3		EB	5	0	2	0	0.00	10
		17.IMDR75	Selected Topics in Risk Management and Insurance Management	3	NS	E	5	0	2	0	0	10
		17.GD016	Selected Chapters in Water Regulation and Protection	3	NS	E	5	0	2	0	0	10
		17.RDI12R	Energy Efficiency in Buildings and Climate Changes	3	SA	E	5	0	2	0	0	10
		17.RDI017	Media Systems and Crisis Management	3	NS	E	5	0	2	0	0	10
		17.GD028	Selected Chapters in Durability of Concrete and Masonry Structures and Robustness of Structures	3	SA	E	5	0	2	0	0	10
		17.GD033	Fire Safety of Building Structures - Selected Chapters	3	SA	E	5	0	2	0	0	10
		17.GD034	Advanced Disaster Risk Analisys Methodes	3	SA	E	5	0	2	0	0	10
		17.GD026	Selected Chapters in Hydro-infortmacis	3	NS	E	5	0	2	0	0	10
		17.RDI018	Power Utilization Safety and Power Outage Risks	3	NS	E	5	0	2	0	0	10
		17.RDI019	Mental Health and Psychosocial Support in Crisis	3	NS	E	5	0	2	0	0	10
8	17.URI05	Elective Course 5 (select 1 out of 10)		3		EB	5	0	2	0	0.00	10
		17.GD016	Selected Chapters in Water Regulation and Protection	3	NS	E	5	0	2	0	0	10
		17.GD026	Selected Chapters in Hydro-infortmacis	3	NS	E	5	0	2	0	0	10
		17.GD028	Selected Chapters in Durability of Concrete and Masonry Structures and Robustness of Structures	3	SA	E	5	0	2	0	0	10
		17.GD033	Fire Safety of Building Structures - Selected Chapters	3	SA	E	5	0	2	0	0	10
		17.GD034	Advanced Disaster Risk Analisys Methodes	3	SA	E	5	0	2	0	0	10
		17.IMDR75	Selected Topics in Risk Management and Insurance Management	3	NS	E	5	0	2	0	0	10
		17.RDI017	Media Systems and Crisis Management	3	NS	E	5	0	2	0	0	10
		17.RDI018	Power Utilization Safety and Power Outage Risks	3	NS	E	5	0	2	0	0	10
		17.RDI019	Mental Health and Psychosocial Support in Crisis	3	NS	E	5	0	2	0	0	10
		17.RDI12R	Energy Efficiency in Buildings and Climate Changes	3	SA	E	5	0	2	0	0	10
9	17.RSIR04	Doctoral Dissertation - Research and Publishing of Results 1		3	NS	M	0	0	6	0	0.00	10
10	17.RSIR03	Doctoral Dissertation - Research and Publishing of Results 2		4	NS	M	0	0	15	0	0.00	18

Table 5.1 Courses schedule by semester and year of study

Study programme: Disaster Risk Management and Fire Safety

No.	Course ID	Course name	S	Type	Status	Active lessons				Other classes	ECTS
						Lec	Pra	SRW	OTT		
11	17.DUR01	Doctoral Dissertation - Theoretical Bases	4	NS	M	0	0	5	0	0.00	12
					Active lessons - total:	40					
										Total ECTS:	60

Table 5.1 Courses schedule by semester and year of study

Study programme: Disaster Risk Management and Fire Safety

No.	Course ID	Course name	S	Type	Status	Active lessons				Other classes	ECTS
						Lec	Pra	SRW	OTT		
THIRD YEAR											
12	17.DUR02	Doctoral Dissertation - Research and Publishing of Results 3	5	NS	M	0	0	20	0	0.00	30
13	17.DUR03	Doctoral Dissertation - Elaborate	6	NS	M	0	0	20	0	0.00	20
14	17.DUR04	Doctoral Dissertation - Technical processing and Defence	6	NS	M	0	0	0	0	0.00	10
					Active lessons - total:	40					
										Total ECTS:	60

Table 5.2 Course specification

Course:		Scientific Research Method
Course id:	DZ001	
Number of ECTS:	8	
Teachers:		Atanacković M. Teodor, Folić J. Radomir
Course status:		Mandatory

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
1	0	0	6	0

Precondition courses: None

1. Educational goal:

To enable students for successful writing of scientific papers and doctoral dissertations.

2. Educational outcomes (acquired knowledge):

- Ability of understanding varius scientific metods witch was used in scientific literature
- Ability of successful managing in proffesonal literature
- Ability of successful writing of scientific paper in area of of interests
- Ability of successful creating and ending of doctoral dissertation

3. Course content/structure:

Definition of science. Development of science through history.
Scientific methodology.
General and special scientific methods.
Structure of a scientific paper. Types of scientific results.
Writing and publishing scientific papers.
Writing the doctoral dissertation.
Evaluating scientific results.

4. Teaching methods:

Lectures. Consultations with students. Seminar paper.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	30.00	Oral part of the exam	Yes	70.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Karl Poper	Logika naučnog otkrića	Nolit, Beograd	1973

Literature

Table 5.2 Course specification

Course:		Selected Chapters in Disaster Risk Management and Fire Safety
Course id:	RDO01	
Number of ECTS:	10	
Teachers:		Ćosić I. Đorđe, Laban Đ. Mirjana
Course status:		Mandatory

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

The educational goal is that the students of doctoral studies to be introduced into the selected area of disaster risk management and fire safety and to learn the general settings that apply in the subject area.

2. Educational outcomes (acquired knowledge):

The learning outcomes are the acquisition of knowledge and abilities of students for independent and team-based scientific and research work in the subject area.

3. Course content/structure:

Survey of research in the areas of disaster risk management (natural disasters and accidents caused by human activity) and fire safety.

4. Teaching methods:

A mentor and student create a list of selected elective subjects depending on the field of student's field of interest. Lectures are combined. The presentation of the theoretical part is accompanied by appropriate examples that contribute to the clarification of the theoretical part. Regular consultations are held. Through a study and research work student, studying scientific journals and other literature independently deepens the material from the lectures.Working with a teacher, the student is trained for independent writing of scientific paper.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Theoretical part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Donald Hyndman, David Hyndman	Natural Hazards and Disasters	Brooks Cole	2016
2,	Robert W. Fitzgerald, Brian J. Meacham	Fire Performance Analysis for Buildings	WILEY	2017
3,	Brenda d. Philips	Disaster Recovery	CRC Press	2016
4,	Michael Havbro Faber	Statistics and Probability Theory: In Pursuit of Engineering Decision Support (Topics in Safety, Risk, Reliability and Quality)	Springer	2016
5,	Dougal Drysdale	An Introduction to Fire Dynamics	John Wiley &Sons, Ltd	2011
6,	Morgan J. Hurley, Eric R. Rosenbaum	Performance-Based Fire Safety Design	CRC Press	2015
7,	Ganapathy Ramachandran, David Charters	Quantitative Risk Assessment in Fire Safety	Spon Press	2011

Literature

Table 5.2 Course specification

Course:	Selected Chapters in Mathematics 1
Course id: DZ01M	
Number of ECTS: 5	
Teachers:	Buhmiler M. Sandra, Čomić Lj. Lidija, Doroslovački D. Rade, Doroslovački R. Ksenija, Grbić P. Tatjana, Kostić Z. Marko, Lukić J. Tibor, Medić S. Slavica, Mihailović P. Biljana, Nikolić M. Aleksandar, Ralević M. Nebojša, Stojaković M. Mila, Teofanov Đ. Ljiljana, Uzelac S. Zorica
Course status:	Elective

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
2	0	0	1	0

Precondition courses: None

1. Educational goal:

To acquire knowledge which can be used in professional subjects and practical work, develop and solve mathematical models for engineering courses using the knowledge gained through selected chapters in mathematics.

2. Educational outcomes (acquired knowledge):

Student will have been competent enough to develop and solve mathematical models in further professional education.

3. Course content/structure:

Student can choose in consultation with programme supervisor, one of the suggested modules: 1. Numerical Mathematics, 2. Optimization. 3. Pattern Recognition. 4. Partial Differential Equations, 5. Nonlinear Equations. 6. Computational geometry. 7. Elements of Functional Analysis. 8. Combinatorics. 9. Graph Theory.10.Operational Research- Linear Programming. 11. Probability 12. Statistics .13.Stochastic Processes. 14. Vector analysis. 15. Complex Analysis. 16. Linear Algebra. 17. Differential and Difference Equations. 18. Euclidean and Non-Euclidean Geometry. 19. Fractional Calculus,Differential Equations . 20. Operational Research-Quiuing theory. 21. Logic in Computing. 22. Discrete Mathematics. 23. Higher order Logic. 24. Theory of Mobile Processes. 25. Numerical Methods of Linear Algebra. 26. Fuzzy Sets. 27. Economic and Financial Mathematics. 28. Groups and Algebras Li. 29. Formal Languages and Automata Theory. 30. Process Algebras. 31. History of Mathematics. Part of the course is in the form of independent research and study in the field of mathematics. Study and research work is based on primary scientific sources, organization and conduction of experiments and statistical data analysis, numerical simulations, and possible paper in the field of mathematics.

4. Teaching methods:

Lectures. (The student can choose in consultation with supervisor, one or more modules depending on module scope). Consultations. Lectures are organized in combined form. The presentation of the theoretical part is followed by the corresponding examples which contribute to better understanding of the theoretical part. In addition to lectures there are regular consultations. Through research and study work the student will, on the bases of scientific journals and other relevant literature that has been studied independently, develop further understanding of the material covered in lectures. Working with the course teacher the student develops the ability to independently work on a scientific paper.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Alexander Mood,...	Introduction to the theory of statistics	McGraw Hill	2005
2,	Athanasios Papoulis	Probability, random variables and stochastic processes	McGraw Hill	2002
3,	I. Kovačević, N. Ralević	Funkcionalna analiza	FTN (edicija tehničke nauke-udžbenici), Novi Sad	2004
4,	N.Ralević,I.Kovačević	Zbirka rešenih zadataka iz Funkcionalne analize	FTN (edicija tehničke nauke-udžbenici), Novi Sad	2004
5,	M.Stojaković	Slučajni procesi	FTN, Novi Sad	1999
6,	V.Jevremović,J.Mališić	Statističke metode u metorologiji i inženjerstvu	Savezni hidrometeorološki zavod, Beograd	2002
7,	Zeidler E.	Nonlinear Functional Analysis and Aplications	Springer-Verlag, New York-Berlin-Heidelberg-Tokyo	1985
8,	Zlobec S., Petrić J	Nelinearno programiranje	Naučna knjiga, Beograd	1989
9,	Dauxois, M. Peyrard	Physics of Solitons	Cambridge University Press, Cambridge, New York	2006
10,	Saaty, T. L	Modern Nonlinear Equations	Dover Publications, Inc., New York	1981
11,	N. Ralević, S.Medić	Matematika 1 - drugi deo	FTN, Novi Sad	2002
12,	Heinz-Otto Peitgen, H. Juergens, D. Saupe	Chaos and Fractals	Springer Verlag, New York	2004

Study Programme Accreditation - PhD Studies

DOCTORAL ACADEMIC STUDIES — Disaster Risk Management and Fire Safety

Literature

Ord.	Author	Title	Publisher	Year
13,	Mileva Prvanović	Osnovi geometrije	Građevinska knjiga, Beograd	1990

Literature

Table 5.2 Course specification

Course:		Selected Chapters in Mathematics 2
Course id:	DZ02M	
Number of ECTS:	5	
Teachers:		Buhmiler M. Sandra, Čomić Lj. Lidija, Doroslovački D. Rade, Doroslovački R. Ksenija, Grbić P. Tatjana, Kostić Z. Marko, Lukić J. Tibor, Medić S. Slavica, Mihailović P. Biljana, Nikolić M. Aleksandar, Ralević M. Nebojša, Stojaković M. Mila, Teofanov Đ. Ljiljana, Uzelac S. Zorica
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
2	0	0	1	0

Precondition courses: None

1. Educational goal:

To acquire knowledge which can be used in professional subjects and practical work, develop and solve mathematical models for engineering courses using the knowledge gained through selected chapters in mathematics

2. Educational outcomes (acquired knowledge):

Student will have been competent enough to develop and solve mathematical models in further professional education.

3. Course content/structure:

Student can choose in consultation with programme supervisor, one of the suggested modules: 1. Numerical Mathematics, 2. Optimization. 3. Pattern Recognition. 4. Partial Differential Equations, 5. Nonlinear Equations. 6. Computational geometry. 7. Elements of Functional Analysis. 8. Combinatorics. 9. Graph Theory.10.Operational Research- Linear Programming. 11. Probability 12. Statistics .13.Stochastic Processes. 14. Vector analysis. 15. Complex Analysis. 16. Linear Algebra. 17. Differential and Difference Equations. 18. Euclidean and Non-Euclidean Geometry. 19. Fractional Calculus,Differential Equations . 20. Operational Research-Quiuing theory. 21. Logic in Computing.22. Discrete Mathematics. 23. Higher order Logic. 24. Theory of Mobile Processes. 25. Numerical Methods of Linear Algebra. 26. Fuzzy Sets. 27. Economic and Financial Mathematics. 28. Groups and Algebras Li. 29. Formal Languages and Automata Theory. 30. History of Mathematics. Part of the course is in the form of independent research and study in the field of mathematics. Study and research work is based on primary scientific sources, organization and conduction of experiments and statistical data analysis, numerical simulations, and possible paper in the field of mathematics.

4. Teaching methods:

Lectures. (The student can choose in consultation with supervisor, one or more modules depending on module scope). Consultations. Lectures are organized in combined form. The presentation of the theoretical part is followed by the corresponding examples which contribute to better understanding of the theoretical part. In addition to lectures there are regular consultations. Through research and study work the student will, on the bases of scientific journals and oth

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Theoretical part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Sheldon Ross	Probability models	Academic Press	1997
2,	Athanasios Papoulis	Probability, random variables, stochastic processes	McGraw Hill	2002
3,	Alexander Mood,...	Introduction to the theory of statistics	McGraw Hill	2005
4,	B.S.Everit	Statistics	Cambridge University Press	2006
5,	Davide Sangiorgi, David Walker	The Pi-Calculus: A Theory of Mobile Processes	Cambridge University Press	2001

Literature

Table 5.2 Course specification

Course:		Selected Chapters in Physics
Course id:	RDZ01F	
Number of ECTS:	5	
Teachers:		Budinski-Petković M. Ljuba, Ilić I. Dušan, Kozmidis-Luburić F. Uranija, Kozmidis-Petrović F. Ana, Lončarević M. Ivana, Samardžić D. Selena, Stojković J. Ivana, Vučinić-Vasić T. Milica
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
2	0	0	1	0

Precondition courses: None

1. Educational goal:

To acquire the knowledge of physics which is applied in modern engineering.

2. Educational outcomes (acquired knowledge):

The students will have acquired the knowledge which enables them to develop models for solving problems in practical professional work as well as evolvement in science and research work in the corresponding areas.

3. Course content/structure:

Student can choose in consultation with programme supervisor, one of the suggested modules: 1. Lasers, their applications in engineering, 2. Quantum tunnelling effect and applications, 3. Quantum dots, wires and tubes, Applications in nanotechnologies, 4. New materials, amorphous materials, spin glass, 5. Natural and artificial polymers and their application in nanotechnologies, 6. Numerical method of statistics physics, random number generator. Monte Carlo simulation.

4. Teaching methods:

Lectures. (The student can choose in consultation with co-mentor, one or more modules depending on module scope). Consultations. Lectures are organized in combined form. The presentation of the theoretical part is followed by the corresponding examples. In addition to lectures there are regular consultations. Through research and study work the student will, on the bases of scientific journals and other relevant literature that has been studied independently, develop further understanding of the material covered in lectures. Working with the course teacher the student develops the ability to independently work on a scientific paper.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	K. Binder, D.W. Heermann	Monte Carlo Simulation in Statistical Physics	Springer-Verlag	1988

Literature

Table 5.2 Course specification

Course:		Selected Chepters of Chemistry
Course id:	ZRDH1	
Number of ECTS:	5	
Teacher:		Prica Đ. Miljana
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
2	0	0	1	0

Precondition courses: None

1. Educational goal:

Acquiring new knowledge in the field of chemistry that will enable understanding and monitoring of engineering processes. Introduction to modern approaches in chemistry. Improving scientific abilities, academic and practical skills in the field of chemistry. Introduction to modern methods of processing and analysis of experimental data. Through this course students will: expand knowledge about concepts and definitions in the field of chemistry, understand and improve the use and definition of terms in the learning context, learn how to set the problem and solve it, develop the ability to identify problems in terms of identification, formulation and possible resolution, as well as improve the principles of engineering judgment and decision making. The acquisition of capabilities and skills to use literary sources, as well as developing a way of thinking, characteristic for theoretical-methodological disciplines.

2. Educational outcomes (acquired knowledge):

Basic knowledge of chemistry. Ability to independently solve practical and theoretical problems using scientific methods and procedures in the field of chemistry. Mastering creative abilities to develop new methods and approaches in solving chemical problems. The development of creative and independent judgment on chemistry issues. After finishing this course, the student is able to: think critically, logically connects theoretical and experimental knowledge in chemistry, apply acquired knowledge in engineering disciplines, communicate with other engineers and work in a team, think creatively, demonstrate understanding and skills, as well as to use the acquired knowledge to design new solutions to engineering problems. At the end of the course, a student is trained to use literature and other resources in seeking the necessary information to improve the level of knowledge in the field of chemistry.

3. Course content/structure:

General and inorganic chemistry (chemical laws, chemical bonds, inorganic molecules structure, physical and chemical properties of inorganic nuclei, mechanisms of chemical reactions). Organic chemistry (organic molecules structure, physical and chemical properties of organic compounds classes, mechanisms of chemical reactions). The physical chemistry (chemical thermodynamics, thermochemistry, ideal and real solutions, surface phenomena and colloidal systems, chemical kinetics and catalysis, chemical equilibrium, states of matter). Instrumental analysis (methodology in instrumental analysis and quality control; spectroscopy, theoretical basics and types of spectroscopy, chromatographic analytical methods, expression of analytical data). Environmental chemistry (defining the chemical source of pollution, the nature of pollution, transformation and migration of pollution in different environment, water, air and soil). Chemistry of materials (corrosion, corrosion rate, corrosion mechanisms, corrosion of metals in different environments, corrosion protection methods, metal coating protection). Statistical analysis of experimental results.

4. Teaching methods:

Lectures, study research work and consultations. Theoretical part of the material is presented in the lectures with use of modern equipment and information and communication technologies. Through lectures, a student acquires contemporary scientific knowledge, scientific methods and procedures that enable him for independent study research. In addition to lectures, consultations are also held regularly. Research work includes all forms of teaching which are in function of enabling students to research, to write scientific papers and doctoral dissertation. Research work includes all forms of teaching which are in function of enabling students to research, to write scientific papers and doctoral dissertation. Study research work includes active monitoring of primary scientific sources, organization and execution of numerical simulations and experimental research.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	N.R. Eldred	Chemistry for the Graphic Arts	GATF Press, Pittsburgh	2001
2,	P. Atkins, J. de Paula	Elements of Physical Chemistry	Oxford University Press Inc. New York	2009
3,	G.W. van Loon, S.J. Duffy	Environmental Chemistry	Oxford University Press Inc. New York	2011
4,	D. Ebbing, S. Gammon	General Chemistry	Houghton Mifflin College Div, Boston, MA	1998
5,	P. Monk	Maths for Chemistry	Oxford University Press Inc. New York	2006

Literature

Table 5.2 Course specification

Course:		Selected Chapers In Qualitative Risk Assessment Methods
Course id:	RDI04	
Number of ECTS:	5	
Teachers:		Ćosić I. Đorđe, Pečujlija D. Mladen
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
2	0	0	1	0

Precondition courses: None

1. Educational goal:

The subject aims to enable students to understand many basic concepts, processes, and issues that arise when performing empirical studies in most disciplines of management, and thus create a conceptual basis for following content during studies that include this type of knowledge, as well as development of a multidisciplinary approach.

2. Educational outcomes (acquired knowledge):

Students are qualified for independent creation of research design, data collection, data processing with univariate procedures, interpretation of data and preparation of reports on conducted research, as well as for using the software package SPSS. Studenti are also qualified for data processing with multivariate methods (exploratory factor analysis, EFA, confirmatory factor analysis CFA, structural modeling, SEM, cluster analysis).

3. Course content/structure:

At the beginning the problems of research preparation are being considered, which introduces a number of basic methodological concepts, such as types and objects of research, methods of sample selection, classification of variables and the relationships between them, the types of data, problems of measurement, types of research control, and other. Thereafter, three basic groups of research design are being analyzed, such as frequency, correlation and factorial designs. Within each of the three groups, drawings are gradually presented from simpler to more complex types. After that, basic forms of processing, analysis and interpretation of results are presented, separately for each three design groups. The advanced section where students are trained to perform the collection, processing and analysis of data using multivariate procedures that are consistent with the trends of the world s leading journals in the field (in depth). These procedures are exploratory and confirmatory factor analysis, cluster analysis, as well as Structural modeling method. The emphasis is on logic and above all mentioned practice. At the end of the course the structure of a standard written report on conducted research is described.

4. Teaching methods:

Lectures, consultations. Interactive monitoring of students work and their progression through lectures, discussions and homeworks. Mentoring for certain areas in order to increase knowledge. Use of contemorary methods of computer science.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature				
Ord.	Author	Title	Publisher	Year
1,	Nunnally, J.M	Psychometric theory	McGRAW-HILL, INC	1998

Literature

Table 5.2 Course specification

Course:		Theory of Security Systems
Course id:	RDI109	
Number of ECTS:	5	
Teachers:		Kuzmanović D. Bogdan, Morača D. Slobodan
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
2	0	0	1	0

Precondition courses: None

1. Educational goal:

The aim of the study course is to acquire comprehensive knowledge of theoretical-methodological, political and normative postulates on which security systems are based. The specificity of this aim is reflected in interpretation and understanding of growing theoretical and scientific debates about security phenomena and their implications on the security policy and practice in the field of disaster risk management.

2. Educational outcomes (acquired knowledge):

Acquired knowledge and competences will enable research and analysis of various theoretical and methodological perspectives of security studies, ssessing their explanatory potential in relation to contemporary security phenomena and processes materialized in the functions and institutions of the security systems. Acquired knowledge will be the basis for developing competencies for prognostic analyzes at the scientific-professional and operational-experience level, significant for the development of system solutions and security practices in disaster risk management.

3. Course content/structure:

Reference area of security (according to levels and sectors of analysis: human security, national security, regional security, global security, social security, energy security, environmental security, political, military and economic); positivist and post-positivist security approaches (realism / neorealism, neoliberalism, peace studies, security policy studies, post-modernism, critical theory, constructivism, normative theory); system theory and the theory of deterministic chaos; security systems as "structures on the move" and systemic variables in shaping the political and security discourse of contemporary international relations and relations within states; application of organization theory and systems theory to the analysis of the national security system as an organizational systems; reference theoretical and methodological frameworks for a comparative analysis of the security system; systemic thinking principles in shaping the strategic thinking of decision makers.

4. Teaching methods:

Teaching will be realized through lectures, panel discussions, discussions, consultations, essays and seminar work.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	James Rosenau	Turbulence in World Politics: A Theory of Change and Continuity	Princeton University Press, Cambrige	2011
2,	B. Buzan	Societal security, the State and Internationalization	London: Pinter	1993
3,	Nye, J.	Understanding International Conflicts	Longman	2000
4,	R. Vukadinović	Teorije međunarodnih odnosa	Politička kultura, Zagreb	2005
5,	Dillon, M	Politics of Security – Towards a political philosophy of continental thought	Routledge, London, New York	2003
6,	Pol D. Vilijams	Uvod u studije bezbednosti	Fakultet bezbednosti i Službeni glasnik	2012
7,	Smith, C. Brooks, D.J.	Security Science – The Theory and Practice of Security	Elsewier	2013
8,	W. C. Kegley, E. Wittkoph E	Worlds Politics, Trends and Transformation	Thomson Wadsworth, Belmont, USA	2006
9,	Z. Keković	Teorija sistema bezbednosti	Fakultet za bezbjednost i zaštitu, Banja Luka	2009
10,	Slobodan P. Simonović	Systems Aproach to management of Disasters Methods and Applications	John Wiley and Sons, Ltd.	2011
11,	Z. Dragišić, K. Radojević	Bezbednosni menadžment	Fakultet bezbednosti, Beograd	2014
12,	Z. Dragišić	Sistem nacionalne bezbednosti Republike Srbije	Fakultet bezbednosti, Beograd	2011
13,	V. Jakovljević	Civilna zaštita Republike Srbije	Fakultet bezbednosti, Beograd	2011
14,	Z. Keković	Sistemi bezbednosti sa sistemom bezbednosti Republike Srbije	Fakultet bezbednosti, Beograd	2017

Literature

Table 5.2 Course specification

Course:		Introduction to Scientific and Research Work
Course id:	RSIR01	
Number of ECTS:	12	
Teachers:		
Course status:	Mandatory	

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
0	0	0	6	0

Precondition courses: None

1. Educational goal:

Introduction to the application of fundamental, theoretical and methodological, scientific and professional, and professional and applicative knowledge and methods in solving concrete problems within the selected research field. Researching the literature, students are introduced to the latest knowledge in the field of research, to methods attended for creative solving of new tasks and the engineering practice in their solving. In this way the student acquires the necessary basic experience in solving the scientific-research problems from the topics of the study programme.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills, development of creative abilities, as well as mastering of specific practical skills in the subject matter of the study programme. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific research results.

3. Course content/structure:

Search and analysis of scientific and research results. Planning and performing numerical simulations and experimental research. Acquisition, processing, presentation and discussion of research results. Writing, publishing and presenting of scientific-research results from the study programme themes.

4. Teaching methods:

The student, in consultation with the supervisor, selects the research topic. For the chosen topic, supervisor delivers research plan to student. The student is obliged to make the work within the given subject using the recommended literature. During the development, the mentor can give additional instructions to the student, refer him to specific literature, and further guide him. In order to successfully carry out the research, the student conducts consultations with the mentor and with other teachers dealing with the research topic. Within the given topic, the student performs an analysis of previous research, identifies the problems and disadvantages of previous research, defines the objectives of his research, and carries out numerical simulations or experimental research. Student presents the research results in the form of the course project.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Svi	Časopisi sa SCI/SCIe/SSCI liste iz problematike studijskog programa		Sve
2,	Svi	Doktorske disertacije iz problematike studijskog programa	Svi	Sve
3,	Svi	Udžbenici i monografije iz problematike studijskog programa	Svi	Sve
4,	Svi	Zbornici radova naučnih skupova iz problematike studijskog programa	Svi	Sve

Literature

Table 5.2 Course specification

Course:		Advanced risk assessment methods
Course id:	IMDR72	
Number of ECTS:	10	
Teachers:		Ćosić I. Đorđe, Kuzmanović D. Bogdan
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

To gain a knowledge and understanding regarding advanced disaster risk assessment methods

2. Educational outcomes (acquired knowledge):

Students will be capable to apply a contemporary mathematical and statistical disaster risk assessment tools regarding various natural and human induced hazards

3. Course content/structure:

This course will implement the advanced risk assessment methods. Students will focus on the advanced assessment of the basic risk parameters such as hazard, vulnerability, exposure and resilience. Special attention will be on the probabilistic risk assessment methods. After the course completion students will be able to apply knowledge gained.

4. Teaching methods:

Lectures, computer based exercises and consultation.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Exercise attendance	Yes	5.00	Written part of the exam - tasks and theory	Yes	50.00
Lecture attendance	Yes	5.00			
Term paper	Yes	15.00			
Test	Yes	25.00			

Literature

Ord.	Author	Title	Publisher	Year
1,	Tim Bedford and Roger Cooke	Probabilistic Risk Analysis: Foundations and Methods	Cambridge	2001
2,	Patrizia Grossi	Catastrophe Modeling: A New Approach to Managing Risk	Springer	2005

Literature

Table 5.2 Course specification

Course:	Selected Topics in Modern Methods of Data Collection and Processing
Course id: RDI11R	
Number of ECTS: 10	
Teacher:	Popov B. Srđan
Course status:	Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Acquiring deep knowledge in the field of modern methods of collecting data, processing data and associated technologies.

2. Educational outcomes (acquired knowledge):

Understanding modern methods of data collection and processing as well as training for the application of acquired knowledge in developing a system for acquisition and use of mass data.

3. Course content/structure:

Contemporary Systems for Acquisition of Mass Data Environments Variables. Infrastructure of mass data environment variables. Data Structures for Working with Environment Variables. Extraction and understanding of sets of objects of interest, described by acredified environment variables.

4. Teaching methods:

Lectures, consultations. Through lectures of discussion and computer simulation, the students work and their progress are monitored interactively. Mentoring for specific areas in order to deepen knowledge. The use of modern methods of computer classes.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Theoretical part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Thomas Lillesand, Ralph W. Kiefer, Jonathan Chipman	Remote Sensing and Image Interpretation , 7th Edition	Wiley	2015
2,	Stefan Dech, Benjamin Leutner, Martin Wegmann	Remote Sensing and GIS for Ecologists: Using Open Source Software	Pelagic Publishing	2016
3,	Dale A. Quattrochi, Qihao Weng	Urban Remote Sensing	CRC press	2006
4,	Ian Dowman, Karsten Jacobsen, Gottfried Konecny, Rainer Sandau	High Resolution Optical Satellite Imagery	Whittles Publishing	2012
5,	Erica Carrick Utsi	Ground Penetrating Radar: Theory and Practice	Elsevier Science	2017
6,	Hanan Samet	Foundations of Multidimensional and Metric Data Structures	Elsevier	2006
7,	Muneesawang, Paisarn, Zhang, Ning, Guan, Ling	Multimedia Database Retrieval	Springer International Publishing	2014

Literature

Table 5.2 Course specification

Course:	Selected Chapters in Seismic Hazard Assessment and Vulnerability of Civil Engineering Structures
Course id: RDI01	
Number of ECTS: 10	
Teachers:	Rašeta T. Andrija, Lađinović Ž. Đorđe, Peško N. Igor
Course status:	Elective

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

The course aims at a more detailed introduction of students with aseismic design of buildings, calculation of seismic hazard and assessment of the vulnerability of civil engineering structures, i.e. acquisition of knowledge necessary to reduce the vulnerability of civil engineering structures, and generally to reduce seismic risk.

2. Educational outcomes (acquired knowledge):

Capability for a more reliable assessment of seismic hazard and risk, defining problems and uncertainties in the results of hazard calculations as well as the ability to calculate earthquake impacts on structures, as well as qualitative and quantitative assessment of the vulnerability of civil engineering structures.

3. Course content/structure:

At first, the causes of the formation and types of earthquake are studied, as well as seismic waves and their dispersion, and the attenuation of the strong ground motion. Then, the probabilistic and deterministic assessment of seismic hazard, the formation of liquefaction and the methods of seismic microz?nation depending on the level of the study of the influence of local soil and geology, as well as the uniform hazard spectra, are thoroughly studied. The structural behaviour during earthquakes is analyzed based on the forced damped vibration of a system with one degree of freedom exposed to the dynamic movements of the base. Design of seismic-resistant structures is being studied, with a focus on the most important goals and requirements of seismic protection. The final emphasis is on the assessment of seismic risk by integrating the results of a probabilistic and / or deterministic assessment of seismic hazard on the one hand and the results of the assessing seismic hazards on the other, as well as on the measures to reduce seismic risk.

4. Teaching methods:

Lectures, numerical-graphic practice, consultations. Through lectures, discussions and homework, students work and progress are monitored. Mentor work for certain areas is foreseen in order to deepen knowledge. Use of modern teaching methods of based on computer science

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Theoretical part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Ang, A.H. and W.H. Tang	Probability Concepts in Engineering: Emphasis on Applications to Civil and Environmental Engineering	John Wiley & Sons	2006
2,	Chopra, A.	Dynamics of Structures: Theory and Applications to Earthquake Engineering	Prentice Hall, Inc.	2001
3,	Petrović, B	Odabrana poglavlja iz zemljotresnog inženjerstva	Građevinska knjiga	1989

Literature

Table 5.2 Course specification

Course:		Advanced data models and database systems
Course id:	IMDR36	
Number of ECTS:	10	
Teacher:		Ristić M. Sonja
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Introducing students to advanced data models and database systems. Students learn to engage in actual projects in the field of databases.

2. Educational outcomes (acquired knowledge):

Understanding the contemporary data models and database systems and acquiring knowledge and skills required for the use of advanced techniques for BP design.

3. Course content/structure:

Contemporary data models and database systems and their development trends. Distributed databases. The integration of data from different sources. Data warehouse systems. XML databases. Spatial databases. Temporal databases. Case studies for the application of contemporary data models and database systems.

4. Teaching methods:

Teaching activity depends on the number of listeners, i.e. mentor or frontal approach.
During the course, students are required to prepare a seminar paper and its defense.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Elmasri R, Navathe S. B,	Fundamentals of Database Systems, 5th Edition	Addison Wesley	2006
2,	Malinowski E., Zimányi E.	Advanced Data Warehouse Design; From Conventional to Spatial and Temporal Applications	Springer	2008
3,	A.K. Elmagarmid; A.P. Sheth	Distributed and Parallel Databases; An International Journal	Springer US	2009
4,	K.-Y. Whang; P.A. Bernstein; C.S. Jensen	The VLDB Journal; The International Journal on Very Large Data Bases	Springer	2009
5,	Kashyap V., Bussler C., Moran M.	The Semantic Web; Semantics for Data and Services on the Web	Springer	2008
6,	Kutsche R-D., Milanovic N.	Model-Based Software and Data Integration; First International WS, MBSDI 2008, Berlin, Germany, April 2008	Springer	2008
7,	Akmal B. Chaudhri Awais Rashid Roberto Zicari	XML Data Management: Native XML and XML-Enabled Database Systems	Addison-Wesley	2003

Literature

Table 5.2 Course specification

Course:		Process, principles and techniques of scientific research - selected chapters
Course id:	GD027	
Number of ECTS:	10	
Teacher:		Folić J. Radomir
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	2

Precondition courses: None

1. Educational goal:

Preparation of students for scientific research, analysis of the links between the theoretical work and practice, the articulation of modern research problems and selection of the appropriate methods that will provide the theoretical foundation for the research.

2. Educational outcomes (acquired knowledge):

Knowledge of the methods and techniques of scientific and technical research and application development in doctoral dissertations.

3. Course content/structure:

The general part, the general methodology of scientific research with the logical basis, general and special methods of learning. Customizing the philosophical, logical, theoretical methods of thinking in architecture (inductive-deductive, apstract method, comparative analysis, methods of displaying graphics ...). The objective reality and objective truth, the establishment of a proof, theoretical framework and knowledge for the implementation of assigned tasks and goals of the research. The methodology of critical analysis of individual works and methods of comparative analysis (part of the figures).

4. Teaching methods:

Lectures. Consultation.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Lecture attendance	Yes	0.00	Written part of the exam - tasks and theory	Yes	30.00
Project	Yes	50.00			
Term paper	Yes	20.00			

Literature

Ord.	Author	Title	Publisher	Year
1,	Borden, J., Ray, V. R.	The Disertation, An Architecture students handbook.	Architectural Press.	2005
2,	Folić, R	Metodologija naučnogistraživačkog rada u graditeljstvu, skripta za Poslediplomske studije	FTN, Novi Sad	2006
3,	Ilić, M	Naučno istraživanje, Opšta metodologija	Univerzitet u Beogradu, Filološki Fakultet, Beograd	1994
4,	Petrović, I	O problemima i metodama projektovanja	Arhitektonski fakultet, Beograd	1997
5,	Prodanović, T., Mićić,N	Naučno istraživanje - metode, procedura, jezik i stil	Agronomski fakultet, Čačak	1996
6,	Šešić, B	Opšta metodologija	Naučna kniga, Beograd	1974
7,	Đ. Šušnjić	Metodologije, kritike nauke	Beograd, Čigoja štampa	2002

Literature

Borden, J., Ray, V. R. (2005): The Disertation, An Architecture students handbook. Architectural Press.
Folić, R (2006):Metodologija naučnogistraživačkog rada u graditeljstvu, skripta za Poslediplomske studije. FTN, Novi Sad
Đ. Šušnjić (2002): Metodologije, kritike nauke. Beograd, Čigoja štampa
Prodanović, T., Mićić,N (1996): Naučno istraživanje - metode, procedura, jezik i stil. Agronomski fakultet, Čačak
Ilić, M (1994): Naučno istraživanje, Opšta metodologija. Univerzitet u Beogradu, Filološki Fakultet, Beograd
Petrović, I (1997): O problemima i metodama projektovanja. Arhitektonski fakultet, Beograd
Šešić, B (1974): Opšta metodologija.Naučna kniga, Beograd

Table 5.2 Course specification

Course:		Security and Resilience of Critical Infrastructures
Course id:	RDI013	
Number of ECTS:	10	
Teachers:		Trivunić R. Milan, Mučenski Lj. Vladimir, Radonjanin S. Vlastimir, Peško N. Igor
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Acquiring theoretical knowledge, advanced methods and techniques of research in the field of security and resilience of critical infrastructure, the development of multidisciplinary approaches and tools

2. Educational outcomes (acquired knowledge):

Qualification for independent research work, dealing with the possibility of conceiving problems, implementing and connecting the acquired knowledge in the subject area with the knowledge acquired in other areas. The ability to follow modern achievements, as well as critical analysis, development of plans, assessment and synthesis of new and complex ideas in the field of critical infrastructure protection, crisis management, the resilience of organization and the community. Developing capabilities for analytical monitoring and implementation of regulations and standards in the field of corporate security. Mastering the process of forming specific models in geographic information systems that adequately present different risk situations. Multiparametric, thematic and topological analyzes of data describing critical infrastructure in risk situations.

3. Course content/structure:

Concepts of critical infrastructure, interdependence and resilience. Criteria for the criticality of the infrastructure systems. Contemporary trends in the implementation of risk management and business continuity in critical infrastructure protection. Comparative overview of legal and regulatory solutions for critical infrastructure protection in the European Union and the region. Modern methods, models, regulations and aspects of risk assessment in the function of protection of critical infrastructure. Risk communication in the function of critical infrastructure security. Crisis communication in order to protect corporation reputation. Thematic maps of disasters' spatial distribution by municipalities for Republic of Serbia based on the available data for the period 1980 - 2013.

4. Teaching methods:

Lectures, consultations. Interactive monitoring of students work and their progression through lectures and discussions. Mentoring for certain areas in order to increase knowledge. Use of contemorary methods of computer science, as well as GIS software.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Tim Bedford and Roger Cooke	Probabilistic Risk Analysis> Foundations and Methods	Cambridge	2001
2,	Dirk Proske	Catalogue of Risks Natural, Technical, Social and Health Risks	Springer	2008
3,	Roxanna McDonald	Introduction to Natural and Man-made Disasters and their Effects on Buildings	Architectural Press	2003
4,	David Yung	Principles of Fire Risk Assessment in Buildings	John Wiley and Sons, Ltd.	2008
5,	H. Rodríguez, E. L. Quarantelli, R. R. Dynes	Handbook of Disaster Research	Springer	2007
6,	EEA Technical report	Mapping the impacts of natural hazards and technological accidents in Europe An overview of the last decade	EEA, Copenhagen	2010
7,	Slobodan P. Simonović	Systems Aproach to management of Disasters Methods and Applications	John Wiley and Sons, Ltd.<eng/>	2011
8,	A.M. Hasofer V.R. Beck, I.D. Bennetts	Risk Analysis in Building Fire Safety Engineering	Elsevier Ltd.	2007
9,	Murray A.T. (ed.), Grubesic T.H. (ed.)	Critical Infrastructure: Reliability and Vulnerability	Springer	2007
10,	John Sullivant	Strategies for Protecting National Critical Infrastructure Assets: A Focus on Problem-Solving	Wiley-Interscience	2007
11,	E. Goec, S.Shenoi	Critical Infrastructure Protection	Springer	2008
12,	Cathleen Fearn Banks	Crisis communication – a Casebook Approach	Routledge	2011
13,	Pamela Walasko	Risk and Crisis Communications	John Wiley & Sons	2011

Literature

Ord.	Author	Title	Publisher	Year
14,	Thomas J. Cova, Philip E. Dennison, Tae H. Kim, Max A. Moritz	Setting wildfire evacuation trigger points using fire spread modelling and GIS. Transactions in GIS 9(4): 603–617	John Wiley & Sons Ltd	2005
15,	Thomas J. Cova	GIS in emergency management. Geographical information systems (2) (845-858).	John Wiley & Sons, New York	1999

Literature

Table 5.2 Course specification

Course:		Public Health in Emergency and Crisis
Course id:	RDI014	
Number of ECTS:	10	
Teacher:		Jevtić R. Marija
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Mastering theoretical knowledge and getting acquainted with appropriate methods and techniques of importance for the field of public health in crisis and emergencies

2. Educational outcomes (acquired knowledge):

Acquiring knowledge about the importance of public health and acting in crisis.
Ability to overcome public health challenges in crisis and emergencies.
Possibility of recognizing public health problems in crisis and emergencies, application and linking acquired knowledge in practice.

3. Course content/structure:

Public health - basic concepts and significance.
Concept of crisis and public health significance
Characterization of a crisis and emergiences and their relevance to public health
Types of extraordinary events, analysis.
Preparing for a crisis event. Response to crisis and emergency situation, population and individual approach.
Water supply on extraordinary occasions. Nutrition on extraordinary occasions. Accommodation in extraordinary circumstances
Vulnerable groups and public health.
Community activities in emergency and crisis situations
Health system and organization in crisis and emergencies.
Communication in crisis and emergencies.
Prevention of crisis situations. Post-crisis rehabilitation.
The importance of knowledge of demographic indicators for prevention, crisis and rehabilitation.

4. Teaching methods:

Lectures, consultations, work in a large group and work in small groups, seminars.
Students work and their advancement are monitored through the lectures, discussion and group work.
Mentors work with students on certain topics in order to deepen their knowledge.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Encho Gospodinov, Gilbert Burnham et al	Public health guide in emergencies	International Federation of Red Cross and Red Crescent Societies	2008
2,	World Health Organization	Emergency Response Framework	WHO	2013
3,	Center for Disease Control	Public Health emergency response guide for state, local, and tribal Public Health directors	CDC	2011
4,	WHO -Department of global capacities, alert and response	International health regulations - Support to global outbreak alert and response, and building and maintaining national capacities	WHO	2015

Literature

Table 5.2 Course specification

Course:		Hazards and Protection from Electrostatic Discharges
Course id:	RDI015	
Number of ECTS:	10	
Teachers:		Juhas T. Anamarija, Pekarić-Nađ M. Neda
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Students learn simple risk control models and how to apply them in the case of power supply interruption with possibly catastrophic consequences. Multidisciplinary approach is established.

2. Educational outcomes (acquired knowledge):

Upon successful completion of this course, the students are able to individually characterize and approach simple problems connected to power loss and risk management. Students are able to overcome obstacles and offer simple solutions related to specific cases of interruption in power supply.

3. Course content/structure:

Modern ideas about risk management and catastrophic events related to power supply. Methods, models, legislation. Qualitative and quantitative data analysis. Backup supply examples.Vulnerability estimation for a chosen environment.

4. Teaching methods:

Lectures and recitations are predominant. Student's progress is monitored trough discussions and homework. Specific subjects are covered trough additional mentoring. Contemporary methods and means of information technology are adopted.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	30.00	Theoretical part of the exam	Yes	70.00

Literature

Ord.	Author	Title	Publisher	Year
1,	J. M. Adams	Electrical Safety: A Guide to the Causes and Prevention of Electrical Hazards	The Institution of Electrical Engineers and Technology	2009
2,	M. A. G. Mitolo	Electrical Safety of Low-Voltage Systems	The McGraw-Hill Companies, Inc.	2009
3,	J. Cadick, M. C. Schelpfeffer, D. Neityel, A. Winfeld	Electrical Safety Handbook, 4th edition	The McGraw-Hill Companies, Inc.	2012
4,	M. El-Sharkawi	Electric Safety, Practice and Standards	CRC Press	2014

Literature

Table 5.2 Course specification

Course:		Selected Chapters in Flood Prevention and Protection			
Course id:	RDI016				
Number of ECTS:	10				
Teacher:		Kolaković R. Srđan			
Course status:		Elective			
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
5	0	0	2	0	
Precondition courses		None			

1. Educational goal:

Acquiring theoretical knowledge and advanced methods and techniques of research of flood waves and flood risk. In addition, introducing students to the new strategy of flood management.

2. Educational outcomes (acquired knowledge):

Enabling students to plan and anticipate possible flood risks to properties and people, vulnerability and jeopardizing of people and to specify measures of flood wave management in order to reduce and mitigate the damage.

3. Course content/structure:

Selection and analysis of flood waves. Analysis of flood damage, conditions which result in damage and damage categories. Numerical and hydraulic analyses with the application of 1D and 2D flow modelling in open channels. Simulation of possible scenarios of extreme floods in order to provide a better understanding of flood wave control and reduce the damage. Specifying measures and strategies for the development of the flood management plan. Development of flood maps and flood risk maps for the design flood. Adjustment of the development planning to the degree of actual risk. Regulations on flood protection. Monitoring and taking measures for prevention of flood protective structures. Specifying minimum time required for evacuation in case of breaching of embankments and other protective structures. Remediation of consequences of extreme floods and inundation of urban and agricultural areas.

4. Teaching methods:

Lectures, consultations. Certain problems are solved through lectures, discussions and computer simulations. Lectures are accompanied with numerous real-life cases.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Rezniček Karlo	Odbrana od poplava	Građevinski fakultet u Subotici	1989
2,	Kolaković Srđan	Vode Vojvodine – neki aspekti funkcionalnosti sistema za zaštitu spoljnjih i unutrašnjih voda na području Vojvodine	Fakultet tehničkih nauka – Novi Sad	2003
3,	Kuspilić Neven	Hidrotehnički objekti – građevine za odbranu od poplava	Građevinski fakultet u Zagrebu	2008
4,	Kolaković S., Trajković S., Nikolić A., Pakai M.	Akcioni planovi za održivu odbranu od poplava	Nauka+Praksa 8, Građ. Fakultet u Nišu	2005
5,	Brunner W.G.	HEC-RAS River Analysis System – 2D Modeling User's Manual	Institute for Water Resources – Hydrologic Engineering Center, Davis,USA	2015
6,	Associated Programme on Flood Management	The role of Land-use Planning In Flood Management – A Tool for Integrated Flood Management	World Meteorological Organization	2016

Literature

Table 5.2 Course specification

Course:		Selected topics of project management			
Course id:	IMDR71				
Number of ECTS:	10				
Teachers:		Lalić P. Bojan, Morača D. Slobodan			
Course status:		Elective			
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
5	0	0	2	0	
Precondition courses		None			

1. Educational goal:

The aim of the course is that students master advanced approach to project management and specific knowledge necessary for the successful implementation of the project. During the teaching process, students will be introduced to modern techniques and tools integration process, time management, cost, quality, communications, risk and supply, as well as the procedures for the development and improvement of existing approaches, tools and techniques of project management.

2. Educational outcomes (acquired knowledge):

After completing this course, students will be able to manage complex projects, using modern approaches, tools and techniques for scientific research in this field.

3. Course content/structure:

The new project management approaches; Modern techniques and tools of project management;
Project management according to internationally recognized standards software packages for project management, Lean Project Management, Change Management, Development tools and techniques of project management, Agile project management methods.

4. Teaching methods:

Lectures, Auditory Practice, Laboratory Practice and Consultations. Lecturing method is based on the multimedia lectures and practice. During lectures problem frame is presented and facts and theoretical approach is analyzed, while the practice is interactive and practical in the form of laboratory practice. Besides lectures and practice, consultations are held on a regular basis. Lecturing method plans for at least 40% of the time to be devoted to the active participation of students, which includes working in the laboratory and visits to production and service organizations.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Theoretical part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Grupa autora	Korpus znanja za upravljanje projektima, četvrto izdanje	FTN	2010

Literature

Table 5.2 Course specification

Course:		Doctoral Dissertation - Research and Publishing of Results 1
Course id:	RSIR04	
Number of ECTS:	10	
Teachers:		
Course status:	Mandatory	

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
0	0	0	6	0

Precondition courses: None

1. Educational goal:

The application of fundamental, theoretical and methodological, scientific and professional, and professional and applicative knowledge and methods in solving concrete problems within the selected research field. Researching the literature, students are introduced to the latest knowledge in research field, to methods for solving similar or new problems and with scientific approaches in their solving. The objective of students` activity within this segment of research is to acquire necessary experience in solving complex scientific and research problems from the field of the study programme.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills. Development of creative abilities, as well as mastering of specific practical skills in the subject matter of the study programme. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific research results.

3. Course content/structure:

Search and analysis of scientific and research results. Planning and performing numerical simulations and experimental research. Acquisition, processing, presentation and discussion of research results. Writing, publishing and presenting the scientific-research results from the filed of the study programme .

4. Teaching methods:

The student, in consultation with the supervisor, selects the research topic. For the chosen topic, supervisor delivers research plan to the student. The student is obliged to make the work within the given subject using the recommended literature. During the development, the mentor can give additional instructions to the student, refer him to specific literature, and further guide him. In order to successfully carry out the research, the student conducts consultations with the mentor and with other teachers dealing with the research topic. Within the given topic, the student performs an analysis of previous research, identifies the problems and disadvantages of previous research, defines the objectives of his research, and carries out numerical simulations or experimental research. Student presents the research results in the form of the project and by publishing them at national conferences.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Svi	Časopisi sa SCI/SCIe/SSCI liste iz problematike studijskog programa	Svi	Svi
2,	Svi	Doktorske disertacije iz problematike studijskog programa	Svi	Svi
3,	Svi	Udžbenici i monografije iz problematike studijskog programa	Svi	Svi
4,	Svi	Udžbenici i monografije iz problematike studijskog programa	Svi	Svi

Literature

Table 5.2 Course specification

Course:	Selected Topics in Risk Management and Insurance Management
Course id: IMDR75	
Number of ECTS: 10	
Teachers:	Ćosić I. Đorđe, Kuzmanović D. Bogdan
Course status:	Elective

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

The goal of this course is to introduce students to the process of risk management, and technical and technological consequences of the execution risk, as well as contemporary processes of insurance

2. Educational outcomes (acquired knowledge):

After passing the exam, students will be trained in the proper analysis of the risk, its assessment and management methods of the same

3. Course content/structure:

analysis, risk assessment, risk management, risk management cycle, emergency response, reconstruction response, preparedness, mitigation, prevention, risk management current trends, satellite systems, geoinformation technology, satellite images, insurance and reinsurance companies as well as professional carriers rzika, Monte Carlo simulation, CAT-NET Munich Re.

4. Teaching methods:

Lectures, exercises and consultations

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Lecture attendance	Yes	10.00	Oral part of the exam	Yes	50.00
Test	Yes	40.00			

Literature

Ord.	Author	Title	Publisher	Year
1,	Avdalović S., Ćosić Đ., Avdalović V.	Osnove osiguranja sa upravljanjem rizikom	FTN	2010
2,	Harrington, Niehaus	Risk management and insurance	The McGraw Hill Companies	2004

Literature

Table 5.2 Course specification

Course:		Selected Chapters in Water Regulation and Protection
Course id:	GD016	
Number of ECTS:	10	
Teachers:		Budinski Lj. Ljubomir, Kolaković R. Srđan
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Acquiring knowledge on the problematic of water regulation and protection.

2. Educational outcomes (acquired knowledge):

Enabling students to individually solve scientific and research tasks and problems in water industry.

3. Course content/structure:

Complex study of problematic of water regulation and protection. Balancing water basin. Equation elements for water balance. Raining. Water evaporation. Referent evapotranspiration. Methods in sustainable basin management. Modelling river basin. Application of artificial intelligence methods (fuzzy numbers, genetic algorithms, artificial neural networks) in solving water industry problems. Hydrological information systems based on ontology. Multi-purpose water utilization in basin – hydro-technical meliorations, water supply. Calculation for water demands for irrigation. Application of sustainable development principle in water industry. Ecological aspects in water basin management – protection of ground and underground waters. Waste water – origin, content, dynamics. Unit operations in water treatment. Water flow revitalization. Biological minimum and ecologically acceptable water flow. Influence of global climatic changes on hydrologic cycle. Appearance of extreme events (floods, small water and drought).

4. Teaching methods:

Teaching is performed auditory in lectures and tutorials. Individual student work includes the elaboration of a seminar paper.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	70.00	Oral part of the exam	Yes	30.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Allen, R. G., Pereira, L. S., Raes, D., and Smith, M.	"Crop Evapotranspiration. Guidelines for Computing Crop Water Requirements." FAO Irrig. and Drain. Paper 56	FAO, Roma, Italy	1998
2,	Baruth, E. E. (Technical Editor)	Water Treatment Plant Design, Fourth Edition	McGraw-Hill Inc	1990
3,	Andy D. Ward, Stanley W. Trimble	Environmental Hydrology, 2nd edition	Lewis Publishers	2003
4,	Trajkovic, S.	Metode proračuna potreba za vodom u navodnjavanju	Gradjevinsko-arhitektonski fakultet Niš	2009
5,	Tsoukalas, L.H., and Uhrig, R.E.,	Fuzzy and Neural Approaches in Engineering	John Wiley and Sons, Inc., New York	1997

Literature

Table 5.2 Course specification

Course:		Energy Efficiency in Buildings and Climate Changes
Course id:	RDI12R	
Number of ECTS:	10	
Teachers:		Lukić M. Ivan, Malešev M. Mirjana, Radonjanin S. Vlastimir
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Mastering the theoretical knowledge and advanced methods and techniques of research in the fields of energy efficiency of buildings and reducing the risk of climate change, developing a multidisciplinary approach and research methods.

2. Educational outcomes (acquired knowledge):

Qualification for independent research work, dealing with the possibility of conceiving problems, implementing and connecting the acquired knowledge in the subject area with the knowledge acquired in other areas. The ability to follow modern achievements, as well as critical analysis, evaluation and synthesis of new and complex ideas in the fields of reducing the risk of climate changes and energy efficiency in built environment.

3. Course content/structure:

Analysis of urban-architectural performance impact on the energy efficiency in buildings. Methodology of energy consumption calculation to provide basic comfort conditions in buildings (heat, light, sound, air quality). Design and construction of low-energy buildings, including passive and zero buildings. International directives and protocols in the field of climate changes, ?????????? ???????, environmental protection and risk reduction.

4. Teaching methods:

Lectures, consultations. Interactive monitoring of students work and their progression through lectures, discussions and computer simulations. Mentoring for certain areas in order to increase knowledge. Use of contemorary methods of computer science.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Theoretical part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	John Straube and Eric Burnett	Building Science for Building Enclosures	Building Science Press Inc.	2015
2,	Ulrich Knaack, Tillman Klein, Marcel Bilow and Thomas Auer	Façades – Principles of Construction	Birkhäuser	2007
3,	Radonjanin Vlastimir, Mirjana Malešev	Građevinski materijali za spoljni omotač zgrada	Predmetni nastavnici	2011
4,	Šumarac D.,	Energetska efikasnost zgrada u Srbiji	Konferencija Graditeljstvo i održivi razvoj, DIMK, Građevinski fakultet Beograd, Ed. S. Marinković i V. Radonjanin, Beograd, jun 04-05	2009
5,	Dirk Proske	Catalogue of Risks Natural, Technical, Social and Health Risks	Springer	2008
6,	Roxanna McDonald	Introduction to Natural and Man-made Disasters and their Effects on Buildings	Architectural Press	2003

Literature

Table 5.2 Course specification

Course:		Media Systems and Crisis Management
Course id:	RDI017	
Number of ECTS:	10	
Teacher:		Ratković-NJegovan M. Biljana
Course status:		Elective

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

The objective of studying the subject is to acquire a comprehensive knowledge and skills necessary for effective, professional, responsible, legal and ethical use of media in preventing risks, increasing personal, corporate and social safety, and mastering the knowledge required to establish optimal crisis communication with public through media at all stages of crisis, as well as in the post-crisis period and in the prevention phase.

2. Educational outcomes (acquired knowledge):

The acquired knowledge and competences will enable students to practice the use of mass media in situations of social crises and conflicts, which is different from their actions in usual circumstances. They will also be trained in quality use of media in risk prevention, as well as communicating with modern media systems in conditions of endangered safety of people, facilities and environment.

3. Course content/structure:

Media in the context of media-communication theories and media environment. Media and the basic characteristics of the media process - social dimension of the media. Influence of the media on the public - analysis of various theoretical approaches. The concept and types of crises and their internal and external reach. Specifics of media behaviour in social conflicts and crises, as states of social interactions of open antagonisms. The media and the creation of a conflict and crisis ambience. Interests of the society and interests of the media – a mediocentric and a sociocentric approach. Determining the media appeal of a specific conflict. Media presentation of social conflicts. Characteristics of media forms in presenting risky crisis situations. Domestic and foreign audiences in the context of crisis communication. Media as a factor in eliminating the consequences of crisis. Preventing risks by communicating with the media. Methods of communication with the media during the post-crisis period. The role of professionals in public relations while helping corporate, non-profit and government institutions, organizations and individuals in managing the optimal use of mass media in conditions of crisis communication. Social responsibility of the media, rights and obligations of the media, media codes.

4. Teaching methods:

The instructions will be realized through lectures, panel discussions, discussions, consultations, essays and seminar paper.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Schwarz, A., Seeger, M. W., Auer, C.	The Handbook of International Crisis Communication Research	Wiley-Blackwell	2016
2,	Reilly, P., Atanasova, D.	A strategy for communication between key agencies and members of the public during crisis situations	EC FP7 CascEff Project, European Commission FP7	2016
3,	Haddow, G, Haddow, K.	Disaster Communications in a Changing Media World, 2nd Edition	Butterworth-Heinemann	2014
4,	Austin, L., Fisher, B., Yan J.	How audiences seek out crisis information: Exploring the social mediated crisis communication model	Journal of Applied Communication Research 40(2)	2012
5,	Coombs, W. T.	Crisis Communication and Its Allied Fields. The Handbook of Crisis Communication	Wiley-Blackwell, Oxford, UK,	2010
6,	Kostić, B.	Media management in latent phase of social conflicts	XIV International Scientific Conference on Industrial Sistems, Novi Sad	2008
7,	M. Regester, M., Larkin,	Risk Issues and Crisis Managementt: A Casebook of best practice (3rd edition)	Kogan Page, London	2005
8,	Keković, Z.	Proces integralnog upravljanja rizicima	Fakultet bezbednosti, Beograd	2001
9,	Fearn-Banks,S.	Crisis Communications: A Casebook Approach	Lorens Erlbaum, London	2000
10,	Mortensen, M.S.	Public Relations in Crisis and Disaster. A Breif Introduction for Practitioners	Atlantic Press, Oslo	1997

Literature

Table 5.2 Course specification

Course:	Selected Chapters in Durability of Concrete and Masonry Structures and Robustness of Structures
Course id: GD028	
Number of ECTS: 10	
Teachers:	Lukić M. Ivan, Malešev M. Mirjana, Radonjanin S. Vlastimir
Course status:	Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Acquiring theoretical knowledge, advanced methods and techniques of research in the areas of concrete and masonry structures and robustness of structures.

2. Educational outcomes (acquired knowledge):

Qualification for independent research work, dealing with the possibility of conceiving problems, implementing and connecting the acquired knowledge in the subject area with the knowledge acquired in other areas. The ability to follow modern achievements, as well as critical analysis, evaluation and synthesis of new and complex ideas in the fields of concrete and masonry structures and robustness of structures.

3. Course content/structure:

Lectures are grouped into two parts: ?) aspects and durability models of concrete structures and b) aspects and durability models of masonry structures. Within both areas, characteristic manifestation forms of disturbed durability of concrete and masonry structures will be analyzed, as well as basic destruction causes and mechanisms. Additionaly, the influential parameters directly dependent on the lifetime of structures will be analyzed (structures quality, environmental impacts and exploitation loads). Robustness of structures, measures to improve the robustness and quantification of robustness. Methods for determining the robustness of structures and methodology for estimating the reliability of complex structural systems

4. Teaching methods:

Lectures, consultations. Interactive monitoring of students work and their progression through lectures, discussions and computer simulations. Mentoring for certain areas in order to increase knowledge. Use of contemorary methods of computer science.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	G.C. Mays	Durability of Concrete Structures: Investigation, Repair, Protection	E&Fn Spon	2003
2,	L.M. Poukhonto	Durability of Concrete Structures and Constructions: Silos, Bunkers, Reservoirs, Water Towers, Retaining Walls	A. A. Balkema	2003
3,	Jason C. Yu, C. W. Yu, John W. Bull Whittles	Durability of Materials And Structures in Building And Civil Engineering	-	2006
4,	Mark G. Richardson	Fundamentals Of Durable Reinforced Concrete	Taylor & Francis	2004
5,	J.M. Baker,H. Davies,A.J. Majumdar,P.J. Nixon	Durability of Building Materials And Components	-	2006

Literature

Table 5.2 Course specification

Course:		Fire Safety of Building Structures - Selected Chapters
Course id:	GD033	
Number of ECTS:	10	
Teacher:		Laban Đ. Mirjana
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Acquiring theoretical knowledge, as well as the methods and techniques of research in the area of contemporary fire safety engineering, with consideration of the importance of a multidisciplinary approach.

2. Educational outcomes (acquired knowledge):

Qualification for independent research work, dealing with the possibility of conceiving problems, implementing and connecting the acquired knowledge in the subject area with the knowledge acquired in other areas of civil engineering. The ability to follow modern achievements, as well as critical analysis, evaluation and synthesis of new and complex ideas in the area of fire safety of building structures.

3. Course content/structure:

Contemporary trends in the development of fire safety engineering and fire protection of building structures. Modern regulations and aspects of fire safety assessment based on building performances. Determination of fire resistance, analysis and risk assessment, the importance of engineering estimates based on previous experiences. The concept of fire safety of buildings. The process of combustion and spread of fire, development and spread of fire in a confined space. The assessment, ranking and calculation of fire resistance of building elements, methods of testing. Fire behavior of building materials and structures: concrete structures, metal structures, wooden structures, lightweight partition and multi-layer construction.

4. Teaching methods:

Lectures, consultations. Through lectures (presentations and video films with complex experimental research) and discussions, interactive monitor the work of students and their progress. Mentoring for certain areas in order to deepen knowledge. Visit to a specialized laboratory.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Andrew H. Buchanan	Structural Design for Fire Safety	John Wiley and Sons, Ltd	2002
2,	Charles A. Harper	Handbook of Building Materials for Fire Protection	McGRAW-HILL	2004
3,	David Yung	Principles of Fire Risk Assessment in Buildings	John Wiley and Sons, Ltd.	2008
4,	James G. Quintiere	Fundamentals of Fire Phenomena	John Wiley & Sons, Ltd	2006
5,	John A. Purkiss	Fire Safety Engineering Design of Structures	Elsevier Ltd.	2007
6,	A.M. Hasofer V.R. Beck, I.D. Bennetts	Risk Analysis in Building Fire Safety Engineering	Elsevier Ltd.	2007
7,	Robert W. Fitzgerald	Building Fire Performance Analysis	John Wiley & Sons Ltd	2004

Literature

Table 5.2 Course specification

Course:		Advanced Disaster Risk Analisys Methodes			
Course id:	GD034				
Number of ECTS:	10				
Teachers:		Laban Đ. Mirjana, Popov B. Srđan			
Course status:		Elective			
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
5	0	0	2	0	
Precondition courses		None			

1. Educational goal:

Mastering the theoretical knowledge and advanced methods and techniques of research in the field of reducing the risk of events with disastrous consequences, the development of a multidisciplinary approach and tools.

2. Educational outcomes (acquired knowledge):

Ability to independently engage in research activities , with the possibility of conceiving problems , application and connecting the acquired knowledge in the subject area with the knowledge acquired in other areas . The ability to follow modern achievements , as well as critical analysis , evaluation and synthesis of new and complex ideas in the field of reducing the risk of events with disastrous consequences in the built environment .

3. Course content/structure:

Contemporary trends in the development of engineering aspect of reducing the risk of events with disastrous consequences . Modern methods , models , regulations and aspects of risk assessment as a function of performance facilities . Analysis of the flow of information , the use of qualitative and quantitative methods in data analysis and use of spatial information systems in the field of risk reduction . Probabilistic methods of analysis of hazards , vulnerability assessment and exposure in the built environment .

4. Teaching methods:

Lectures , consultations . Through lectures discussion and interactive computer simulation to monitor the work of students and their progress . Mentoring for certain areas to increase knowledge . Using modern methods of computer classes

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Term paper	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Tim Bedford and Roger Cooke	Probabilistic Risk Analysis> Foundations and Methods	Cambrige	2001
2,	Dirk Proske	Catalogue of Risks Natural, Technical, Social and Health Risks	Springer	2008
3,	Roxanna McDonald	Introduction to Natural and Man-made Disasters and their Effects on Buildings	Architectural Press	2003
4,	David Yung	Principles of Fire Risk Assessment in Buildings	John Wiley and Sons, Ltd.	2008
5,	H. Rodríguez, E. L. Quarantelli, R. R. Dynes	Handbook of Disaster Research	Springer	2007
6,	EEA Technical report	Mapping the impacts of natural hazards and technological accidents in Europe An overview of the last decade	EEA, Copenhagen	2010
7,	Slobodan P. Simonović	Systems Aproach to management of Disasters Methods and Applications	John Wiley and Sons, Ltd	2011
8,	A.M. Hasofer V.R. Beck, I.D. Bennetts	Risk Analysis in Building Fire Safety Engineering	Elsevier Ltd.	2007
9,	S. Nayak S. Zlatanova	Remote Sensing and GIS Technologies for Monitoring and Prediction of Disasters	Springer-Verlag Berlin Heidelberg	2012

Literature

Table 5.2 Course specification

Course:		Selected Chapters in Hydro-infortmacis
Course id:	GD026	
Number of ECTS:	10	
Teacher:		Kolaković R. Srđan
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

The goal of this course includes work on improving scientific and technical competence of the participants, as well as work on developing the skills of scientific and technical communication in the field of civil engineering-hydraulic.

2. Educational outcomes (acquired knowledge):

As a result, students will be able to conduct independent research in the field hydroinformatics of defining issues, through gathering information through search of the literature, the application of the chosen method , and in the end, create a written report that meets the standards of scientific journals.

3. Course content/structure:

Statistical analysis of the hydro-climatology. Spatial interpolation of climate data, analysis of the frequency of high water, rain frequency analysis, probabilistic hydrological forecasts, predictions using the state space, the predictability of the water quality parameters, the application of genetic algorithms, neural networks application, the use of covariation analysis, trend analysis and other changes in the hydrological and weather hydro-climatic series.

4. Teaching methods:

Interactive work with the students to the continuous monitoring of the level of student learning. Theoretical analysis and numerical modeling of the phenomenon covered by syllabus . Program requires preparation and defense of a term paper.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Lecture attendance	Yes	10.00	Oral part of the exam	Yes	40.00
Term paper	Yes	50.00			

Literature

Ord.	Author	Title	Publisher	Year
1,	Zelenhasić Emir	Inženjerska hidrologija	Naučna knjiga - Beograd	1991
2,	Salas, J.D., Markus, M., and Tokar, A.S	Streamflow Forecasting Based on Artificial Neural Networks; chapter in Artificial Neural Networks in Hydrology	Kluwer Academic Publishers, Dordrecht	2000
3,	Kumar, P., Alameda, J,	Hydroinformatics: Data Integrative Approaches in Computation, Analysis, and Modeling	CRC Press, Boca Raton, Florida	2006

Literature

Kumar, P., Alameda, J (2006): Hydroinformatics: Data Integrative Approaches in Computation, Analysis, and Modeling. RC Press, Boca Raton, Florida
Salas, J.D., Markus, M., and Tokar, A.S (2000): Streamflow Forecasting Based on Artificial Neural Networks; chapter in Artificial Neural Networks in Hydrology. Kluwer Academic Publishers, Dordrecht

Zelenhasić Emir (1991): Inženjerska hidrologija. Naučna knjiga - Beograd

Table 5.2 Course specification

Course:		Power Utilization Safety and Power Outage Risks
Course id:	RDI018	
Number of ECTS:	10	
Teachers:		Juhas T. Anamarija, Pekarić-Nađ M. Neda
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Acquiring knowledge about power failure and power loss related risks. Implementing simple models of risk reduction related to sudden power outages. Acquiring ability to develop multidisciplinary risk mitigation strategies and tools.

2. Educational outcomes (acquired knowledge):

The students are qualified for independent research work. The students are qualified to apply acquired knowledge in the area of Power outage and to relate it to the knowledge acquired elsewhere. The students develop ability to understand modern achievements, as well as new and complex ideas for risk mitigation in the area of Power outage.

3. Course content/structure:

Consequences of Power loss at workplaces, on information and communication devices, in smart homes. National legislation. Prevention of power loss related risks. Modern methods, models, princilples and aspects of risk assessment in the area of Power blackout. Methods to utilize computer programs and calculations for risk reduction. Backup power sources. Vulnerability assessment and hazard estimation in the area of Power outages.

4. Teaching methods:

Lectures, consultations. Interactive monitoring of students progress through homework and discussions. Mentoring in certain areas in order to deepen knowledge. Using modern methods provided by information technology.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	30.00	Theoretical part of the exam	Yes	70.00

Literature

Ord.	Author	Title	Publisher	Year
1,	G. Luttgens, N. Wilson	Electrostatic Hazards	Butterworth-Heinemann	1997
2,	L. G. Britton	Avoiding Static Ignition Hazards in Chemical Operations	American Institute of Chemical Engineers	1999
3,	N. Jonassen	Electrostatics, 2nd edition	Springer	2002
4,	K. L. Kaiser	Electrostatic Discharge	Taylor & Francis	2006

Literature

Table 5.2 Course specification

Course:		Mental Health and Psychosocial Support in Crisis
Course id:	RDI019	
Number of ECTS:	10	
Teacher:		Jevtić R. Marija
Course status:		Elective

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
5	0	0	2	0

Precondition courses: None

1. Educational goal:

Mastering theoretical knowledge and getting acquainted with appropriate methods and techniques of importance in the field of mental health and psychosocial support in crisis

2. Educational outcomes (acquired knowledge):

Acquiring knowledge about the importance of mental health and providing psychiatric support in crisis. Capable of challenging challenges and dealing with crisis Possibility of recognizing problems in crisis, application and linking acquired knowledge in practice.

3. Course content/structure:

Mental health - the basic notion of significance.
Crisis event and psychosocial support.
Vulnerable groups and their recognition.
Communication in crisis nd emergencies.
Family in situation of crisis abd emergencies.
Provide psychosocial support and help.
Activities in improving mental health in a community in a crisis and emergencies.
Individual and population approach in preserving mental health in crisis and emergencies . Prevention of stress among professionals and volunteers in crisis and emergencies.
Work with children in crisis situations. Violence and abuse and crisis and emergencies.
Self-help in crisis and emergencies.

4. Teaching methods:

Lectures, consultations, work in a large group and work in small groups, seminars.
Students work and their advancement are monitored through the lectures, discussion and group work.
Mentors work with students on certain topics in order to deepen their knowledge

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Ord.	Author	Title	Publisher	Year
1,	Inter-agency standing committee Working Group	IASC Guidelines on Mental Health and Psychosocial support in Emergency settings	The Inter-agency standing committee IASC	2007
2,	Inter-agency standing committee Working Group	IASC Mental Health and Psychosocial Support in Humanitarian Emergencies	The Inter-agency standing committee IASC	2007
3,	Susan Clayton, Christie Manning, Kirra Krygsman, Meighen Speiser	Mental Health and our Changing Climate: Impacts, Implications, and Guidance	American Psychological Association	2017
4,	WHO. Department of Mental Health and Substance Dependence World Health Organization Geneva	Mental Health in Emergencies	WHO	2003

Literature

Table 5.2 Course specification

Course:	Doctoral Dissertation - Research and Publishing of Results 2
Course id: RSIR03	
Number of ECTS: 18	
Teachers:	
Course status:	Mandatory

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
0	0	0	15	0

Precondition courses: None

1. Educational goal:

The application of fundamental, theoretical and methodological, scientific and professional, and professional and applicative knowledge and methods in solving concrete problems within the selected research field. Researching the literature, students are introduced to the latest knowledge in research field, to methods for solving similar or new problems and with scientific approaches in their solving. The objective of students` activity within this segment of research is to acquire necessary experience in solving complex scientific and research problems from the field of the study programme.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills. Development of creative abilities, as well as mastering of specific practical skills in the subject matter of the study programme. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific research results.

3. Course content/structure:

Search and analysis of scientific and research results. Planning and performing numerical simulations and experimental research. Acquisition, processing, presentation and discussion of research results. Writing, publishing and presenting the scientific-research results from the filed of the study programme .

4. Teaching methods:

The student, in consultation with the supervisor, selects the research topic. For the chosen topic, supervisor delivers research plan to the student. The student is obliged to make the work within the given subject using the recommended literature. During the development, the mentor can give additional instructions to the student, refer him to specific literature, and further guide him. In order to successfully carry out the research, the student conducts consultations with the mentor and with other teachers dealing with the research topic. Within the given topic, the student performs an analysis of previous research, identifies the problems and disadvantages of previous research, defines the objectives of his research, and carries out numerical simulations or experimental research. Student presents the research results in the form of the project and by publishing them at national conferences.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Table 5.2 Course specification

Course:		Doctoral Dissertation - Theoretical Bases
Course id:	DUR01	
Number of ECTS:	12	
Teachers:		
Course status:	Mandatory	

Number of active teaching classes (weekly)				
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
0	0	0	5	0

Precondition courses: None

1. Educational goal:

The theoretical bases of the doctoral dissertation assess the ability of PhD students for independent scientific research work and aims: to motivate students to present and synthesize theoretical and research work, to determine the creative potential of students for continuing studies, to determine the students ability to understand and apply the fundamental science concepts, to test the students speech abilities and the ability to express their ideas clearly and to identify the areas of science that need to be extracted by the candidate as the necessary basis for the preparation of the doctoral dissertation.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills, development of creative abilities, as well as mastering of specific practical skills from the topic of doctoral dissertation. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific research results.

3. Course content/structure:

Search and analysis of scientific and research results. Writing a course project from a doctoral dissertation topic. The student is obliged to write the course project in which he will explain the doctoral dissertation topic. Within project, student should define and explain following: subject (problem) of research, need for research, research goals, scientific hypotheses, work plan, methods to be applied and other relevant data.

4. Teaching methods:

The student is obliged to make the course project within the given subject. During the process, the mentor can give additional instructions to the student, refer him to specific literature and further guide him, in order to create quality work. The student conducts consultations with the mentor and the subjects teachers, and if necessary with other teachers dealing with problems in the field of doctoral dissertation topic. Within a given topic, student, if necessary, performs certain measurements, carries out numerical simulations and experimental research, presents and discusses the results of the research, if this is foreseen by the work topic.

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Table 5.2 Course specification

Course:	Doctoral Dissertation - Research and Publishing of Results 3
Course id: DUR02	
Number of ECTS: 30	
Teachers:	
Course status:	Mandatory

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
0	0	0	20	0

Precondition courses: None

1. Educational goal:

The application of fundamental, theoretical and methodological, scientific and professional, and professional and applicative knowledge and methods in solving concrete problems within the selected research field. Researching the literature, students are introduced to the latest knowledge in research field, to methods for solving similar or new problems and with scientific approaches in their solving. The objective of students` activity within this segment of research is to acquire necessary experience in solving complex scientific and research problems from the field of the study programme.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills. Development of creative abilities, as well as mastering of specific practical skills in the subject matter of the study programme. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific research results.

3. Course content/structure:

Search and analysis of scientific and research results. Planning and performing numerical simulations and experimental research. Acquisition, processing, presentation and discussion of research results. Writing, publishing and presenting the scientific-research results from the filed of the study programme .

4. Teaching methods:

The student, in consultation with the supervisor, selects the research topic. For the chosen topic, supervisor delivers research plan to the student. The student is obliged to make the work within the given subject using the recommended literature. During the development, the mentor can give additional instructions to the student, refer him to specific literature, and further guide him. In order to successfully carry out the research, the student conducts consultations with the mentor and with other teachers dealing with the research topic. Within the given topic, the student performs an analysis of previous research, identifies the problems and disadvantages of previous research, defines the objectives of his research, and carries out numerical simulations or experimental research. Student presents the research results in the form of the project and by publishing them at national conferences.

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Table 5.2 Course specification

Course:		Doctoral Dissertation - Elaborate			
Course id:	DUR03				
Number of ECTS:	20				
Teachers:					
Course status:		Mandatory			
Number of active teaching classes (weekly)					
Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:	
0	0	0	20	0	
Precondition courses		None			

1. Educational goal:

The application of fundamental, theoretical and methodological, scientific and professional, and professional and applicative knowledge and methods in solving concrete problems within the selected field. Researching the literature, students are introduced to the latest knowledge in the research field , to methods attended for creative solving of new tasks and the engineering practice in their solving. The objective of students` activity within this segment of research is to acquire necessary experience in solving complex scientific and research problems from the doctoral dissertation topic.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills, development of creative abilities, as well as mastering of specific practical skills from the doctoral dissertation topic. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific research results.

3. Course content/structure:

Search and analysis of scientific and research results. Planning and performing numerical simulations and experimental research. Acquisition, processing, presentation and discussion of research results. Writing, publishing and presenting of scientific-research results from the doctoral dissertation topic.

4. Teaching methods:

The student, in consultation with the supervisor, selects the research topic related to doctoral dissertation. For the chosen topic, supervisor delivers research plan to student. The student is obliged to make the work within the given subject using the recommended literature. During the development, the mentor can give additional instructions to the student, refer him to specific literature, and further guide him. In order to successfully carry out the research, the student conducts consultations with the mentor and with other teachers dealing with the research topic. Within the given topic, the student performs an analysis of previous research, identifies the problems and disadvantages of previous research, defines the objectives of his research, and carries out numerical simulations or experimental research. Student presents the research results in the form of the project and by publishing the paper in an international journal (SCI listed).

Knowledge evaluation (maximum 100 points)					
Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Project	Yes	50.00	Oral part of the exam	Yes	50.00

Literature

Table 5.2 Course specification

Course:	Doctoral Dissertation - Technical processing and Defence
Course id: DUR04	
Number of ECTS: 10	
Teachers:	
Course status:	Mandatory

Number of active teaching classes (weekly)

Lectures:	Practical classes:	Other teaching types:	Study research work:	Other classes:
0	0	0	0	0

Precondition courses: None

1. Educational goal:

The application of fundamental, theoretical-methodological, scientific, professional and applicative knowledge and methods in solving concrete problems within the selected topic of the doctoral dissertation. Technical processing and defence of the doctoral dissertation enables students to develop skills to make the results of independent scientific research work in a suitable form and to publicly present them, as well as to respond to comments and questions related to the doctoral dissertation topic.

2. Educational outcomes (acquired knowledge):

Enabling students to achieve scientific competencies and academic skills, development of creative abilities, as well as mastering of specific practical skills from the doctoral dissertation topic. Enabling students to independently solve theoretical and practical problems, to understand and to use contemporary knowledge, the ability to follow contemporary achievements, independent and creative action, connecting knowledge from various fields and its application, solving problems using scientific methods, performing numerical simulations and experimental research, presentation and discussion of research results, communication at the professional level in writing and presenting scientific-research results through the written form of the doctoral dissertation and its public defence.

3. Course content/structure:

Writing and presenting scientific-research results in the form of a doctoral dissertation. Student performs the final technical processing of the doctoral dissertation. Printed dissertation delivers to the Commission for assessment and defence. The student orally defends the doctoral dissertation. The procedure of public defence of the doctoral dissertation is regulated by the general act of the Faculty of Technical Sciences.

4. Teaching methods:

The student, in consultation with the supervisor, selects the research topic related to doctoral dissertation. For the chosen topic, supervisor delivers research plan to student. The student is obliged to make the work within the given subject using the recommended literature. During the development, the mentor can give additional instructions to the student, refer him to specific literature, and further guide him. In order to successfully carry out the research, the student conducts consultations with the mentor and with other teachers dealing with the research topic. Within the given topic, the student performs an analysis of previous research, identifies the problems and disadvantages of previous research, defines the objectives of his research, and carries out numerical simulations or experimental research. Student presents the research results in the form of the project, and by publishing the paper in an international journal (SCI listed).

Knowledge evaluation (maximum 100 points)

Pre-examination obligations	Mandatory	Points	Final exam	Mandatory	Points
Writing the PhD thesis	Yes	50.00	PhD thesis defence	Yes	50.00

Literature

Standard 06. Programme Quality, Contemporaneity and International Compliance

The study programme Disaster Risk Management and Fire Safety is consistent and comparable with contemporary scientific developments and programs of foreign higher education institutions in the field of risk management sciences by essence, structure and scope. This ensures the harmony between good experiences in education in this field in our country and positive examples of study programs from prestigious European and world faculties in the field of Disaster Risk Management and Fire Safety. The structure of the study programme is designed as complete and comprehensive and offers students the latest scientific knowledge in this area. The study programme is formally and structurally consistent with strategies for the development of education, science and profession in Republic of Serbia, as well as with other programs of the higher education institution - Faculty of Technical Sciences in Novi Sad. The study programme is aligned with European standards in terms of enrolment, length of study, conditions of transition to a following year, graduation and method of study.
The study program is similar, comparable and harmonized with the accredited study programs of the following foreign higher education institutions:

1. University of Žilina, Žilina, Slovakia
Third-cycle studies in Disaster Management/Crisis Management
http://www.sjf.stuba.sk/sk/uchadzacov/prijimacie-konanie-phd..html?page_id=4183
Rescue Services http://fbi.uniza.sk/en/

2. University College London (UCL), Institute of Risk and Disaster Reduction (IRDR), Great Britan PhD in Risk and Disaster Reduction
https://www.ucl.ac.uk/prospective-students/graduate/research-degrees/risk-disaster-reduction-mphil-phd
http://www.ucl.ac.uk/rdr/teaching

3. Delft University of Technology, The Netherlands PhD in Safety and Security Science
https://www.tudelft.nl/en/tpm/education/post-graduate-programmes/post-initial-education/management-of-safety-health-environment/

Standard 07. Student Enrollment

In accordance with social needs and its resources, the Faculty of Technical Sciences enrolls a number of students to the Doctoral Academic Studies in Disaster Risk Management and Fire Safety either to the budget financing of studies or self-financing which is defined each year by a special decision of Educational-Scientific Council of the Faculty.

The first year of doctoral studies may be enrolled by a person who has:

• completed undergraduate academic and graduate academic studies in an appropriate field with at least 300 ECTS credits and grade point average not less than 8.00 on the undergraduate academic and graduate academic studies - Master or equivalent grade from other rating systems, or if one belongs to 20% of the best students in the generation,

• academic title of Master of Science from the appropriate scientific field in accordance with the law,

• completed studies according to regulations before the adoption of the Law on Higher Education, provided that this is equivalent to graduation diploma with a minimum of 300 ECTS, which is proven by a decision on recognized equivalence.

Appropriate graduate studies and scientific fields are determined for each study programme in particular. In some exceptional situations enrolment may be allowed to other candidates taking differential exams. The decision on taking differential exams including the character of differential exam is made by the Commission for enrolment of the study programme (study group). Commission for evaluation of previously completed studies has three to five members and consists of Head of the appropriate doctoral academic study programme and Heads of Chairs at Departments responsible for the implementation of the study programme. For each candidate registered for the Enrollment Competition, Commission for evaluation checks whether the previously completed studies are appropriate in a way which evaluates all passed exams, determines enrollment conditions of the candidate and year of enrollment. Verification of the evaluation results is carried out by the Commission for enrollment and Council of Doctoral Studies.

Student enrollment at doctoral studies is conducted by the Commission for enrollment. The enrollment commission consists of the heads of all study programs of doctoral studies at Faculty of Technical Sciences. Based on the average grade point and the duration of studies, published scientific and expert papers, the Committee for the study programme quality forms a list of applied candidates. Committee for the study programme quality can issue a decision on organizing additional knowledge evaluation by setting a classification exam.

Priority in budget studies is given to candidates who work in the position of associates at the Faculty and those having scholarships provided by the Ministries and Secretariat for Science of AP Vojvodina.

In addition, the candidate is required to know world languages and to have IT skills which guarantee the smooth attendance of classes and the use of literature.

During enrolment, the student and the Faculty conclude an agreement on the rights and obligations during studies.

Standard 08. Student Evaluation and Progress

The final grade in each course included in this programme is formed by continual monitoring of students' accomplishments throughout the academic year and by passing the final examination.
By taking exams, students are obtaining a certain number of ECTS credits, using a unique methodology for all study programs at Faculty of Technical Sciences. Each course within the programme is worth a certain number of ECTS credits which students obtain by successfully passing the course examination. Students` success in mastering a certain course is constantly monitored during classes and is expressed in points. Maximum number of points obtained in a course is 100. Students obtain points from a course through their work during classes, completion of the prerequisites and taking the examination. The minimal number of points a student can obtain by fulfilling the course prerequisites during classes is 30, the maximum 70. The final success of students at a course is presented with a grade from 5 (fail) to 10 (excellent). Exceptionally, a student who publishes a paper (accepted for publication) in SCI listed journals does not have to take the exam and is graded with 10. The conditions for taking the exam are defined separately for each subject.
Studying at the study programme is carried out in the following way:
The Head of the Study Programme (the study group), upon admission, assigns for every student a co-mentor from the existing teaching stuff at the study programme, who will be their councilor until they choose a mentor.
At the end of each semester, the co-mentor submits a report on the student`s work at a research project and the achieved results to the Head of the Study Programme.
The condition for enrollment in the second year of study (third semester) is acquired by a student who in the first year of study achieved at least 30 ECTS with a relative average grade of at least 8.00 (eight 00/100). Relative average grade is calculated on the basis of the estimate, in proportion to the number of course credits (formula is given in the rules of studying at FTS).
The right to take the qualifying exam in order to be able to write and defend the doctoral dissertation (a research study of the theoretical framework for the doctoral thesis) is given to students who have completed the second year of studies and passed all the exams within the study programme for a maximum of 3 (three) years from the beginning of the study, with a relative average grade of at least 8.00 (eight 00/100). Students who do not fulfill the requirement for enrollment in the second year of study, but achieve at least 15 ECTS, or do not fulfill the condition for laying the theoretical basis of the doctoral dissertation, with the recognition of the exams have the opportunity to continue their studies at specialized academic studies.
Students in the doctoral studies are eligible to take the exam three times. A student who has passed all the exams prescribed by a study program with a relative average grade of at least 8.00 (eight 00/100) and the theoretical basis of a doctoral dissertation with at least 8, acquires the right to apply for a doctoral dissertation topic. The final part of doctoral studies is the preparation and defense of the doctoral dissertation. The submission of the topic proposal for doctoral dissertation is submitted to the FTS student service in the form determined by the University Senate.
Mentor is a study programme professor, who, in addition to the requirements defined by the accreditation standards, has at least five papers of a particular category.
The mentor is obliged to assist the student in the selection of scientific research work methods and literature, as well as in the preparation of dissertation structure, etc.
Based on the application, Educational-Scientific Council of the Faculty makes a decision on the formation of the Commission for the evaluation of the topic, the candidate and mentors, on the proposal of the Study Programme Council with the approval of the Head of PhD studies. The commission consists of at least 5 (five) professors and at least one of them must be from a related higher education or scientific institution outside of the Faculty. The majority of commission members must be from the FTS. Educational-Scientific Council of the Faculty gives approval to PhD candidate to prepare a doctoral dissertation after accepting a positive report from the Commission, as well as after obtaining consent from the competent authority of the University. The candidate is forwarding completed doctoral dissertation to the FTS student service within 5 years from the topic approval. At the proposal of the Study Programme Council,
Educational-Scientific Council establishes a commission for the assessment and defense of the dissertation, which is obliged to write a report within 60 days. Thereafter, with the consent of the Head of PhD studies, the report, along with the text of the doctoral dissertation, is placed on the Faculty website to public insight for 30 days.
Report and eventual remarks, along with the opinion of the Educational-Scientific Council of the Department are submitted for the opinion to the Educational-Scientific Council of the Faculty. Decision on report adoption made by FTS Educational-Scientific Council is being delivered to the appropriate expert council of the University, together with report. University Senate gives consent to the report and thus

creates conditions for the public defense of the doctoral dissertation. For incorrect evaluation of scientific-professional work on the topic suitability candidates by the commission, or on the evaluation and defense, sanctions are prescribed according to the rules on disciplinary responsibility

Standard 09. Teaching Staff

For the realization of the study programme in Disaster Risk Management and Fire Safety, there is teaching staff with necessary professional and scientific qualifications, verified by the list of published scientific papers and data on participation in national and international scientific and research projects. At least 2/3 of teachers participate in scientific and research projects. Teachers` competence is determined on the basis of scientific papers published in international magazines, where at least three papers has been published or accepted to be published in a journal from the SCI list; scientific papers published in national journals; papers published in proceedings from international scientific conferences; monographs; patents; textbooks; new products or significant improvements in the field of Disaster Risk Management and Fire Safety.

The supervisor has at least five scientific papers published or accepted to be published in scientific journals on the given field. It has been established that a supervisor cannot lead more than five Doctoral dissertation candidates simultaneously.

The number of teachers coincides with the demands of the study programme and depends on the number of courses they lecture and the number of classes at these courses. The total number of teachers is sufficient to cover the total number of classes on the study programme, so each teacher has an average of 180 active classes (lectures, tutorials, practice classes, field classes) per year, i.e. 6 classes per week. Out of the total number of necessary teachers, all 100% are full time employed. A minimal number of teachers participating in the given study programme with full time employment is five.

Scientific and professional qualifications of the teaching staff relate to the educational and scientific field and the level of their participation. Each teacher has at least 10 references from the narrow scientific or professional field in which they lecture on the study programme.

No teacher has more than 12 classes per week. All data on teachers and assistants (CV, selections, and references) are available to the public.

Standard 10. Organizational and Material Resources

O perform the study programme, the adequate human, spatial, technical and technological, library and other resources suitable to the study programme features and predicted students` number are provided. Classes on the study programme Disaster Risk Management and Fire Safety are held in 2 shifts, so the minimum of 2 m2 of space is provided per student.

To perform the study programme, the adequate space for lecturing is provided, as well as the adequate laboratory space necessary for the experimental work and the equipment based on contemporary information and communication technologies. Lectures are held in amphitheatres, classrooms and specialized laboratories.

Faculty provides the usage of the library fund from its own or other sources (books, monographs, scientific magazines, other periodicals) in the amount necessary for the Doctoral study programme. Doctoral study students have the access to databases necessary for Doctoral dissertation elaboration and scientific and research work.

The library possesses more than 100 library units relevant for the performance of the study programme. All courses from the study programme have adequate textbooks, devices and supplementary equipment available on time and in a satisfactory number for the normal teaching process. There is also adequate information support.

Faculty has the library and the study room and provides a seat for each student in amphitheatres, classrooms and laboratories.

Faculty has a short-term and a long-term plan and the budget for the realization of scientific and research work.

Means for the realization of Doctoral studies, besides the ones provided by the resource ministries, are also provided in cooperation with other higher education institutions, accredited scientific institutions and international organizations.

Faculty provides students to utilize equipment or have access to necessary and adequate equipment in the possession of the Faculty, for scientific and research work.

Faculty provides students to utilize equipment or have access to the equipment necessary for scientific and research work on the basis of contracts on cooperation with other appropriate institutions.

Standard 11. Quality Control

Estimation of the study programme quality is elaborated regularly and systematically via self-evaluation and external quality control. It is especially necessary to emphasize the multi-decade practice of students` surveys.
Study programme quality control is elaborated in the following manners:
- Surveying students at final lecture from the given course.
- Surveying students on the quality of the study programme and logistic support to the studies in the event of awarding the Diploma. Also, the studying comfort (classroom cleanness and tidiness) is evaluated there.
- Surveying students during the confirmation on completing a year of studies. Then students evaluate the logistic support to the studies.
- Surveying students on enrolling each year of studies. Then students evaluate the study programme at the year they completed in the prior academic year.
- Surveying the teaching and non-teaching staff on the quality of the study programme and the logistic support to the studies. This survey evaluates the work of the Dean`s office, Registrar`s office, library, and other services at the Faculty. Furthermore, the studying comfort (classroom cleanness and tidiness) is also evaluated.

To monitor the quality of the study programme, there is also a committee with all heads of all Departments participating in the realization of the study programme, together with a student from each study group. Additional quality is obtained by the obligatory scientific production of candidates. Prior to beginning the defense of the Doctoral dissertation, each candidate is obliged to publish at least 1 paper in the journal of certain category from the doctoral dissertation field.

Standard 12. Transparency

Faculty of Technical Sciences has provided public access to the study programme and doctoral dissertations as final work of doctoral studies Study programme Disaster Risk Management and Fire Safety is available on the official website of the Faculty of Technical Sciences in Novi Sad:

http://www.ftn.uns.ac.rs/177059227/upravljanje rizikom od katastrofalnih događaja i požara

Faculty of Technical Sciences deposits doctoral dissertations into a unique repository that is permanently available to the public. Electronic versions of doctoral dissertations, together with the report of the commition for assessment and defense, data on the mentor and composition of the commission, as well as work data (scientific research results) of candidates whose publication was a prerequisite for the defense are publicly available on the official website of the Faculty of Technical Sciences in Novi Sad:

http://www.ftn.uns.ac.rs/1054578074/doktorske-disertacije-stavljene-na-uvid-javnosti-i-izvestaj-o-ocenikomisije

Data on supervisors at doctoral academic study programme Disaster Risk Management and Fire Safety, together with data on their competence and previous mentoring are available on the official website of the Faculty of Technical Sciences in Novi Sad:

http://www.ftn.uns.ac.rs/n1187861334/mentori

Standard 13. Studies in a foreign language

It is foreseen that the Doctoral Study Programme Disaster Risk Management and Fire Safety is performed in Serbian and English language.
Besides students from the Republic of Serbia, it is envisaged that this study programme is attended by students from Albania, Bosnia and Herzegovina, Montenegro, Macedonia and other countries. Classes would be conducted in one group for both domestic and foreign students, in English language (in case a certain number of foreign students apply, otherwise the lectures would be conducted in the Serbian language).
In addition to the Serbian language, teachers who teach at this study programme are competent to conduct teaching in the English language, which they proved by lecturing in English at FTS , as well as with papers and participation at foreign scientific conferences.

Standard 15. IMT programme

The Doctoral Study Programme Disaster Risk Management and Fire Safety is an interdisciplinary study programme within the technical-technological field. Department of Civil Engineering and Department of Industrial Engineering and Management (Faculty of Technical Sciences) are included in the realization of this study programme.

The multidisciplinarity of this study programme is reflected in subjects in civil engineering, geodesy, industrial engineering, engineering management, electrical engineering, computing and environmental protection and occupational safety.

Multidisciplinarity can be achieved through the selection of elective courses. With the consent of the Head of the study programme, the student is allowed to choose and attend two courses from any other study programme at FTS or some other faculty of the University of Novi Sad.