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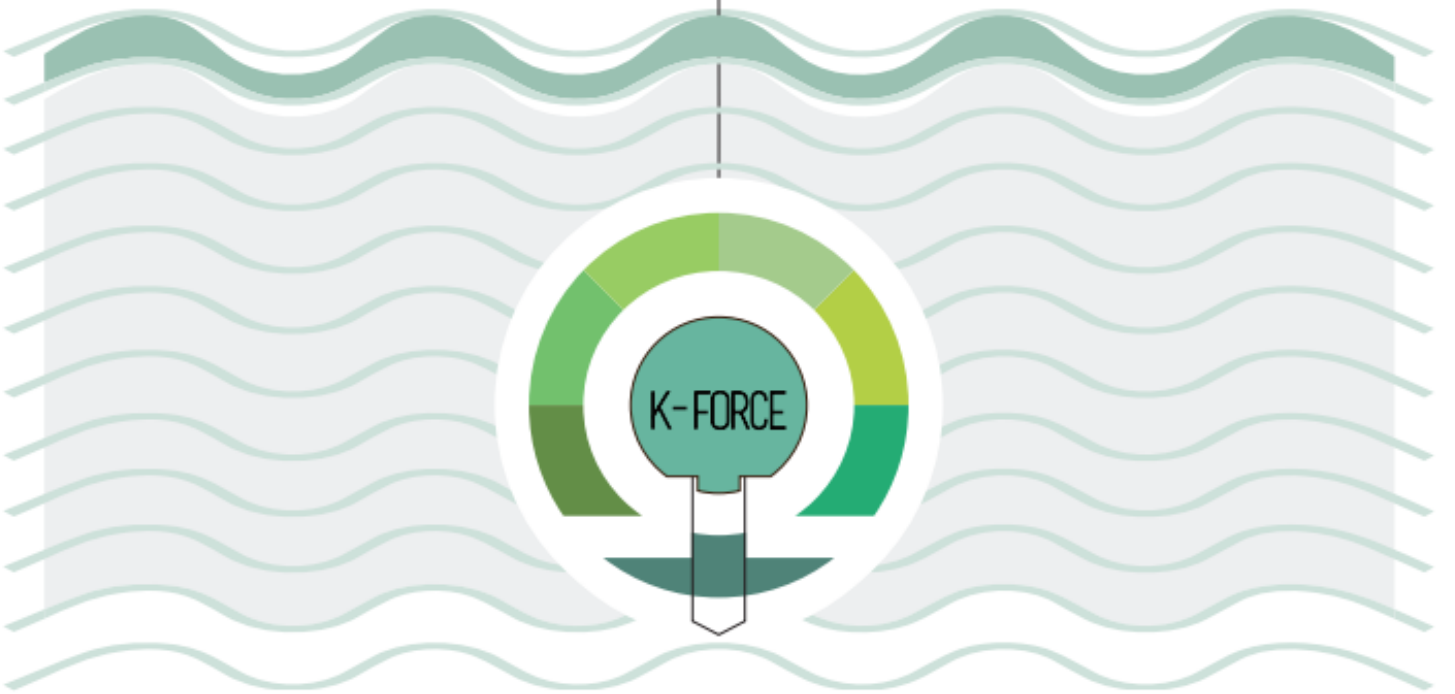
Knowledge FOr Resilient soCiEty

K - FORCE

573942-EPP-1-2016-1-RS-EPPKA2-CBHE-JP



WP3

REPORT ON ADOPTED LEARNING METHODOLOGIES: STUDENT CENTRED LEARNING AND PROBLEM BASED LEARNING

Deliverable 3.3

Prepared by:

The University of Tuzla, Faculty of Mining, Geology and Civil Engineering
University of Banja Luka, Faculty of Architecture, Civil Engineering and Geodesy
University of Novi Sad, Faculty of Technical Sciences
Higher Technical School of Professional Studies in Novi Sad
University of Tirana, Faculty of Economy
Epoka University, Faculty of Architecture and Engineering

Report 3.3 gives an overview on training organized by partners P8 and P10 with aim to train the WBC teaching staff on both DRM&FSE topics and b-learning methodologies; and WBC teaching staff implementing student-centred learning and problem-based learning

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TABLE OF CONTENT

1. INTRODUCTION

One of the crucial objectives of the K-FORCE project, on which depend a large number of indicators of success, is teachers' training and course/program development. Within the Project these activities provided necessary inputs for the realization of WP4, WP5, WP6 and WP8.

WP3 objectives were achieved through the exchange of knowledge and expertise on DRM&FSE education and training among PA and Program partners (PR), which resulted in improved learning and teaching tools, methodologies and pedagogical approaches, as well as implemented blended learning methodologies and created learning material.

The aim of this report is to give an overview of WP3, 3.3 activities implementation in six WB universities throughout the Project.

As a result of tasks realised within WP 3 WBC staff have been trained in teaching methodology on the K-FORCE project, through a combination of study visits to EU partner institutions, workshops held and literature provided on the project website.

Program partners (PR) organized training with the aim to train the WBC teaching staff on both DRM&FSE topics and b-learning methodologies. Training schedule for 2018 is shown in Annex 1.

A report on K-FORCE Workshop on Student Centred Learning held in Novi Sad, on September 27, 2018, is given in Annex 2.

As a result of applied methodologies, students work will be arranged in 6 separate ZIP folders for every institution and these folders are linked in the text to the final report at the website. Presentation of students work and implemented methodology is given in brief in Annexes 3-8.

2. TRAINING ON THE EDUCATION SYSTEM AND TEACHING METHODS AND APPLIED SCL METHODOLOGY

Teaching methodologies were introduced to Partner counties in following study visits to PR partners HEIs (P7-P12):

- Study visit and meeting at Aalborg University (P8) took place from 25th to 29th of April, 2017,
- Study visit and meeting at Technical University of Denmark (P7) took place from 26th to 27th of June, 2017,
- Study visit and training event within the K-FORCE project was organized from January 29th to February 2nd, 2018 and hosted by the University of Žiline (P10),
- A study visit and project consortium meeting within the K-FORCE project was organized from July the 2nd to July the 6th 2018 and hosted by the Ss. Cyril and Methodius University in Skopje (P11).

In year 2018, Programme countries have organised trainings for academic staff from Partner counties with accent on the education system and teaching methods for MSc education. Training schedule for 2018 is shown in Annex 1.

In 2018, in the first K-FORCE training course, a training visit was arranged at **Technical University of Denmark - DTU (P7)** as part of the Special Mobility Strand (SMS) program of the KFORCE project for staff members. The visit took place in the period 12-23 March 2018 and was aimed at providing the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at DTU.
Link: http://www.kforce.gradjevinans.net/training-mobility-2/204-k-force-training-visit-at-dtu-march-1223-2018.html

Training course on Knowledge Building in Disaster Risk Management, provided by the group on Risk, Reliability, Resilience and Sustainability of the Built Environment (R3+SBE) at the Department of Civil Engineering, at **Aalborg University – AAL (P8)**, from April 23 - May 7-19, 2018. The aim was to acquire forefront knowledge of high relevance to the topic of DRM through participation in the advanced course on Systems Risk Modelling and Analysis in Engineering Decision Making, to attain training and teaching instruments facilitating their own learning process and later also their own teaching abilities, to establish a first peer group of professionals across the borders of the WBC's – a professional network - enhancing the resilience of Knowledge for Resilient Society.
Link: http://www.kforce.gradjevinans.net/training-mobility-2/230-k-force-training-visit-at-aau-april-23-may-7-19-2018.html

At **Lund University (P9)** the training took place in the period April 23 - May 05 2018 and 04-15th of June 2018. The goal of the visit aimed at providing the trainees involved in the mobility with international experience on the education system and teaching methods at LU.
Link: http://www.kforce.gradjevinans.net/training-mobility-2/219-k-force-training-visit-at-lund-april-23-may-5-and-june-4-15-2018.html

University of Žilina - UNIZA (P10) organised a training visit for academic staff from the Western Balkan countries from April 23 – May 04, 2018. The primary focus was on gaining new and improving teaching and research skills at the MSc level.
Link: http://www.kforce.gradjevinans.net/training-mobility-2/207-k-force-training-visit-at-uniza-april-23-may-4-2018.html

A training visit at **Ss. Cyril and Methodius University in Skopje - UKIM (P11)**, as part of the Special Mobility Strand (SMS) program of the KFORCE project, took place in the period 11-21 April 2018. The training mobility was organized within two institutions: Faculty of Civil Engineering and Institute for Earthquake Engineering and Engineering Seismology. The aim of the training was to provide the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at UKIM.
Link: http://www.kforce.gradjevinans.net/training-mobility-2/199-k-force-training-visit-at-ukim-april-11-21-2018.html

Training material provided by Program partners (PR), regarding education system and teaching methods:

Teaching and education at Technical University of Denmark

- Interdisciplinary teaching at DTU
- Mandatory Teacher Training programme - DTU
- MSc Project

Teaching and education at Aalborg University

- Msc. Risk and Safety Management at Aalborg University
- Systems Engineering Decision Analysis

Teaching and education at Lund University

- How do we educate PhD educators - LUND

A report on K-FORCE Workshop on Student Centred Learning held in Novi Sad, on September 27, 2018 is given in Annex 2.

K-FORCE training visits continued in following years 2019 and 2020, with different aims regarding different project tasks:

- UKIM (P11) - 19 August - 03 September 2019,
- DTU (P7) – August 19 - 26, 2019,
- UNIZA (P10) - May 6-17, 2019,
- LU (P9) – June 3rd – June 14th, 2019,
- AAL (P8), April 3rd – April 17th, 2019,
- DTU (P7), March 25th – April 4th, 2019,
- LU (P9) – February 18th – March 1st, 2019,
- UNIZA (P10) - January 28 – February 08, 2019,
- UNTZ (P3) - December, 2019,
- UKIM (P11) - November 2019.

P1 - UNIVERSITY OF NOVI SAD

The aim of training visits at 2017/2018 was to train teachers stuff from Partner countries for implementing new teaching methods at new master study program developed as a product of K-Force project, starting from 2017, in the University of Novi Sad.

In 2018 training visit, arranged at **Technical University of Denmark - DTU (P7)** in the period 12-23 March 2018, trainee from University of Novi Sad (UNS), Serbia was an **assistant professor Vesna Bulatović**.

Training course at **Aalborg University – AAL (P8)**, from April 23 - May 7-19, 2018, was attended by **Ivan Lukić, assistant professor**.

At **Lund University (P9)** the training took place in the period April 23 - May 05 2018 and 04-15th of June 2018. **Professor Mirjana Laban** and teaching **assistant Slobodan Šupić** from University of Novi Sad attended this training.

University of Žilina - UNIZA (P10) organised a training visit for academic staff from the Western Balkan countries from April 23 – May 04, 2018, which attended teaching **assistant Jovana Bondžić**.

A training visit at **Ss. Cyril and Methodius University in Skopje - UKIM (P11)**, in the period 11-21 April 2018, **assistant professor Igor Džolev** attended.

New methodologies were applied on 2 subjects:

- ***Evacuation calculation and modelling,***
- ***Rescue and protection plan.***

Students were divided into groups of different sizes depending on the number of students. They worked on chosen topics (illustrated in table below).

On following link are student papers and photos that illustrate applied methodology:
https://www.dropbox.com/sh/5zr7d2f2wcv0kds/AACECe5o91jPTIYjZV-kjhTAa?dl=0

The outcomes and presentations are shortly presented in Annex 3.

UNIVERSITY OF NOVI SAD, FACULTY OF TECHNICAL SCIENCES DISASTER RISK MANAGEMENT AND FIRE SAFETY - MASTER ACADEMIC STUDIES				
No	**COURSE TITLE**	**TOPIC**	**APPLIED SCL METHODOLOGY**	**STUDENT CENTRED LEARNING OUTCOME**
1	**Evacuation calculation and modelling**	**Evacuation plans in buildings (5 projects)**	**Students are working in groups of 3 or 4, they select the group members. The group divide the tasks between the members.** **The group has the right to decide if someone has not done the work supposed to do and to exclude the group member.** **Each group prepares the paper and the presentation which will be discussed with other students and teacher.** **The final grade is the same for all the group members.** **Teachers provide the building planes and literature, theoretic basics and regular consultations. The most of the work students are doing on their own.** **The students have 6 weeks to finish the project.** **Tasks:** • **Check the evacuation paths in the building and FS measures** • **Design evacuation scenario(s)** • **Analysis of building tenants (number, age, vulnerability)** • **Define the movement speed** • **Define the obstacles in evacuation** • **Define the risk in evacuation** • **Calculate the evacuation time** • **Design evacuation model in Pathfinder software** • **Compare calculation and software results** • **Evaluation of Fire Safety** • **Design evacuation plan** • **Proposals for FS improvement**	***Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.*** • **Mastering academic content;** • **Learning how to think critically and solve problems;** • **Working collaboratively;** • **Evacuation comprehensive knowledge** • **Math, information, media, and technology skills** • **Communication creativity** • **Communicating effectively** • **Relationship Skills;** • **Responsibility to work and to the co-workers** • **Responsible decision-making**

2	**Protection and rescue plans**	**Vulnerability assessment of one public building (1 project)**	**Due to the complexity of the task, all students participate in the same project.** **Based on the methodology for risk assessment and protection and rescue plans, students are enrolled in the identification of all potential dangers for given building/enterprise. For selected critical dangers, students carry out the risk assessment, determine vulnerability (probability and consequences), risk level and, based on the risk acceptability, and propose measures for risk treatment.** **Students prepare the paper and the presentation which will be discussed with other students and teacher.** **The final grade is the same for all the group members.** **Teachers provide the city planes and literature, theoretic basics and regular consultations. The most of the work students are doing on their own. Field observation plan and schedule is designed in cooperation with teachers.** **The students have 8 weeks to finish the work.** **Tasks:** • **Collecting general data on the building/enterprise** • **Analysis of the critical infrastructure** • **Identification of the risks** • **Creating risk scenario** • **Risk analysis for critical identified dangers** • **Risk evaluation and treatment**	***Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.*** • **Mastering academic content;** • **Recognition of building structures and materialization** • **Ability for defining assessment criteria and ranking methods** • **Ability to recognize the valid and reliable source of information** • **Field observation and data collection** • **Working collaboratively;** • **Math, information, media, and technology skills** • **Project management** • **Analytic and systematic assessment** • **Relationship Skills;** • **Responsibility to work and to the co-workers** • **Responsible decision-making**

P2 - HIGHER EDUCATION TECHNICAL SCHOOL OF PROFESSIONAL STUDIES IN NOVI SAD

In the VTSNS, the process was particularly intensified in 2017 with the accent on blended learning intending to prepare grounds for the launch of the ICT platform in the following school year. Then, in the beginning of the summer semester of 2018/2019 school year, with the aim to enhance student-centred learning and problem-based learning, VTSNS teachers were asked to consider the possibility of applying the two methods in their teaching activities.

At training visit at **DTU (P7)** in the period 12-23 March, aimed at providing the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at DTU, was attended by **Professor Anita Petrović** from High technical school of Novi Sad.

A training visit organized by **UNIZA (P10)** from April 23 – May 04, 2018, which had the primary focus on gaining new and improving teaching and research skills at the MSc level, was attended by the **dean of High technical school of Novi Sad, Professor Branko Savić**.

Training visit at **UKIM (P11)** in the period 11-21 April 2018, organized within two institutions: Faculty of Civil Engineering and Institute for Earthquake Engineering and Engineering Seismology was attended by **Professor Saša Spaić**.

The idea was to select one or two courses and implement the methods to see the student reaction to this teaching approach. The teacher most willing to enrich his teaching methodology in this way was **Professor Saša Spaić**, assistant director for teaching in the VTSNS. He was introduced to SCL and PBL during his visit to Danish partners DTU and ALU in 2017. His course ***Investigation of causes, phases and consequences of fire***, is also very suitable for this kind of experimentation. Students made five groups and produced five papers on topics on fire safety during March 2019. The teacher took an active role of a mentor. The presentation of student achievements was organised on April 14, 2019. The defence of papers in front of the entire group was dynamic and all team members participated. The conclusion is that this approach takes more time and effort of both teachers and students than traditional teaching methods where students are more or less consumers of what is presented by the teaching stuff, but the results of such an engagement are far more rewarding.

Two of the papers were presented at the 2nd K-FORCE Symposium in Tirana in September 2019.

Outcomes and presentations are briefly shown in Annex 5.

On following link student presentations, papers, and photos from papers presentations are shown: https://www.dropbox.com/sh/gt1oxzqow66yusm/AAAtw4RmZLWTYQyRw_pmR-Rta?dl=0

STUDENT CENTERED LEARNING

METHODOLOGY APPLICATION IN TEACHING AT MP PROTECTION ENGINEERING

HIGHER EDUCATION TECHNICAL SCHOOL OF PROFESSIONAL STUDIES IN NOVI SAD PROTECTION ENGINEERING - MASTER PROFESSIONAL STUDIES				
No	**COURSE TITLE**	**TOPICS**	**APPLIED SCL METHODOLOGY**	**STUDENT CENTRED LEARNING OUTCOME**
1	Investigation of causes, phases and consequences of fire	1 Landfill fires 2 Grain crop stubble fires 3 Fires of agricultural and construction machinery 4 Silo fires 5 Road vehicle fires (5 projects)	Students themselves form teams of four/five members. Each team suggests a topic of their project assignment. The teacher provides literature, theoretical grounds and consulting, but most of the work is done by the students. Team tasks are fairly divided among the members. The team can exclude a member not contributing to the realisation of the assignment. The team has six weeks to prepare a paper and a presentation to be discussed with other students and the teacher. The assignment is assessed and all team members get the same grade. Tasks: • Gather, select and study available literature resources in paper and e-form; • Collect required data; • Data analysis; • Define and discuss the causes of fires; • Determine phases of fires and their characteristics; • Discuss consequences of fires; • Propose fire safety improvement.	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to apply or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Ability to recognize the valid and reliable source of information; • Data collection; • Analytic and systematic assessment; • Math, information, media, and technology skills; • Working collaboratively; • Communication skills; • Responsible decision-making; • Project management.

P3 - UNIVERSITY OF TUZLA

At Faculty of Mining, Geology and Civil Engineering WP3 activities in improving teaching skills started in March 2018 with **assistant professor Edisa Nukić** training visit at **DTU (P7)**. Main activities in the training visit included 15 presentations and seminars on education lines, courses, and pedagogical training for teachers. This training included 5 courses (2 of the MSc in Civil Engineering and 3 of the Master in Fire Safety) and participation in 4 supervising sessions of 7 students working on numerical and experimental MSc projects. In addition, the trainees carried out a project on laboratory-based teaching, prepared and then carried out fire dynamics experiments in the fire lab, under the supervision of the head of the fire lab. Trainees also presented the results of the experiments to the member of the fire group at DTU and participated in a workshop on numerical modelling and in a final discussion on teaching and learning methods. 22 DTU members (15 employees and 7 students) were engaged in the training activities and contributed to the success of this visit.

These activities were continued with two week training visit at Aalborg University – **AAL (P8)** in April and May 2018 attended by **senior teaching assistant Damir Malkočević**. During this visit trainees were introduced to the Department of Civil Engineering and were provided with information about the general principles of Project Based Learning. The training course was designed with three supporting sub-objectives in mind: prepare the trainees for an advanced course on a topic of central importance for DRM, Introduce the trainees to the concept of Problem Based Learning (PBL) and to provide the trainees the advanced course with expert teachers and supported exercise sessions.

13 April to 4 May 2018, **teaching assistant Abaz Velić** attended training visit at **UNIZA (P10)**. The primary focus was on gaining new and improving teaching and research skills at the MSc level. During the visit the following activities were undertaken: Introductory lecture by UNIZA, Lectures for UNIZA students (lectures delivered by the trainees to the students of the crisis management MSc. programme), Guided project work, Student scientific competition panel member (Each trainee was a member of a student scientific competition during which they judged the scientific work of the students from the Faculty of security engineering and other institutions) and Final evaluation.

In period 11-21 April 2018 **teaching assistant Aneta Jokić** attended training visit at **UKIM (P11)**. The training mobility was organized within two institutions: Faculty of Civil Engineering and Institute for Earthquake Engineering and Engineering Seismology.

These trainings in teaching methodologies were successful preparation for new Master study programme “Disaster Risk Management and Fire Safety Engineering” that was launched at University of Tuzla in October 2018.

In the beginning of new school year 2018/19 teachers and teaching assistants were asked to apply student-centred and problem based learning. At same time ICT platform is launched as well.

Professors Zvjezdan Karadžin and Edisa Nukić applied SCL and PBL into their two courses in summer semester:

- ***Risk analysis in decision making process,***
- ***Community resilience to hazards.***

Students were divided into two groups due to small number of master students and they worked on chosen topics (illustrated in table below).

Their papers were produced and presented in July during summer semester exams: https://www.dropbox.com/sh/7o2rxhysq88xccl/AACH2PWWwq9JcCQGEmWOZGc4a?dl=0

Outcomes and presentations are shortly presented in Annex 5.

STUDENT CENTERED LEARNING

METHODOLOGY APPLICATION IN TEACHING AT MP DRM&FS

UNIVERSITY OF TUZLA, FACULTY OF MINING, GEOLOGY AND CIVIL ENGINEERING DISASTER RISK MANAGEMENT AND FIRE SAFETY ENGINEERING - MASTER ACADEMIC STUDIES				
No	**COURSE TITLE**	**TOPIC**	**APPLIED SCL METHODOLOGY**	**STUDENT CENTRED LEARNING OUTCOME**
1	Risk analysis in decision making process	Decision making in case of floods (mandatory vs voluntary evacuation)	Students are working in two groups (1st group defends arguments for decision on mandatory evacuation and 2nd group for voluntary evacuation). Students need to set criteria for their decision based on collected data and choose a group. Teacher provides city maps, literature and data related to emergency situation. Final grade is the same for all group members. Both groups prepare presentation and elaborate their decision on mandatory evacuation or voluntary evacuation and discuss with colleagues and teacher. Tasks: - Map and terrain topography study - Analysis of urban area and population - Analysis of critical infrastructure - Meteorological data collection - Determine the risk of (non) evacuation - Decision making	• Mastering academic content; • Problem solving and critical thinking skills; • Collaborative learning; •Communication skills improvement; • Comprehensive knowledge on evacuation during floods; • Ability for defining assessment criteria and ranking methods; • Ability to recognize the valid and reliable source of information; • Data collection, selection and analysis; • Analytic and systematic assessment; • Responsibility to work and to co-workers; • Responsible decision-making
2	Community resilience to hazards	Tasks required to enhance community resilience to	Students are working in two groups (1st group conducts case study related to Serbia and 2nd group related to Bosnia). Students need to mark weak spots and set tasks	• Mastering academic content; • Learning to think critically and solve problems;

		hazards	required to enhance community resilience to hazards. Teacher provides information and available materials related to the two case studies. Both groups prepare presentation and elaborate their findings concerning how communities were prepared and if there was a plan to absorb, recover from, and more successfully adapt to adverse events concerning their case studies. Tasks: - Analysis of urban areas and population affected by floods in 2014 at research areas, including critical infrastructure. - Analysis of respond of affected local communities - Analysis of respond of local and cantonal civil defence departments. - Define tasks for enhanced resilience that will allow better anticipation of disasters and better planning to reduce disaster losses—rather than waiting for an event to occur and paying for it afterward	• Working collaboratively; • Comprehensive knowledge on community resilience to hazards • Communicating effectively • Ability for defining assessment criteria and ranking methods • Ability to recognize the valid and reliable source of information • Data collection, selection and analysis • Analytic and systematic assessment • Responsibility to work and to the co-workers • Responsible decision-making

P4 - UNIVERSITY OF BANJA LUKA

University of Banja Luka was introduced with activities in improving teaching skills at visit arranged at **DTU (P7)**. The visit in the period 12-23 March, aimed at providing the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at DTU, was attended by **senior assistant Mladen Slijepevic** from University of Banja Luka (UBL).

In 2018, in training visit at **AAU (P8)**, from April 23 - May 7-19, participated **Professor Gordana Broćeta**.

At **UNIZA (P10)** training visit for academic staff from the Western Balkan countries, from April 23 – May 04, 2018, attended **Professor Bojana Grujic** from the University of Banja Luka, as one of the professors on new Master program, as the primary focus was on gaining new and improving teaching and research skills at the MSc level.

A training visit at **UKIM (P11)**, which took place in the period 11-21 April 2018, also with the aim of the training was to provide the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at UKIM, **senior assistant Radovan Vukomanović** form University of Banja Luka attended.

At Faculty of Architecture, Civil Engineering and Geodesy for new Master study program "Disaster Risk Management and Fire Safety Engineering" professors Gordana Broćeta, Saša Čvoro, Vinko Babić, Mirsad Tarić and Mato Uljarević, whith their associates Mladen Slijepčević, Radovan Vukomanović, Marina Latinović, applied SCL into following courses:

- ***Constructive Rules for Fire safety of Building,***
- ***Assessment of Damaged Structures,***
- ***Repair of Timber, Steel and Masonry structures,***
- ***Aseismic Design and Construction.***

On following link are student papers and photos that illustrate applied methodology:
https://www.dropbox.com/sh/dv1le5ulweltyuo/AACUO_mJZxKoEziN11psAYXSa?dl=0

Students were divided into groups of different sizes depending on the number of students (since some curses were elective). They worked on chosen topics (illustrated in table below), and they gained common grade for student projects or points for group assignments.

Outcomes and presentations are shown in Annex 6.

STUDENT CENTERED LEARNING

METHODOLOGY APPLICATION IN TEACHING AT MP DRM&FS

UNIVERSITY OF BANJA LUKA - FACULTY OF ARCHITECTURE, CIVIL ENGINEERING AND GEODESY MASTER MODULE "DISASTER RISK MANAGEMENT"				
No	**COURSE TITLE**	**TOPIC**	**APPLIED SCL METHODOLOGY**	**STUDENT CENTRED LEARNING OUTCOME**
1	Constructive Rules for Fire safety of Building	Fire risk determination on the example of residential/public building (2 projects) Evacuation route determination on the example of residential/public building (2 projects)	Students are working in groups of 2. Group members divide the tasks between themselves. Each group prepares the paper which will be discussed with the teacher. The final grade for papers is the same for all group members. Teachers provide the literature, theoretic basics and regular consultations. The most of the work students are doing on their own. Fire risk determination Tasks: • Determination of the fire resistance of the structure • Determination physical and chemical properties of flammable materials • Recognition of technological processes and the dangers that accompany it • Fire risk determination calculation Evacuation route determination Tasks: • Division of the facility into fire departments • Evacuation of persons from object – route determination • Evacuation time calculations	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content • Knowledge in fire risk determination • Knowledge in evacuation route determination • Learning how to think critically and solve problems • Working collaboratively • Communicating effectively • Responsibility to work and to the co-workers

2	Assessment of damaged structures	Assessment of existing public buildings (3 class visits)	Students are working in groups of 4-5. Each group performs activities on the site and they gain points in activity that affect the final grade. Teachers provide theoretic basics, relevant standards and equipment for field tests. Class visits and tasks are organised by the teachers. Tasks: • Performing field visual inspection of the object - obtaining insight into the geometry of the object and the constructive system • Noting detections of defects • Making conclusions on defects causes • Familiarisation with methods for damage identification • Familiarisation with methods for built in materials condition assessment • Making conclusions of object condition	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content • Knowledge in assessment of damaged buildings • Recognition of building structures and materialization • Damage and material condition identification knowledge • Field observation and data collection by visual inspection and the use of instruments for non-destructive tests • Learning how to think critically and solve problems • Working collaboratively
3	Repair of timber, steel and masonry structures	Elaborate on recommendation for repair of existing public buildings (5 projects)	Students are working in groups of 4-5. Group members divide the tasks between themselves. Each group prepares the paper and the presentation which will be discussed with other students and teacher. The final grade is the same for all the group members. Teachers provide literature, theoretic basics and regular consultations. The most of the work students are doing on their own.	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content • Widening technology and media literacy • Data collection • Working collaboratively

			Tasks: • Familiarisation with relevant valid standards • Describing the main defects and main causes of defects • Performing basics calculations for elements capacity evaluation before and after the repair • Providing repairing plans for entire building in form of drawings • Providing repairing details in form of drawings • Describing repairing technology • Defining quantities of repairing works	• Knowledge in repair methods • Math, information, media, and technology skills • Relationship skills • Responsibility to work and to the co-workers • Responsible decision-making
4	Aseismic Design and Construction	Calculation of reinforced structure according to EC8	Students are working individual projects, but they have group workshops during the course where they discuss different solutions and compare individual results. Teachers provide literature, theoretic basics and regular consultations. Tasks: • Familiarisation with standard EC 8: Seismic Design of Buildings • Analysis and discussion of the structural regularity of the object • Comparing different input parameters and output results for individual cases	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content • Knowledge in standard EC 8: Seismic Design of Buildings • Learning how to think critically and solve problems • Communicating effectively

P5 - UNIVERSITY OF TIRANA

Activities on implementation of the new teaching methodology were continued with two week training visit at **AAU (P8)** in April and May 2018 attended by **senior teaching assistant Kapidani Mariola**. During this visit trainees were introduced to the Department of Civil Engineering and were provided with information about the general principles of Project Based Learning.

A training visit was arranged at **Lund University (P9)** as part of the Special Mobility Strand (SMS) program of the K-FORCE project for staff members. **Professor Elona Pojani** from University of Tirana, Albania attended.

As part of the K-FORCE project **UNIZA (P10)** organised a training visit for academic staff from the Western Balkan countries. The primary focus was on gaining new and improving teaching and research skills at the MSc level. **Professor Perseta Grabova** from the University of Tirana, Albania attended.

A training visit at **UKIM (P11)**, organized within two institutions: Faculty of Civil Engineering and Institute for Earthquake Engineering and Engineering Seismology, attended **Matilda Shehu**, University of Tirana, Economics Faculty. The aim of the training was to provide the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at UKIM.

SCL methodology was implemented in four subjects. Students were divided into groups of different sizes depending on the number of students. They worked on chosen topics (illustrated in table below).

Courses with implemented new methodology:

- **Disaster risk management,**
- **Research methods,**
- **Risk management and insurance,**
- **Foundations of risk assessment and decision making.**

On following link are student papers and photos that illustrate applied methodology:
https://www.dropbox.com/sh/qv3y531s66jum7n/AACLbw0GvInk-TBl3j_j-o40a?dl=0

Students worked on chosen topics (illustrated in table below). Outcomes and presentations are shortly presented in Annex 7.

STUDENT CENTERED LEARNING

METHODOLOGY APPLICATION IN TEACHING AT MP "MASTER OF SCIENCE IN RISK MANAGEMENT"

UNIVERSITY OF TIRANA, FACULTY OF ECONOMY MASTER OF SCIENCE IN RISK MANAGEMENT - MASTER ACADEMIC STUDIES				
No	COURSE TITLE	TOPIC	APPLIED SCL METHODOLOGY	STUDENT CENTRED LEARNING OUTCOME
1	Disaster Risk Management	Risk Evaluation and Contingency Planning in main disaster hotspots in Albania (4 projects)	The Course Disaster Risk Management is conceived in the form of a workshop where students are required to apply the theoretical knowledge they receive for developing various tasks that have been appointed to them. The workshop's nature of the course is reflected in the organization of lecture and seminar hours, which are expected to include intensive independent work by students under the guidance and supervision of the lecturers. The lecture hours will include many visits from the Kforce project experts, as well as visits from representatives of public institutions and national and international projects in the field of DRM. Students are working in groups of 5. They have been randomly appointed to each group in order to make the groups as heterogeneous as possible. One hotspot has been appointed to each group. For the selected hotspot students have to develop 5 projects: 1. Hotspot Profile 2. PESTEL Analysis 3. Risk and Vulnerability	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Learning how to think critically and solve problems; • Working collaboratively; • Independent work • Problem based approach • Communication, creativity • Communicating effectively • Relationship Skills; • Responsibility to work and to the co-workers • Responsible decision-making • Effective communication with experts in the field • Creating networks

			Analysis 4. Contingency Plan 5. Financial Plan in case of Disaster. The group divides the tasks between the members. Each group prepares the paper and the presentation which will be discussed with other students and the teacher. The final grade is the same for all the group members. Teachers provide the building planes and literature,theoretic basics and regular consultations. The most of the work students are doing on their own. The students have 15 weeks to finish all 5 papers related to the hotspot.	
2	Research Methods	Different topics related to risk assessment and risk attitude (5 projects)	The "Research Methods" course will serve to familiarize students with the knowledge and skills necessary to carry out independent research, in the form of a course paper, scientific article, diploma or dissertation project. In response to the objectives of the course, students will be trained in developing research ideas, organization of work, data collection, analysis and structuring and final presentation of their studies in the field of risk management. Continuous and independent group work is at the foundation of organizing classes. Students are working in groups of 4. They have been randomly appointed in each group. The group divides the tasks between the members. Each group prepares the tasks appointed throughout the course	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Ability to recognize the validity and reliable source of information; • Field observation and data collection; • Working collaboratively; • Project management • Analytic and systematic assessment • Relationship Skills; • Responsibility to work and to the co-workers • Responsible decision-

			and the presentation which will be discussed with other students and the teacher. The final grade is a combination of group work (same for all members of each group) and personal learning (evaluated through tests, essays and individual projects they have to complete throughout the semester). Teachers provide literature, theoretic basics and regular consultations. The most of the work students are doing during group work and on their own. The students have 15 weeks to finish the work. The tasks of the course include: 1. Definition of different research topics within the area of risk management, either involving risk perception, management of crisis, environmental management, enterprise risk management or societal aspects. 2. Planning of research and research tools within one topic in the field of risk management. 3. Justification of choosing a research methodology and application within the research field. 4. Illustration of theoretical aspects of the course through essays, team projects and individual projects.	making • Individual work Team building
3	Risk Management and Insurance	Different topics related to insurance and	The "Risk Management and Insurance" course aims to provide the student with some advanced concepts and techniques in the	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should*

		reinsurance (6 projects)	insurance industry. The program of this course describes insurance as a device of risk management, as a legal contract between an insurance company and the policyholder and as a financial service provided by the insurance market and supervised by the state. On completion of the course, the student should be able to define risk, risk management and insurance; identify the fundamental types of risk exposure and alternative techniques of dealing with risk; explain the requirement of an insurable risk; understand the insurance costs and the benefities of society; identify several branches and classifications of insurance; explain the legal environment of insurance and specific legal terminology concepts applied in insurance; explain specific conditions of several insurance contracts and products; understand the several operations of insurance companies: underwiting, rating, production, claim settlements and reinsurance; and analyse the financial reports of insurance companies. A variety of teaching methods will be used in this course, including lectures, discussions of theory in workshops sessions, as well as the presentation and discussion of material obtained from the academic literature in the field of insurance. Students are expected to play an active role in class discussions, both during lectures and in seminars.	*be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Working collaboratively; • Analytic and systematic assessment; • Improving communication skills through written or oral presentations in class; • Solving several practical exercises for implementing the knowledge received during lessons; • Analysing of methodology and the findings of several scientific articles in insurance field; • Individual work • Team building

4	Foundations of Risk Assessment and Decision Making	Different topics related to Risk Management process, including the elements of the process: 1. Identification of Problems and Opportunities 2. Risk Assessment 3. Risk Evaluation 4. Risk Control 5. Risk Monitoring (4 projects)	The "Foundations of Risk Assessment and Decision Making" course aims to offer the students fundamental knowledge and understanding of risk analysis, risk evaluation and risk management, with applications in a broad array of areas including safety, health, environment and society. The course also aims that the students shall gain the ability to utilize tools for risk analysis, evaluation and management and how they can support risk-related decisions. Furthermore, the course is aimed at providing a foundation for continuing studies in the risk management field. Students are divided in 4 groups. Each group is composed of 5-6 students. Each group is considered as an organization/company etc. Each member of the respective group should create ideas about one or more situations that may arise in the organization/company involved. The situation will then go through two main stages: 1. Identify problems and opportunities 2. Risk assessment A variety of teaching methods will be used in this course, including lectures, discussions of theory in workshop sessions, as well as the presentation and discussion of material obtained from the academic literature in the field of insurance. Students are expected to play an active role in class discussions, both during lectures and in seminars.	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Working collaboratively; • Analytic and systematic assessment; • Improving communication skills through written or oral presentations in class; • Solving several practical exercises for implementing the knowledge received during lessons; • Analyzing of methodology and the findings of several scientific articles in insurance field; • Individual work • Team building

P6 - EPOKA UNIVERSITY

A training visit was arranged at **DTU (P7)**, in the period 12-23 March, aimed at providing the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at DTU, attended **professor Enea Mustafaraj** from Epoka university (EPOKA) in Tirana.

Training activities for teaching staff Epoka University were continued with two week training visit at **AAU (P8)** in April and May 2018, attended by **senior teaching assistant Artan Hysa**. During this visit trainees were introduced to the Department of Civil Engineering and were provided with information about the general principles of Project Based Learning.

A training visit was arranged at **Lund University (P9)** which took place in the period April 23 - May 05 2018 and 04-15th of June 2018, was attended by **assistant Artemis Hasa** from Epoka University. The goal was providing the trainees involved in the mobility with international experience on the education system and teaching methods at LU.

Training at **UNIZA (P10)** from April 23 – May 04, 2018, with primary focus was on gaining new and improving teaching and research skills at the MSc level, was attended by **professor Ali Osman Topal**, from the Epoka University, Albania

A training visit at **UKIM (P11)** with the aim to provide the trainees involved in the mobility with international experience on the education system and teaching methods for MSc education at UKIM, was attended by **Professor Erion Luga** from EPOKA University, Faculty of architecture and engineering.

The applied methodology was introduced in following subjects:

- ***Project planning, management and coordination,***
- ***Risk analysis in decision making process,***
- ***Evacuation calculation modeling,***
- ***Structural fire safety,***
- ***Reinforced concrete structures,***
- ***Landscape Perspectives in DRM&FS,***
- ***Durability of concrete.***

Students were divided into groups of different sizes depending on the number of students. They worked on chosen topics (illustrated in table below).

On following link are student papers and photos that illustrate applied methodology:
https://www.dropbox.com/sh/ax3vzoe5htvz90f/AAAmml22fHgoX-mNHusOhaAVa?dl=0

Students worked on chosen topics (illustrated in table below). Outcomes and presentations are shortly presented in Annex 8.

STUDENT CENTERED LEARNING

METHODOLOGY APPLICATION IN TEACHING AT MP DRM&FS

EPOKA UNIVERSITY, FACULTY OF ARCHITECTURE AND ENGINEERING DISASTER RISK MANAGEMENT AND FIRE SAFETY IN CIVIL ENGINEERING - MASTER ACADEMIC STUDIES				
No	**COURSE TITLE**	**TOPIC**	**APPLIED SCL METHODOLOGY**	**STUDENT CENTRED LEARNING OUTCOME**
1.	PROJECT PLANNING, MANAGEMENT AND COORDINATION	Tools and knowledge necessary to plan network schedules and budgets for construction project. Work Breakdown structure, Critical path scheduling, Stochastic scheduling, Resource levelling, and project costs. Project planning with emphasis on legal aspects of various types of delivery methods and contract types. (3 projects+ Achievement tests)	Students are working in groups of 3, they select the group members. The group divide the tasks between the members. Each group prepares the paper and the presentation which will be discussed with other students and teacher. Teachers provide the case study and literature, theoretic basics and regular consultations, beside the regular lectures. Students are working independently on teamwork- bases. Tasks: Competitive bidding Contracts, Types of FIDIC form of construction contract, Output based maintenance contracts, PPP Agreements, Project planning and management with PERT/CPM, Cost Plan, Project Time- Cost Trade-off. Achievement Test: used multiple-choice, true/false, and short answer format questions.	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Learning how to think critically and solve problems; • Working collaboratively; • Ability to develop hierarchical work breakdown structures, as well as the physical preparation of each of these components for an actual project • Ability to develop CPM schedules and PERT analysis • Ability to prepare cost and resource loaded schedules to measure and forecast project cost performance • Ability to interpret planning with emphasis on legal aspects of

				various types of delivery methods and contract types • Communication creativity and effectively • Relationship Skills; • Responsibility to work and to the co-workers • Responsible decision-making
2.	RISK ANALYSIS IN DECISION MAKING PROCESS	Nature, typology and dynamics of risk & risk management, apply them to strategic and tactical problems and illustrate their tools and techniques (4 projects+ Achievement tests)	Students are working in groups of 3, they select the group members. The group divide the tasks between the members. Each group prepares the paper and the presentation which will be discussed with other students and teacher. Teachers provide the case study and literature, theoretic basics and regular consultations, beside the regular lectures. Students are working independently on teamwork- bases. Tasks: Disaster Risks and impact on society, Risk Identification Tools, Qualitative and Quantitative Risk Analysis Tools, Multi hazard risk assessment and decision making, Risk Response Planning, Risk Monitoring and Controlling	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • Mastering academic content; • Learning how to think critically and solve problems; • Working collaboratively; • Understand and be able to apply the concept of risks and uncertainties in construction industry • Evaluate the risk-based situations applying concepts of hazard and vulnerability assessment • Understand and be able to apply tools for identification, analysis and evaluation, and to develop responses to project risks • Integrating multi hazards risk assessment to solve problems with realistic constraints • Communication creativity

				and effectively • Relationship Skills; • Responsibility to work and to the co-workers • Responsible decision-making
3.	EVACUATION CALCULATION MODELING	Panic, Characteristics of people movement through smoke, Human behaviour in fire theories: decision-making, response to alarm systems, information, and environmental cues, Evacuation time analysis: Components of evacuation time, Transitions, Queues, evacuation modelling	Different teaching methods (lectures, dialogue, group work, laboratory exercises) are combined. The aim is to develop learning as active process and focus on student's innovation. Different forms of feedback (e.g. oral consultancy sessions, face to face dialog; written-comments to reports in a form of track-changes, e-mail communication) are used to communicate with the students. Specifically, the methodology includes: Learn the principles of fire life safety concepts, design the buildings with concepts of fire safety evacuation, include computational simulation methods in fire analysis, design evacuation systems in project design integration	• Employ a variety of teaching tools, with the aim to stimulate interest and motivation in the students, thus boosting the learning process. • *Develop schemes to get students involved in learning: Motivation to initiate learning, and to maintain engagement during learning.* • *Work actively with course content to have a clear structure and learning objectives- students can explore and navigate the course* • *Continuous feedback and consultancy to students in different roles as expert, facilitator, advisor – showing very high interest on their progress in solving the given tasks and problems as well as on their learning process.* • *Provide students freedom to make their own learning-related choices, which is important if students are to become independent lifelong learners and select their on approach to the problem.* • *Reflective teaching:*

				Working on solutions based on case-by case situation.
4.	Structural fire safety	Design of structural for fire safety	FIRSTLY, HAVE BEEN PRESENTED LECTURES ON HOW TO ANALYSE THE STRUCTURES FOR FIRE SAFETY. THEN THROUGH SEMINARS ARE PRESENTED CASES STUDIES. THESE KNOWLEDGES ARE EVALUATED THORUGHT MIDTERM AND FINAL EXAM. WHILE ACTIVE AND PASSIVE STRATEGIES OF PROTECTION OF STRUCTURES FROM FIRE HAVE BEEN PRESENTED BY STUDENTS IN FORM OF PROJECTS.	1. Able to evaluate the fire development in a compartment 2. Able to evaluate protected and unprotected steel structures 3. Able to evaluate protected and unprotected reinforced concrete structures 4. Able to evaluate protected and unprotected composite structures 5. Able to evaluate protected and unprotected timber structures 6. Able to evaluate protected and unprotected masonry structures 7. Able to evaluate protected and unprotected aluminium structures
5.	REINFORCED CONCRETE STRUCTURES	Understanding the behaviour of reinforced concrete structural elements, mechanical properties of concrete; ultimate strength theory of flexure and shear;	The course content is delivered through: Lectures, Presentations, Handouts from various sources. -Tutorials of finite element modelling -Students are assessed based on their individual assignments and exams as well as a term project where	• Mastering academic content; • Learning how to think critically and solve problems; • Working collaboratively; • Understand and be able to apply various concepts of reinforced concrete design • Ability to design simple

		concepts of design and proportioning sections for strength and serviceability; background of Code specification requirements; strength design of beams, columns, and members under combined axial load and bending based on Eurocodes. Knowledge of these concepts is critical to be known before conducting any further fire design or analysis. *Content is tailored for DRM&FS students who have not taken Reinforced concrete course in their studies.	there is an integration of all different concepts in a single project	structural member such as beam, column and slab. • Ability to understand and design reinforcement detailing. • Communication creativity and effectively • Relationship Skills; **8.** Responsibility to work and to the co-workers
6.	Landscape Perspectives in DRM&FS	GIS Applications in Wildfire and Forest fire risk assessment	Following a Project Based Learning (PBL) and Problem Oriented Research (POR) methodology the students are introduced into an interactive working environment. The students have selected a specific case study among Skopje, Novi Sad and Banja Luka. Students were self-organised	*Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to do or demonstrate as a result of completing a program of study, a course or lesson.* • To understand the concepts of hazard assessment, elements at

			into groups of 4 members. The group divide the tasks between the members. In case of guidance they have been assisted by the instructor. During the practical sessions of the semester each student is responsible for practicing and producing the GIS materials. Finally as a group they have to prepare the text-based paper, the set of risk maps, the presentation, and the poster. Each member is the primary responsible person for one of the above tasks. The grade of the final term work is the same for all the group members. While during the semester each student is evaluated individually for individual assignments. The students are continuously encouraged by being considered and treated as colleagues more than students.	risk mapping, vulnerability assessment, and risk assessment • Formulate the spatial data requirements for a specific type of risk assessment • Understanding the importance and utility of GIS technologies in DRM & FS • Generate risk maps using qualitative and quantitative methods in GIS • Understanding the Multi-variable and multi-criteria character of risk and vulnerability • Understanding the inter-dependency of diverse hazards with each-other • Experiencing a Problem Oriented Research (POR) process • Being able to work in group and contribute to a common research • Being able to prepare the term research work into at least a conference paper
7.	DURABILITY OF CONCRETE	Understanding of the aspects of environment affecting the durability of concrete such as; atmospheric	The course content is delivered through: Lectures, Presentations, Handouts from various sources etc. The Lectures are organised in the form of open	• Mastering academic content; • Learning how to think critically and solve problems regarding concrete durability; • Understand and be able

		environment, sea environment, soil environment, industrial environment. Aspects of Material; corrosion of reinforcing bar, alkali - aggregate reaction, carbonation, fire damage, soundness, corrosion, fire, dimensional stability, pore structure-permeability, chlorine ion permeation, frost resistance. shrinkage, creep, sulphate attack, resistance to heat and fire, acid attack etc	discussions in order to get a direct feed back of the students related to the respective topic. -Students are assessed based on their individual assignments and exams as well as a final presentation where there asked to analyse and present the causes of deterioration of a reinforced concrete structure.	to apply various concepts of concrete durability • Ability to analyse RC structures and member and define their causes of deterioration. • Ability to understand the problems arising from lack of concrete durability • Communicate creativity and effectively
8.	FLOOD RISK ASSESSMENT	Flood hazard and flood risk assessment and management. Frequency analysis and delineation of the water profiles techniques. Delineating the floodplain area, techniques and analysis. Flood risk and Flood hazard map. Flood mitigation and measures.	The course is a combination of lectures, dialogue, group work and exercises. Students work for the projects in individual basis. They presented their work and during the classes they have the opportunity to discuss their result and to expand their knowledge on the subject. Of a very interest for the student was the invitation of the experts in floods assessment and	• Understand the concepts of flood risk assessment. • Ability to assess the flood frequencies • Ability to delineate the floodplain area • Understand the importance of soft and hard measures • Learning to and understand how to apply some principles of flood management • Critical thinking and problem-solving understanding

		Structural adjustments to flood risk. (2 projects+ final exam)	management. Students are assessed based on their performance, work done with the assignments and projects and the final exam.	• Communicate creativity and effectively Importance of life long learning process

3. ANALYSIS AND CONCLUSION

Training in teaching methodologies were successful in preparation for new Master study programs developed by Partner institutions in the field of Disaster Risk Management and Fire Safety Engineering. Students had many benefits from applied methodologies. All trainings were held according to plan and project objectives and were attended by the staff from all Partner countries.

Although this approach takes more time and effort of both teachers and students than traditional teaching methods, students are not only the consumers of what is presented by the teaching staff, but they are directly involved, and the results of such an engagement are far more rewarding.

Besides mastering academic content, they learned how to think critically and solve problems and work collaboratively, and also they gained relationship skills, had a responsibility to work and the co-workers and had to make responsible decisions.

ANNEXES 1-8

ANNEX 1

K-FORCE SMS TRAINING MOBILITY SCHEDULE - SPRING SEMESTER 2018

HOST INSTITUTION	MOBILITY PERIOD	TOPIC	CONTACT PERSON	CANDIDATES
DTU, Kopenhagen, Denmark Civil Engineering Department	Arrival date: 11 March Training: 12 March – 23 March Departure date: 23 March	FIRE SAFETY DESIGN	FIRE SAFETY DESIGN Luisa Giuliani lugi@byg.dtu.dk Frank Markert fram@byg.dtu.dk	UNS - 1 EPOKA - 1 VTSSS NS - 1 UTZ - 1 UBL - 1
UkiM, Skopje, FYR Macedonia	Arrival date: 10 April Training: 11 April – 21 April Departure date: 22 April (Working Saturdays)	Selected lectures and workshoop: • SEISMIC RISK, EARTHQUAKE, • FIRE SAFETY OF STRUCTURES, • PROJECT RISK MANAGEMENT	Meri Cvetkovska cvetkovska@gf.ukim.edu.mk	UNS - 1 EPOKA - 1 UTZ - 1 UT - 1 UBL - 1 VTSSS NS - 1
UNIZA, Žilina, Slovakia	Arrival date: 22 April Training: 23 April – 4 May Departure date: 4 May	Fire safety engineering – Fire modelling Economics – Risks and resilience	Lenka Sivakova lenka.sivakova@fbi.uniza.sk cc. Katarina Holla katarina.holla@fbi.uniza.sk	UNS - 1 EPOKA - 1 UTZ - 1 UT - 1 UBL - 1 VTSSS NS - 1
AAL University, Aalborg, Denmark	Arrival date: 6 May Training: 7 May -18 May Departure date: 18 May	1st week- preparation for JCSS course 2nd week - JCSS Advanced Course on Systems Risk Modelling and Analysis in Engineering Decision Making	Michael Faber Nielsen mfn@civil.aau.dk IMPORTANT: Contact prof. Michael Faber before signing up for a course according to flyer instructions - K-FORCE trainees are exempt from paying registration fees	UNS - 1 EPOKA - 1 UTZ - 1 UT - 1 UBL - 1
LUND University	Arrival date: 3 June Training: 4 June – 15 June Departure date: 15 June	Fire safety (evacuation) Disaster Risk Management	Enrico Ronchi enrico.ronchi@brand.lth.se Henrik Hassel henrik.hassel@risk.lth.se	UNS - 2 UT - 1 EPOKA - 1

ANNEX 2

KnowledgeFOr ResilientsoCiEty

CONSORTIUM MEETING, WBB MEETING & S-FORCE SYMPOSIUM

University of Novi Sad

September 26-29, 2018

2nd Day – September 27, 12.00 – 13.00

VENUE: UNS, Faculty of Technical Sciences, Building: Department for Civil Engineering and Geodesy, Address: Sime Miloševića 12, Novi Sad, First floor, Amphitheatre

AGENDA ITEM: STUDENT CENTRED LEARNING METHODOLOGIES WORKSHOP

Prepared by DTU in cooperation with Lund & AAL
Presenter: Frank Markert, DTU-BYG (Civil Engineering Department)
Contributions by Luisa Giuliani, and Per Goltermann

REPORT ON WORKSHOP ACTIVITIES AND RESULTS

The introductory presentation by Frank Markert Ph.D., Associate Prof. at DTU-BYG, explained the implementation of the concept of Project Families in interdisciplinary courses in Building Design & Processes at the Civil Engineering Department. This model of student centred learning approach has been successfully conducted for several years in this HEI. Consequently, it was awarded the DTU educational price in 2017.

The representatives of the WBC HEIs at the meeting workshop then formed three working groups to discuss the concept of project families focusing on the following issues:

- *What are the pros and cons for the project family approach conducted at your HEI?*
- *What other student centred methods are applied to your HEI?*
- *Plan a potential project family thesis project for 2019. What student centred methods will be included?*

The group discussions took about 20 minutes, while LU and AAL representatives acted as moderators to the discussions with their experiences regarding the topic. After that, one speaker from each group briefly highlighted the main results of their discussion.

Working group 1
Members from UT (Elona Pojani, Dorina Koci, Mariola Kapidani), and EPOKA (Miriam Ndini, Sokol Dervishi), Moderator Enrico Ronchi, from LU

Working group 2
Members from UNTZ (Edisa Nukić, Aneta Jokić, Damir Zenunović, Rijad Šišić), and UNS (Slobodan Kolaković, Mirjana Laban, Ivan Lukić, Mirjana Malešev, Igor Džolev)
Moderator: Frank Markert, from DTU

Working group 3

- Members from UBL (Gordana Broceta, Gordana Jakovljevic, Dragana Zeljic) and VTSNS (Branka Petrovic);
- Moderator, Linda Nielsen from AAL.

Generally, the concept of project families suits the mentality of the people from the Balkans as empathy, willingness to help and collaborate, as well as the sense of togetherness, are deeply incorporated in most individuals. However, this seems to be the only reason pro the project family approach the group has found in this very short discussion. There are far more cons, and they include: large student groups that enable closer student connections; no additional teacher education and training on pedagogical issues, particularly in technical institutions of the HE system; few laboratories, usually small and inadequate for team work; the proposed form of student centred learning is not applicable to all courses.

Although the Bologna process in HE principally puts the student in the centre of the teaching/learning activities, group work and team building are not emphasised. It is individual students and their needs that are to be met. Even if grouped in teams, they get directions and precise instructions from the teaching staff concerning their tasks, so there is little space for them to deal with a problem as a creative team, or interdependent individuals relying on one another when solving the same or different problems.

Workgroup 1:

Group learning methodologies via project family approach are efficient instruments for student motivation, encouraging active learning, having critical-thinking, and decision-making skills. However, a careful planning needs to be made in order not to create student frustration. At first, group arrangement needs to be carefully implemented, to have a comfortable environment. The objectivity and the theme of the work needs to be challenging. Otherwise, project family approach can create complex scenarios, difficult to manage. Secondly, the work for each student of the group work (project family approach) should arouse students' field of research interest. In addition, the project family approach should encourage involvement and a very fair work division.

Sometimes, it is very difficult to share the work in equal distribution and complexity. In addition, the group size is a determinant factor in the work distribution. It is also challenging while explaining the tasks clearly for each student. Project Family, if not designed appropriately, approach might create dependency and less responsibility for the work done, as the work done is shared with the others. Other difficult situations such as: members of the project family not contributing, ineffective communication and different personalities can create complex situations which might create difficulties in managing the work as a family.

Workgroup 2:

The most suitable course for applying the project family concept could be Professional Practice that is a compulsory course in all institutions educating young people in engineering. Student placement in companies offers a variety of real situations they have to handle, but being students, they rarely do it by themselves. There are supervisors in the companies and their teacher-mentors at schools. Nevertheless, peer to peer help is always desirable, avoids barriers of the teacher/supervisor relationship with the student. Hence, the project family approach engaging fellow students in problem discussion and concrete support regarding better understanding of tasks they all face at work would give an additional dimension to student placement. It is applicable in cases when several students are in the same enterprise, but could work even if they are all in different companies. Brainstorming, workshop, discussion, Q&A session, debate, etc. could be included as segments of the project family approach.

Workgroup 3:

PROS:

- students with different background can work together
- it trains student for team work
- develops responsibility
- good for teambuilding
- oportunity to recognize individual students potentials
- oportunity to identify students who are not willing to work as a team (or individualy)

CONS:

- how to evaluate individual effort and involvement? (students are usually backing up each other)
- our student are often employed and busy – hard to organize project family (to group them together)

Example of our project family:

Project: **Fire Risk Assessment for Public Building**; students are divided in 3 groups

1st group tasks:

- group of students collect Project design documentation;
- then they conduct building inspection and confirmation of design plans;
- fire resistance assesment – constructural fire safety and fire performance of building materials.

2nd group tasks:

- group has to identify quantity and quality of flammable and explosive materials;
- determine properties of dangerous materials (if found);
- calculation of fire load.

3rd group:

- use various software packages to simulate fire and evacuation.

All 3 groups:

- Students get together and define recommendations and conclusions.

Co-funded by the
Erasmus+ Programme
of the European Union

ANNEX 3

P1 - UNIVERSITY OF NOVI SAD

Course title: ***Evacuation calculation and modelling***

Topic: ***Evacuation plans in buildings***

5 student projects – 5 case studies – buildings in the campus of University of Novi Sad - Faculty of Technical Sciences

Projects' presentations were organized in May 2019

<u>1. Case study – F block:</u>

Simulation Results		
Mode	**Steering**	**SFPE**
Nr. Of Occupants	316	316
Evacuation Time (s)	317.1	362.8
Completion Times for All Occupants (s)		
Min:	7.2	6.1
Max:	317.1	362.8
Average:	151.8	166.9
Standart Deviation:	93.6	109.6
Travel Distances for All Occupants (m):		
Min:	9.2	8.5
Max:	143.4	87.5
Average:	68.6	49.8
StdDev:	30.7	17.8

2. Case study – Research and Technology Center:

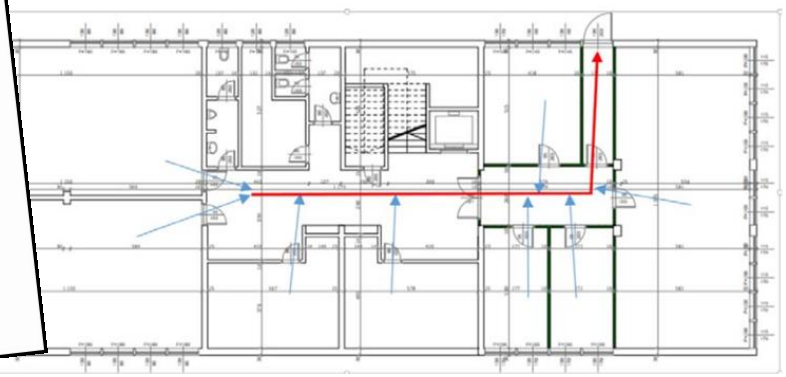
UNIVERZITET U NOVOM SADU
FAKULTET TEHNIČKIH NAUKA
U NOVOM SADU

Ispitni projekat
ISTRAŽIVAČKO TEHNOLOŠKI CENTAR

Predmet: Proračun i modelovanje evakuacije
Profesor: dr Laban Mirjana
Asistenti: Draganić Suzana
Šupić Slobodan

Studenti:
Milinčić Stanšić Gorana zp 10/2018
Stojanović Jovana zp 16/2018
Milić Jelena zp 8/2018
Minić Jelena zp 14/2018

Novi Sad, 2019



3. Case study – Administrative building:

4.1 Scenario I

Case I – Evacuation of the complete building through the external staircase

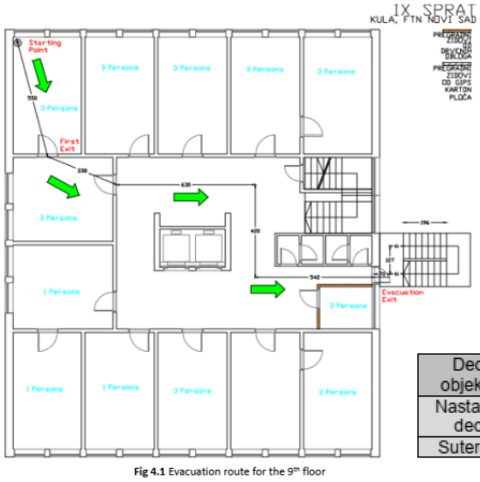


Fig 4.1 Evacuation route for the 9th floor

Slika 17. Akter 00266

Deo objekta	Posmatrani scenario		
	Scenario 1	Scenario 2	
Nastavni deo	1390,91	875,91	
Suteren	242,08	-	121

UNIVERZITET U NOVOM SADU
FAKULTET TEHNIČKIH NAUKA
U NOVOM SADU

Departman za građevinarstvo i geodeziju
Studijski program: Upravljanje rizikom od katastrofalnih događaja i požara

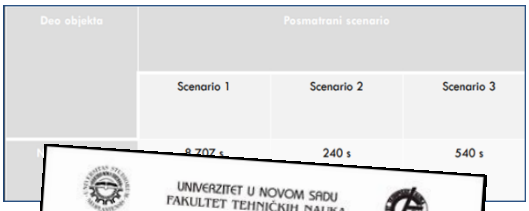
Predmetni projekat
Predmet: Planiranje i modelovanje
KOMPARATIVNA ANALIZA VREMENE POTREBNOG ZA EVAKUACIJU KORISNIKA OBJEKTA DOBIJENOG RAČUNSKIM I RAČUNARSKIM PUTEM

Studenti:
Ivan Petrović
Danijela Matić
Marko Jovanović
Strahinja Bubulj

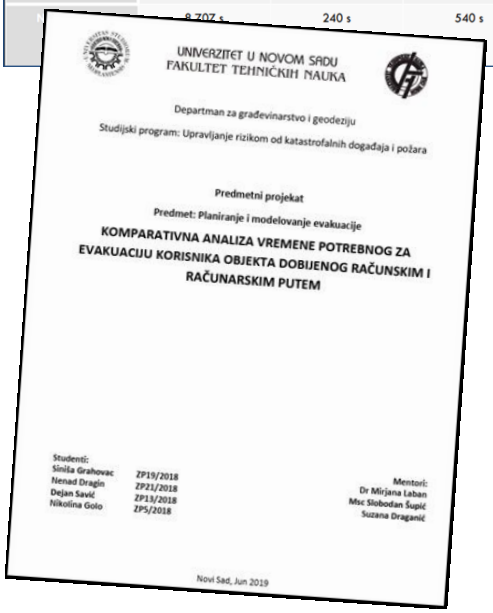
Profesor:
Prof. Dr Mirjana Laban

NOVI SAD, 2019.

4. Case study – Teaching block:



Deo objekta	Posmatrani scenario		
	Scenario 1	Scenario 2	Scenario 3
	8.707 s	240 s	540 s



UNIVERZITET U NOVOM SADU
FAKULTET TEHNIČKIH NAUKA

Departman za građevinarstvo i geodeziju

Studijski program: Upravljanje rizikom od katastrofalnih događaja i požara

Predmetni projekat

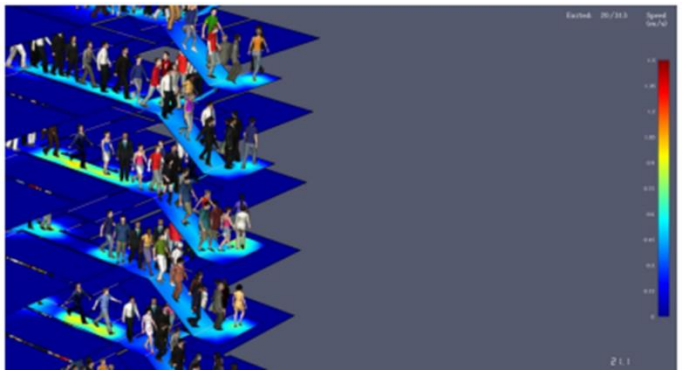
Predmet: Planiranje i modelovanje evakuacije

KOMPARATIVNA ANALIZA VREMENE POTREBNOG ZA EVAKUACIJU KORISNIKA OBJEKTA DOBIJENOG RAČUNSKIM I RAČUNARSKIM PUTEM

Studenti:
Siniša Grahovac ZP19/2018
Nenad Dragin ZP21/2018
Dejan Savić ZP13/2018
Nikolina Golo ZP5/2018

Mentori:
Dr Mirjana Laban
Msc Slobodan Šupić
Suzana Draganić

Novi Sad, Jun 2019



5. Case studies – Administrative building – EPOKA University SMS students:

UNIVERZITET U NOVOM SADU
FAKULTET TEHNIČKIH NAUKA U NOVOM SADU

Faculty of Technical Sciences

Disaster Risk Management and Fire Safety

Subject: Evacuation Calculation Modelling

CALCULATION OF TIME NEEDED FOR OCCUPANTS' EVACUATION FROM FTS ADMINISTRATIVE BUILDING

Seminar Work

Students:
Andi Gjoçi
Kevin Zaçe
Ormal Lishi

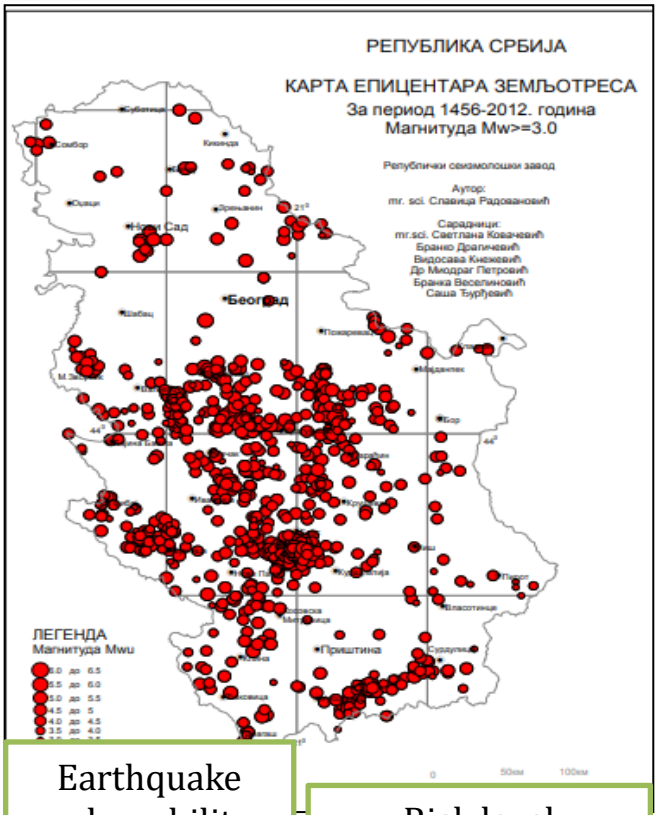
Mentors:
Ass.Prof Mirjana Laban
Msc Suzana Draganić
Msc Slobodan Supić

Novi Sad
June,2019

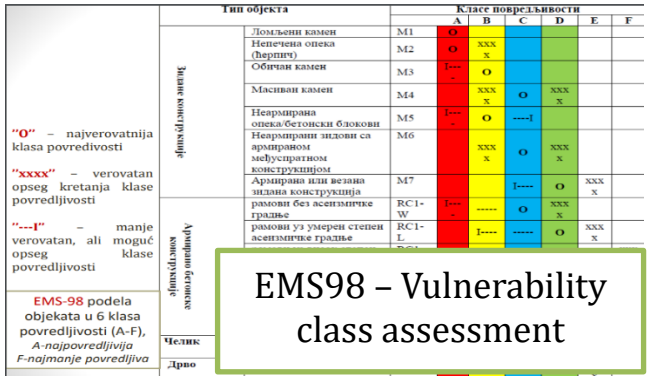
Course title: ***Protection and rescue plans***

Topic: ***Vulnerability assessment of the building***
1 student project

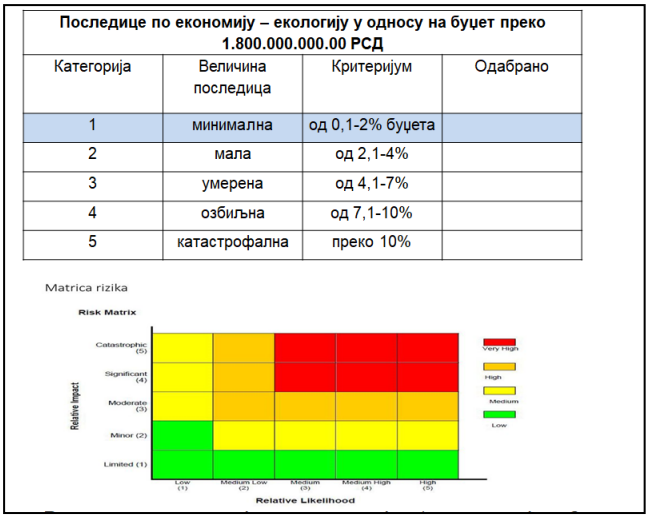
<u>Earthquake vulnerability assessment of the Faculty of Technical Sciences</u>



Earthquake vulnerability assessment



EMS98 – Vulnerability class assessment



Последице по економију – екологију у односу на буџет преко 1.800.000.000.00 РСД			
Категорија	Величина последица	Критеријум	Одабрано
1	минимална	од 0,1-2% буџета	
2	мала	од 2,1-4%	
3	умерена	од 4,1-7%	
4	озбиљна	од 7,1-10%	
5	катастрофална	преко 10%	

Matrica rizika

Risk level calculation

ANNEX 4

P2 - HIGHER EDUCATION TECHNICAL SCHOOL OF PROFESSIONAL STUDIES IN NOVI SAD

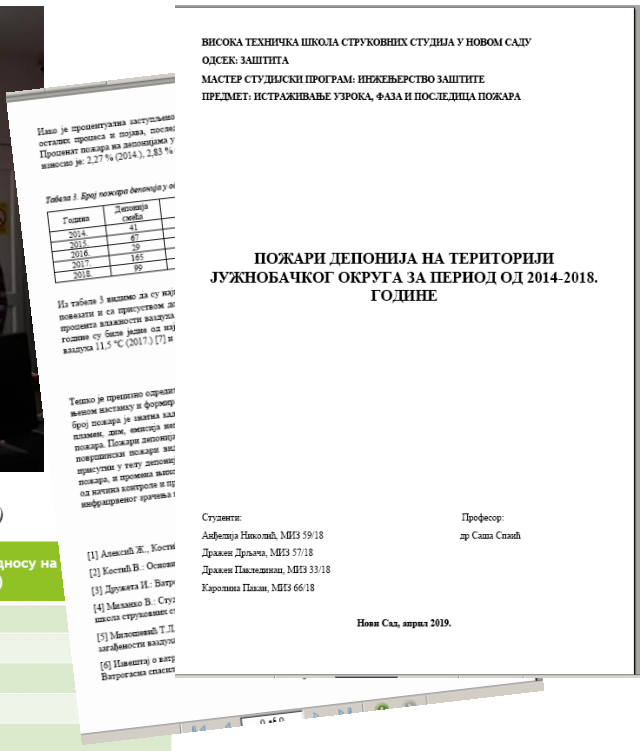
Course title: ***Investigation of causes, phases and consequences of fire***

Topic: ***Vulnerability assessment of the building***
5 student projects

Each of the topics was discussed and developed within one project, so there were five projects altogether, and they all included recent data referring to the South Backa District of the Autonomous Province of Vojvodina, where the VTSNS is situated. The area of the District is approximately 4,000 km2, and there are more than 600,000 inhabitants.

Five papers on topics on fire safety were produced during March 2019.
The presentation of student achievements was organized on April 14, 2019.
The defense of papers in front of the entire group was dynamic and all team members participated.

1. Case study - Landfill fires in South Backa District in 2014-2018



ВИСОКА ТЕХНИЧКА ШКОЛА СТРУКОВНИХ СТУДИЈА У НОВОМ САДУ
ОДСЕК: ЗАШТИТА
МАСТЕР СТУДИЈСКИ ПРОГРАМ: ИНЖЕЊЕРСТВО ЗАШТИТЕ
ПРЕДМЕТ: ИСТРАЖИВАЊЕ УЗРОКА, ФАЗА И ПОСЛЕДИЦА ПОЖАРА

ПОЖАРИ ДЕПОНИЈА НА ТЕРИТОРИЈИ ЈУЖНОБАЧКОГ ОКРУГА ЗА ПЕРИОД ОД 2014-2018. ГОДИНЕ

Студенти:
Анђелија Николић, МИЗ 59/18
Драженка Дрљача, МИЗ 57/18
Дражен Павлединац, МИЗ 33/18
Каролина Пакан, МИЗ 66/18

Професор:
др Саша Спасић

Нови Сад, април 2019.

Табела 2. Број пожара депонија у односу на пожаре на отвореном (%)

Година	Депонија смећа	Укупно пожара на отвореном	Расподела пожара депонија у односу на отвореном (%)
2014.	41	1.116	3,67
2015.	67	1.147	5,84
2016.	29	978	2,97
2017.	165	1.739	9,49
2018.	99	1.555	6,37

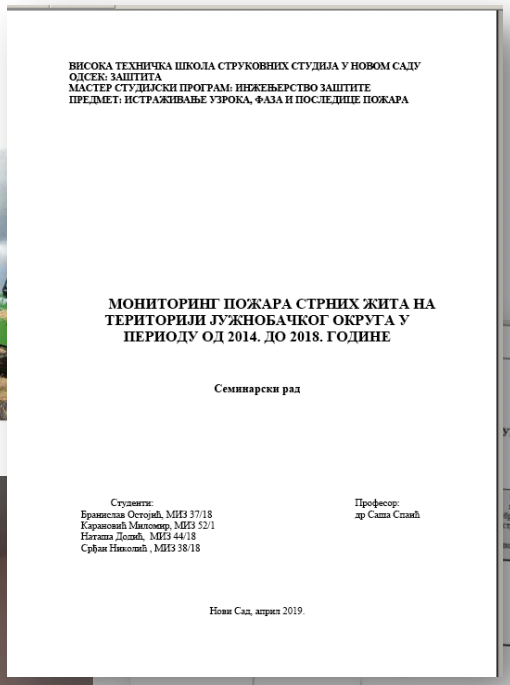
2. Case study - Monitoring of grain crop stubble fires in South Backa District in 2014-2018

5. ПОСТУПАК У СЛУЧАЈУ ПОЖАРА И ТАКТИКА ГАШЕЊА ПОЖАРА

У случају да дође до пожара исти се објављује гласом:
„ПОЖАР – ГОРИ ЖИТО“ или „ПОЖАР – ГОРИ КОМБАЈН“

Слика 9. Жито у пламену[8]

Слика 10. Комбајн у пламену[9]



ВИСОКА ТЕХНИЧКА ШКОЛА СТРУКОВНИХ СТУДИЈА У НОВОМ САДУ
ОДСЕК: ЗАШТИТА
МАСТЕР СТУДИЈСКИ ПРОГРАМ: ИНЖЕЊЕРСТВО ЗАШТИТЕ
ПРЕДМЕТ: ИСТРАЖИВАЊЕ УЗРОКА, ФАЗА И ПОСЛЕДИЦЕ ПОЖАРА

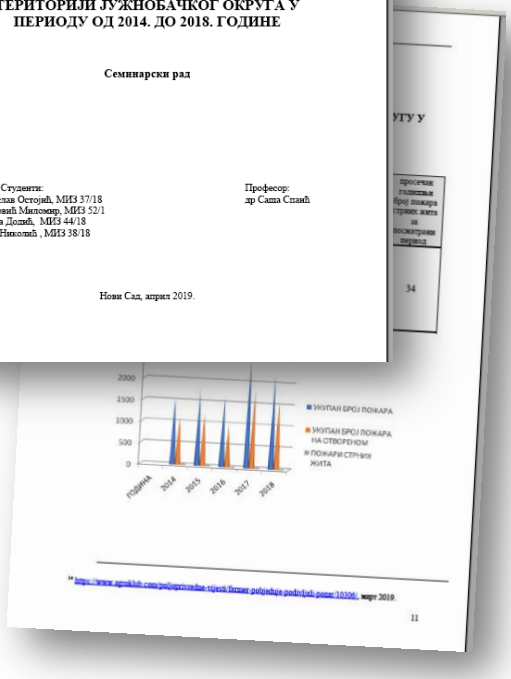
МОНИТОРИНГ ПОЖАРА СТРНИХ ЖИТА НА ТЕРИТОРИЈИ ЈУЖНОБАЧКОГ ОКРУГА У ПЕРИОДУ ОД 2014. ДО 2018. ГОДИНЕ

Семинарски рад

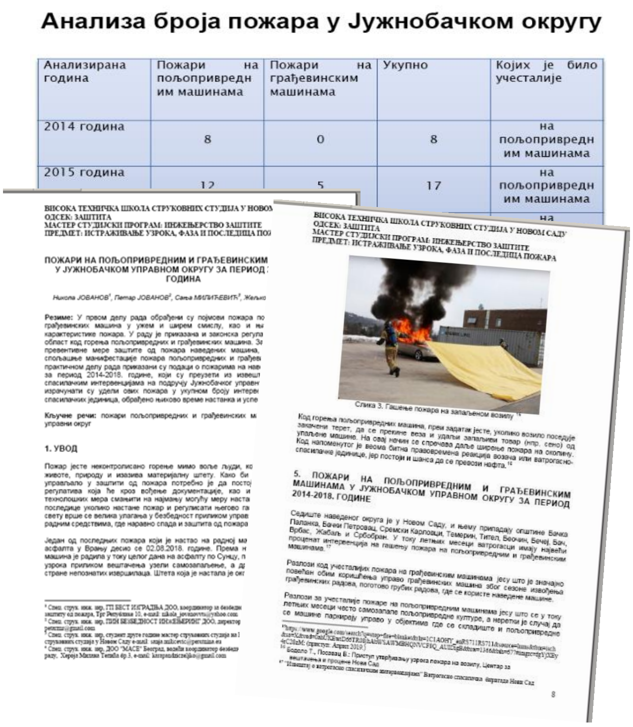
Студенти:
Бранислав Остојић, МИЗ 37/18
Карановић Миломир, МИЗ 52/1
Наташа Делић, МИЗ 44/18
Срђан Николић , МИЗ 38/18

Професор:
др Саша Спасић

Нови Сад, април 2019.



3. Case study - Fires of agricultural and construction machinery in South Backa District in 2014-2018



Анализа броја пожара у Јужнобачком округу

Анализирана година	Пожари на пољопривредним машинама	Пожари на грађевинским машинама	Укупно	Којих је било учесталије
2014 година	8	0	8	на пољопривредним машинама
2015 година	12	5	17	на пољопривредним машинама

ВИСОКА ТЕХНИЧКА ШКОЛА СТРУКОВНИХ СТУДИЈА У НОВОМ САДУ
ОДСЕК: ЗАШТИТА
МАСТЕР СТУДИЈСКИ ПРОГРАМ: ИНЖЕЊЕРСТВО ЗАШТИТЕ
ПРЕДМЕТ: ИСТРАЖИВАЊЕ УЗРОКА, ФАЗА И ПОСЛЕДИЦА ПОЖАРА

ПОЖАРИ НА ПОЉОПРИВРЕДНИМ И ГРАЂЕВИНСКИМ У ЈУЖНОБАЧКОМ УПРАВНОМ ОКРУГУ ЗА ПЕРИОД ГОДИНА

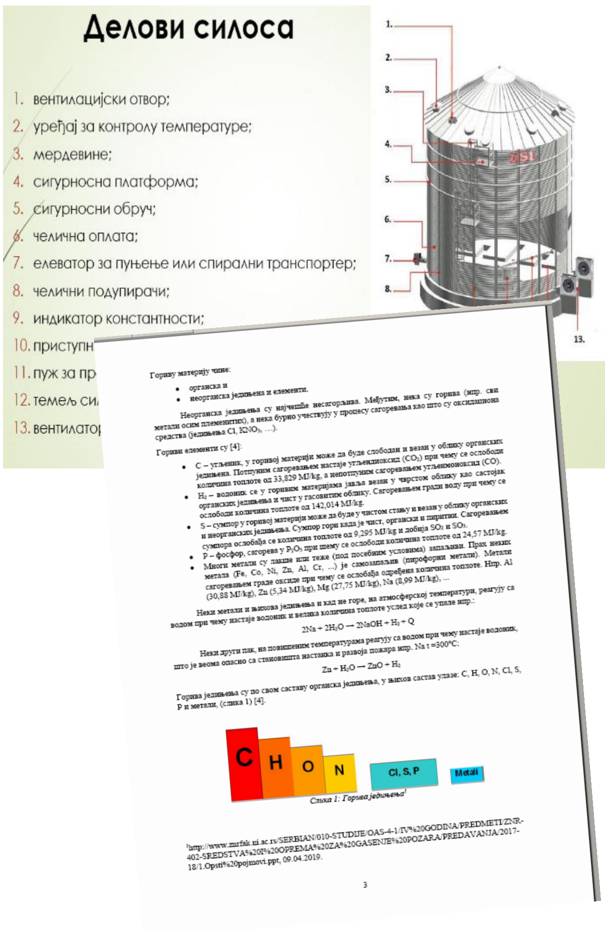
Никола ЈОВАНОВ[1], Петар ЈОВАНОВ[2], Сања МИЛИЋЕВИЋ[3], Жељко

1. УВОД

Слика 3. Гашење пожара на запаљеном возилу

5. ПОЖАРИ НА ПОЉОПРИВРЕДНИМ И ГРАЂЕВИНСКИМ МАШИНАМА У ЈУЖНОБАЧКОМ УПРАВНОМ ОКРУГУ ЗА ПЕРИОД 2014-2018. ГОДИНЕ

4. Case study - Number of total fires and silo fires in South Backa District in 2014-2018



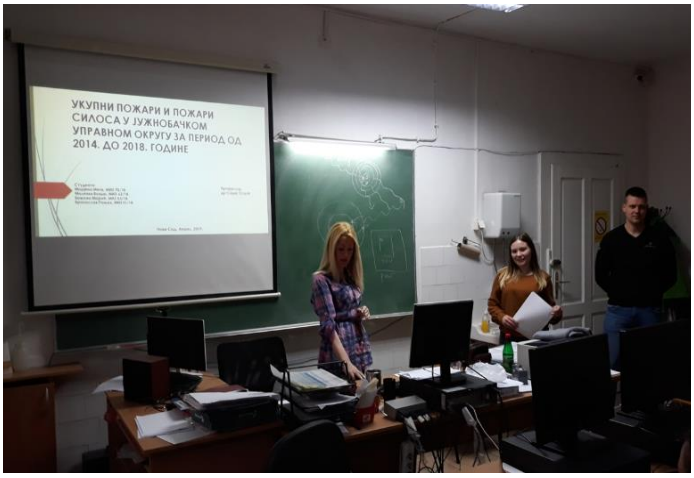
Гориву материју чине:

- органска и
- неорганска једињена и елементи.

Неорганска једињења су најчешће несагорљива. Међутим, нека су горива (нпр. сви метали осим племенитих), а нека бурно учествују у процесу сагоревања као што су оксидациона средства (једињења Cl, KNO_3, ...).

Горивни елементи су [4]:

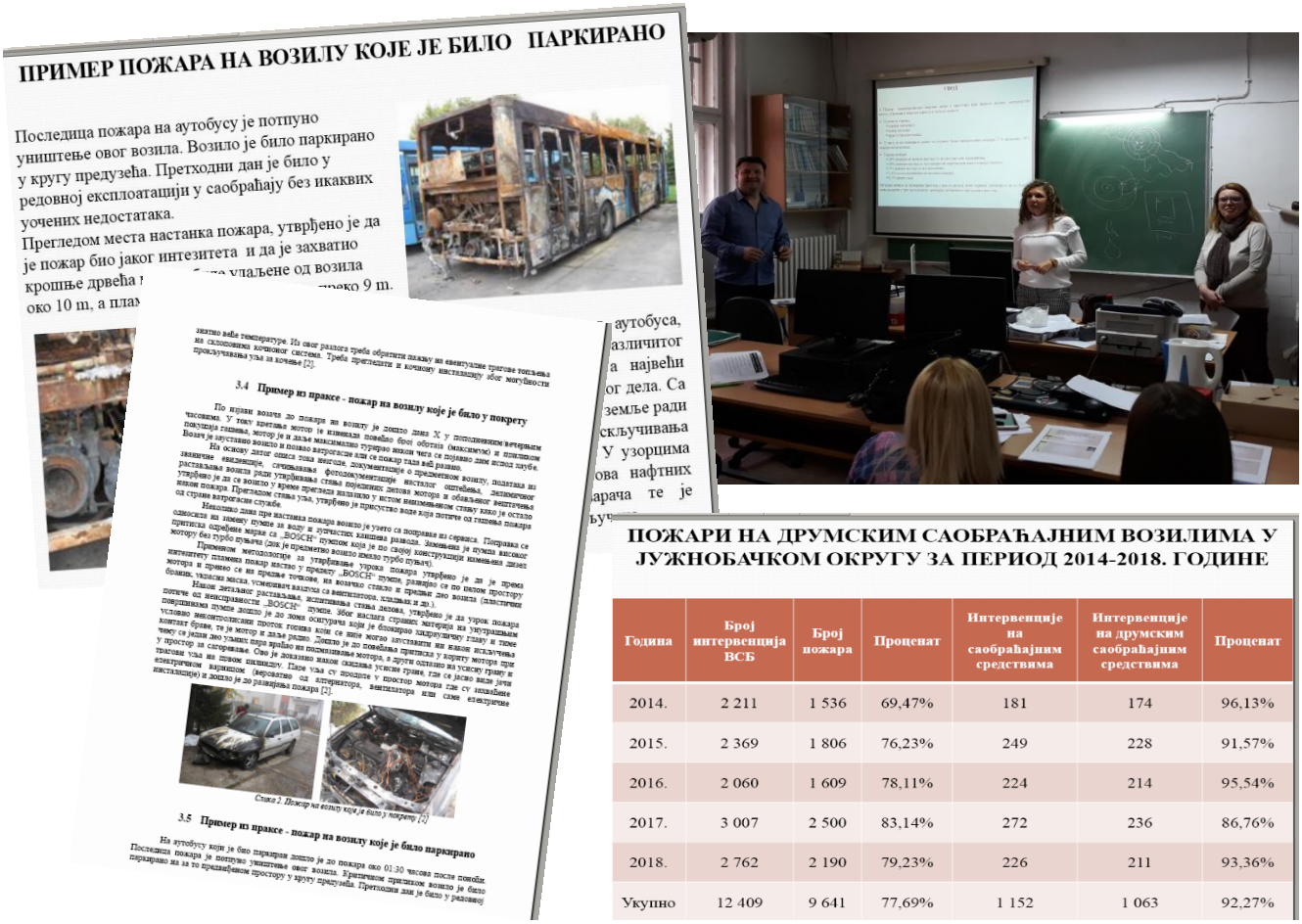
- C – угљеник, у горивој материји може да буде слободан и везан у облику органских једињења. Потпуним сагоревањем настаје угљендиоксид (CO_2) при чему се ослободи количина топлоте од 33,829 MJ/kg, а непотпуним сагоревањем угљенмоноксид (CO).
- H_2 – водоник се у горивим материјама јавља везан у чврстом облику као састојак органских једињења и чист у гасовитим облику. Сагоревањем гради воду при чему се ослободи количина топлоте од 142,014 MJ/kg.
- S – сумпор у горивој материји може да буде у чистом стању и везан у облику органских и неорганских једињења. Сумпор гори када је чист, органски и піритни. Сагоревањем сумпора ослобађа се количина топлоте од 9,295 MJ/kg и добија SO_2 и SO_3.



Евиденција пожара интервенција ватрогасно спасилачке јединице града Новог Сада за период од 2014. до 2018. године.

Година	Укупни пожари	Пожари силоса	Пожари силоса по години [%]
2014.	1536	3	0,19
2015.	1806	1	0,05
2016.	1609	6	0,37
2017.	2500	0	0
2018.	2190	0	0
Укупно	9641	10	0,1

5. Case study - Road vehicle fires in South Backa District in 2014-2018



ПРИМЕР ПОЖАРА НА ВОЗИЛУ КОЈЕ ЈЕ БИЛО ПАРКИРАНО

Последица пожара на аутобусу је потпуно уништење овог возила. Возило је било паркирано у кругу предузећа. Претходни дан је било у редовној експлоатацији у саобраћају без икаквих уочених недостатака.
Прегледом места настанка пожара, утврђено је да је пожар био јаког интензитета и да је захватио крошње дрвећа

ПОЖАРИ НА ДРУМСКИМ САОБРАЋАЈНИМ ВОЗИЛИМА У ЈУЖНОБАЧКОМ ОКРУГУ ЗА ПЕРИОД 2014-2018. ГОДИНЕ

Година	Број интервенција ВСБ	Број пожара	Проценат	Интервенције на саобраћајним средствима	Интервенције на друмским саобраћајним средствима	Проценат
2014.	2 211	1 536	69,47%	181	174	96,13%
2015.	2 369	1 806	76,23%	249	228	91,57%
2016.	2 060	1 609	78,11%	224	214	95,54%
2017.	3 007	2 500	83,14%	272	236	86,76%
2018.	2 762	2 190	79,23%	226	211	93,36%
Укупно	12 409	9 641	77,69%	1 152	1 063	92,27%

As a result of the applied SCL methodology two group student papers were selected and presented at the poster section of the 2nd K-FORCE Symposium in Tirana, in September 2019.

2ND INTERNATIONAL SYMPOSIUM K-FORCE 2019
Tirana, September 9, 2019
GRAIN CROP STUBBLE FIRES IN THE SOUTH BAČKA DISTRICT IN THE PERIOD 2014-2018

2ND INTERNATIONAL SYMPOSIUM K-FORCE 2019
Tirana, September 9, 2019
NUMBER OF TOTAL FIRES AND SILO FIRES IN THE SOUTH BAČKA DISTRICT IN THE PERIOD 2014-2018

ANNEX 5

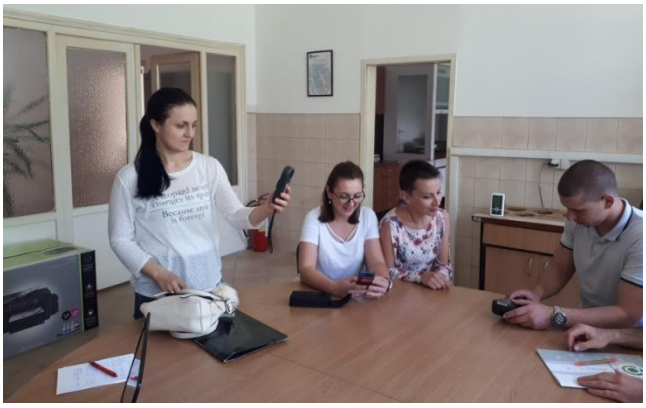
P3 – UNIVERSITY OF TUZLA

Course title: ***Risk analysis in desicion making process***

Topic: ***Landslides – task: identify directly and indirectly endangered structures, perform terrain analysis, identify potentially new landslides and produce a report***

Students were working in two groups:

- *1st group collected and prepared landslides data*
- *2nd group visualisation of collected data*
- *Together: risk assesment*



KARTA STABILNOSTI TERENA

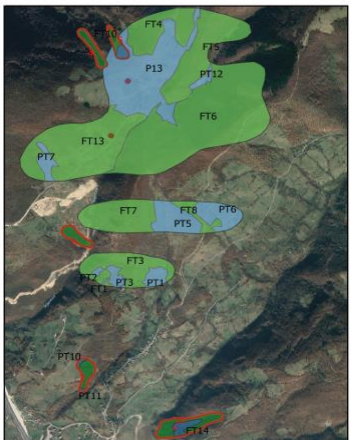
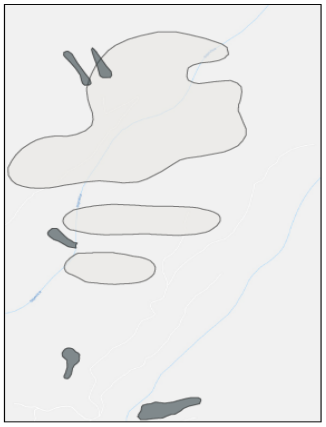


Tabela atributa sloja klizište				
id	broj	status	povrsina	napomena
	1	aktivan	41257	
	2	aktivan	16514	
	3	saniran	13425	
	4	aktivan	14508	
	5	aktivan	13707	

LEGENDA
namjena zemljista
Šumsko
poljoprivredno
objekti
kliziste
Stabilnost terena
nestabilan teren
uslovno stabilan
Google Satellite Hybrid

1:18917

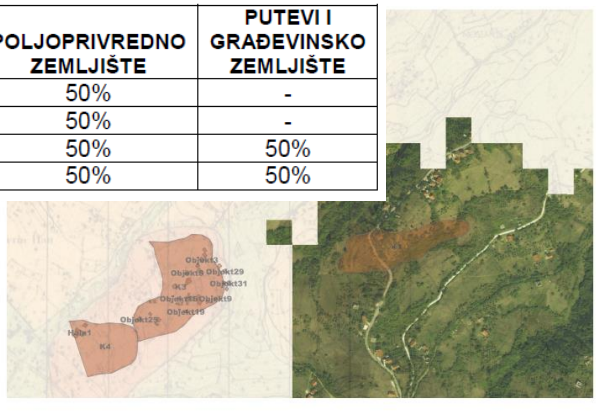
Tematska karta stabilnosti terena

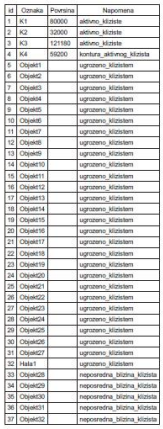


LEGENDA
Stabilnost terena
nestabilan teren
uslovno stabilan
Google Maps

1:22045

KLIZIŠTE	OBJEKTI	PRIVREDNI OBJEKTI	ŠUMSKO ZEMLJIŠTE	POLJOPRIVREDNO ZEMLJIŠTE	PUTEVI I GRAĐEVINSKO ZEMLJIŠTE
K1	-	-	50%	50%	-
K2	-	-	50%	50%	-
K3	100%	-	-	50%	50%
K4	100%	100%	-	50%	50%





100 0 100 200 300 400 m

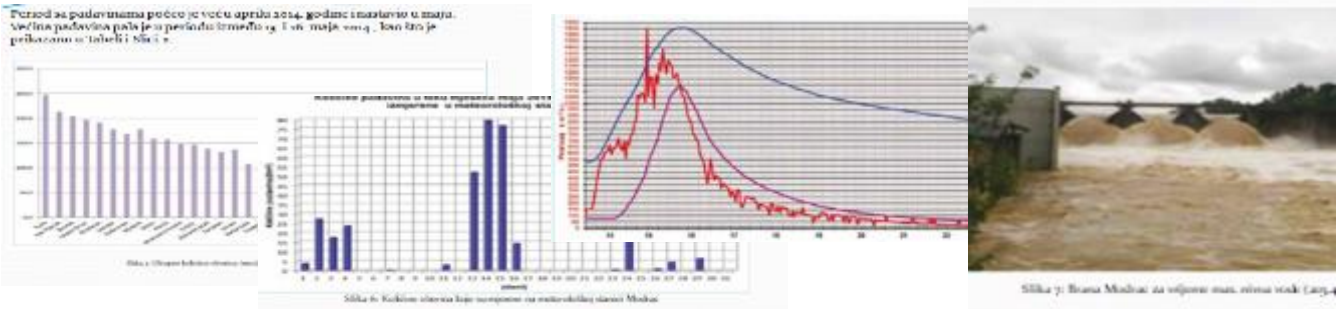
Legenda
10-1
Klizista [37]
Bing Aerial
Klizista
DTM_primjer
320.262
939.618

Course title: ***Community resilience to hazards***

Topic: ***Floods 2014***
2 student projects

<u>1. Case study - Floods in Serbia 2014, case study Obrenovac</u>

<u>2. Case study - Response to floods in Bosnia 2014, analysis</u>

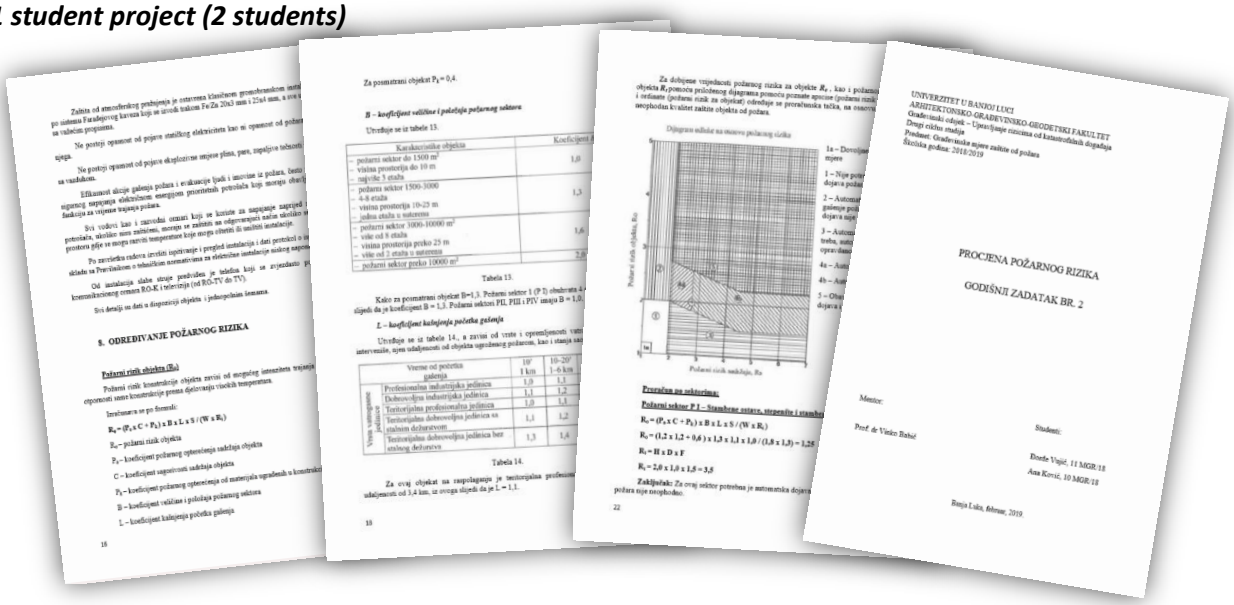


ANNEX 6

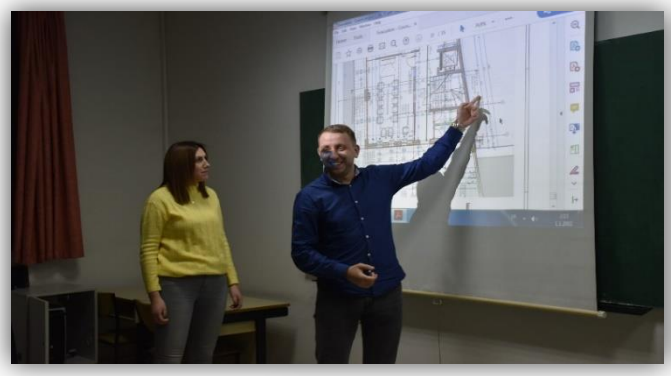
P4 – UNIVERSITY OF BANJA LUKA

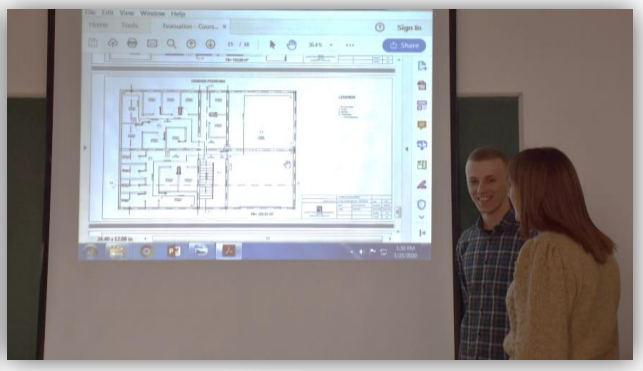
Course title: ***Constructive Rules for Fire safety of Building***

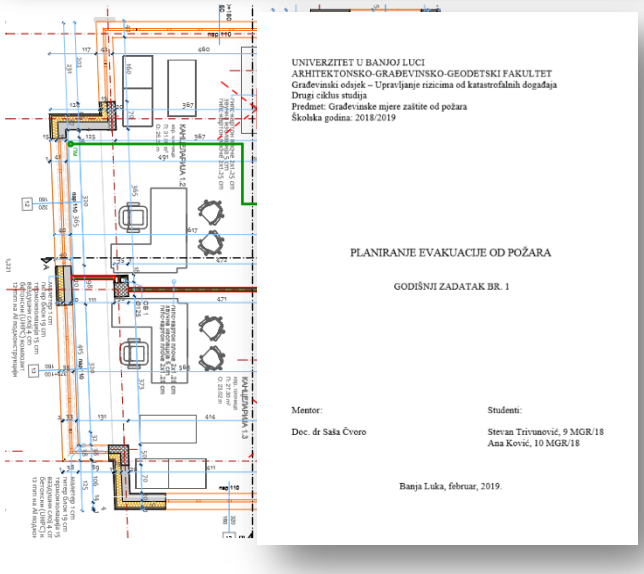
Topic: ***Fire risk determination on the example of residential/public building***
1 student project (2 students)

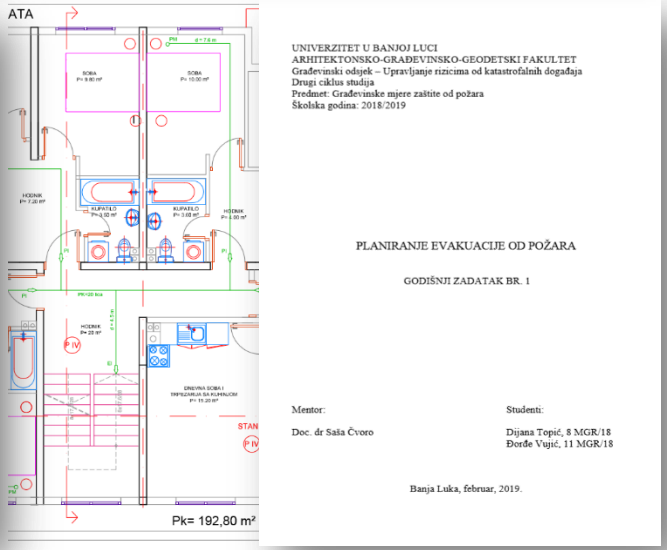


Topic: ***Evacuation route determination on the example of residential/public building***
2 student projects (2x2 students)









Course title: ***Assessment of Damaged Structures***

3 class visits:

1. Group assignments on in-situ testing of concrete bridge over river Stavnja

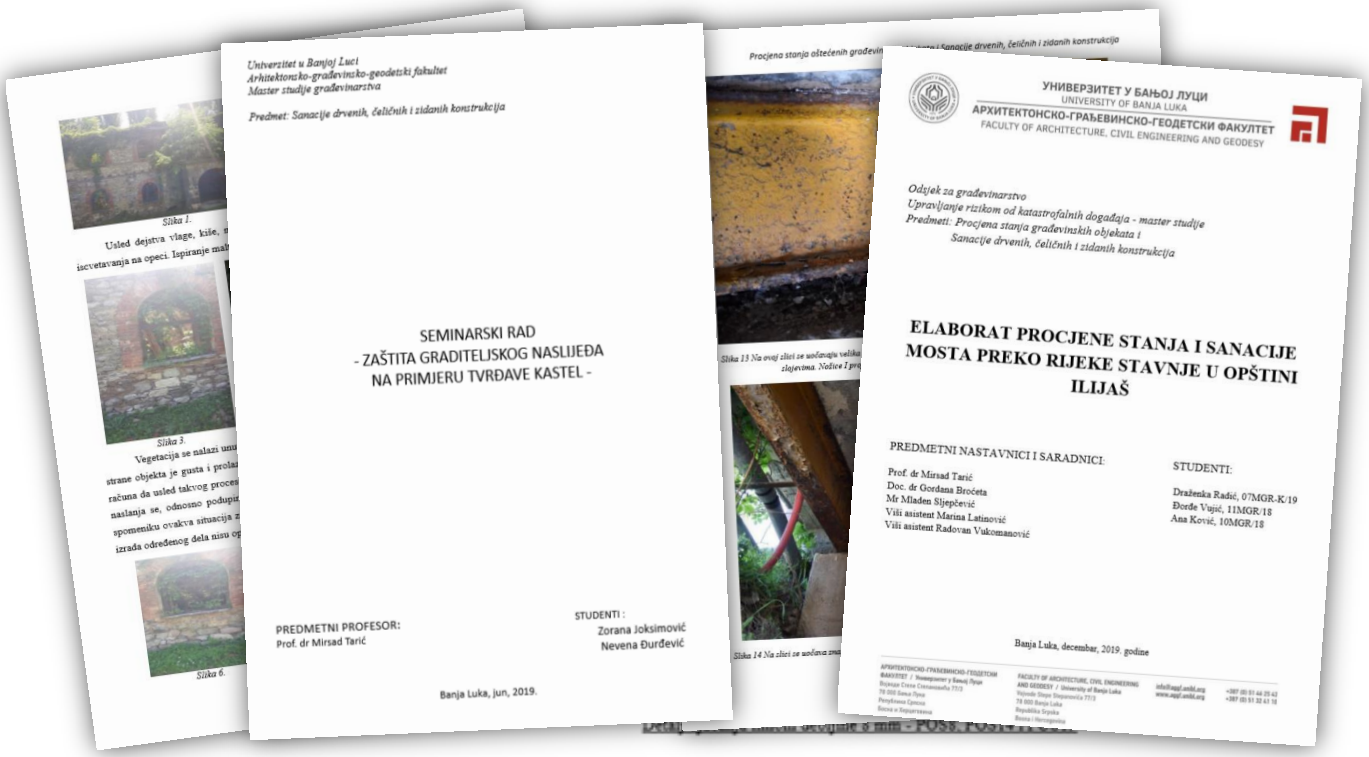
2. Group assignments on in-situ testing on concrete building in Banja Luka

3. Group assignments on in-situ testing on steel crane structure in „Incel“ business zone

Course title: ***Repair of Timber, Steel and Masonry structures***

Topic: ***Fire risk determination on the example of residential/public building***
2 student projects

<u>1. Case study - Repair of steel structure of a bridge over river Stavnja, Ilijas municipality</u>
<u>2. Case study - Heritage protection on the example of Castle Fortress</u>

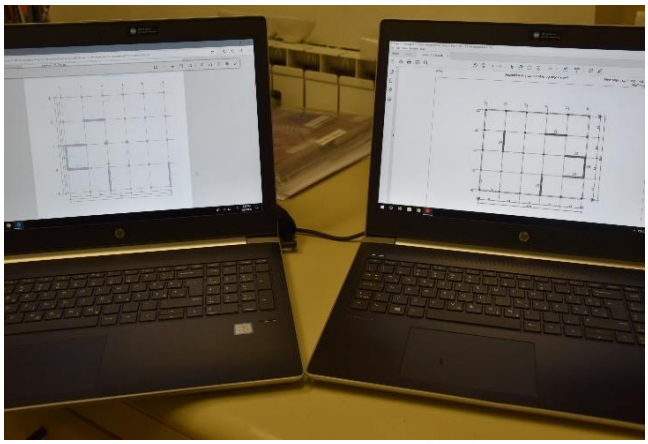


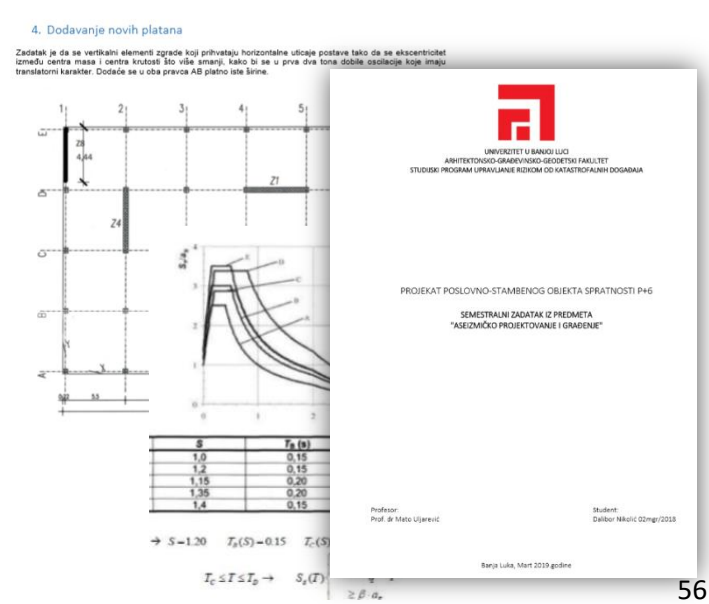
Course title: ***Repair of Timber, Steel and Masonry structures***

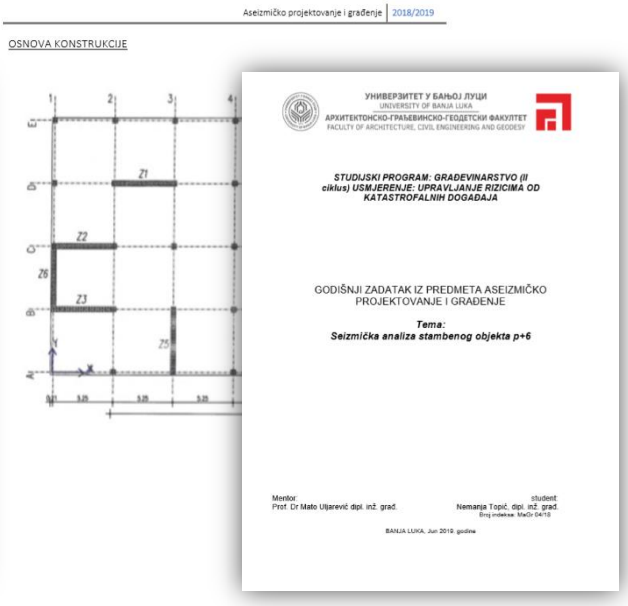
Topic: ***Demonstration of repair techniques for masonry architectural heritage buildings on Banjaluka's cultural center building façade repair***
1 class visit

Course title: ***Aseismic Design and Construction***

Topic: ***Fire risk determination on the example of residential/public building***
2 student projects







ANNEX 7

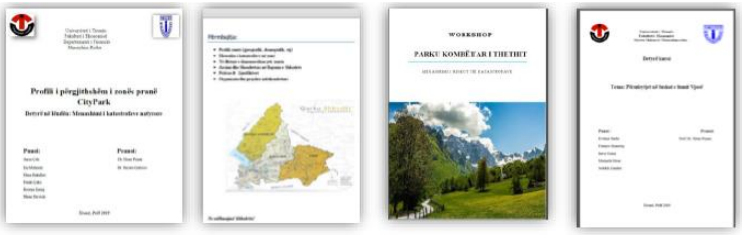
P4 – UNIVERSITY OF TIRANA

Course title: ***Disaster Risk Management***

Topic: ***Risk evaluation and contingency planning in main disaster hotspots in Albania***
5 student projects:

1. Hotspot Profile
2. PESTEL Analysis
3. Risk and Vulnerability
4. Contingency Plan
5. Financial Plan in case of Disaster.

Students needs to search for giving results
4 Hotspots information



Then come the analyzation of :

PESTEL ANALYSIS
DISASTER RISK ASSESSMENT FOR THE AREA
CONTINGENCY PLAN
FINANCIAL PLAN

Course title: ***Research Methods***

Topic: ***Risk assessment and risk attitude***
4 student projects

Course title: ***Risk Management and Insurance***

Topic: ***Insurance and reinsurance***
6 student projects

Students received four steps orientation on how to run facilitation process regarding an insurance topic:

- How to develop the concerns;
- How to develop policy possibilities;
- How to develop practical consequences and;
- How to develop possible implementations solutions and their effects on individuals, groups, institutions and/or society.

After observing professor facilitations for the first 4 sessions, students were oriented to choose one aspect of insurance, risk management and reinsurance.

Course title: ***Foundations of Risk Assessment and Decision Making***

Topic: ***Identification of Problems and Opportunities, Risk Assessment, Risk Evaluation, Risk Control , Risk Monitoring***

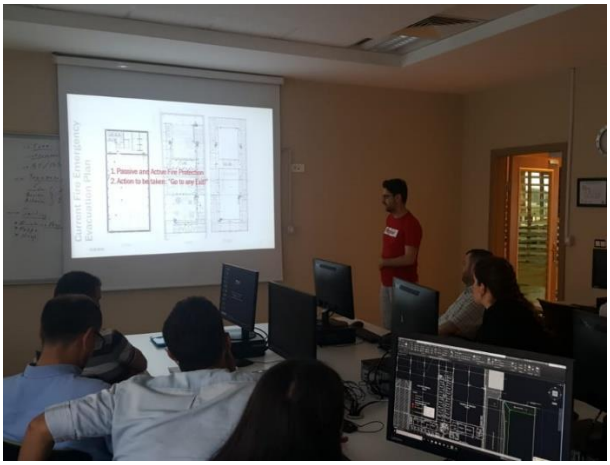
4 student projects

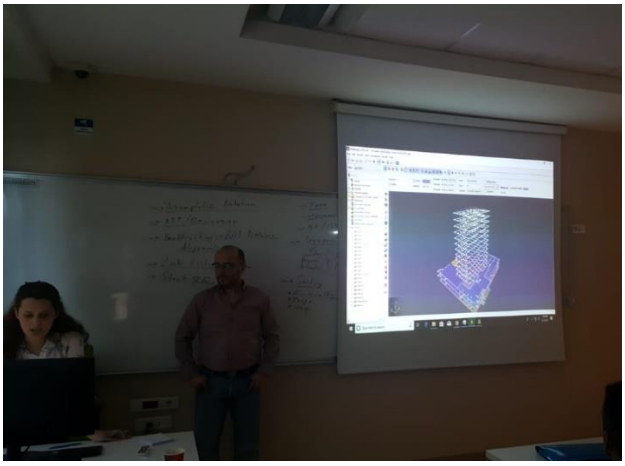
ANNEX 8

P6 - EPOKA UNIVERSITY

Course title: ***Evacuation calculation modeling***

Topic: ***Panic, Characteristics of people movement through smoke, Human behaviour in fire theories: decision-making, response to alarm systems, information, and environmental cues, Evacuation time analysis: Components of evacuation time, Transitions, Queues, evacuation modelling***





Course title: ***Landscape Perspectives in DRM&FS***

Topic: ***GIS Applications in Wildfire and Forest fire risk assessment***

Course title: ***Project planning, management and coordination***

Topic: ***Tools and knowledge necessary to plan network schedules and budgets for construction project. Work Breakdown structure, Critical path scheduling, Stochastic scheduling, Resource levelling, and project costs. Project planning with emphasis on legal aspects of various types of delivery methods and contract types.***
(3 projects+ Achievement tests)

Course title: ***Structural fire safety***

Topic: ***Design of structural for fire safety***

Course title: ***Risk analysis in decision making process***

Topic: ***Natural disasters and their impact; Risk of breakdown of structures;***