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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.	<i>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.</i> <ul style="list-style-type: none"> • 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



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				<p>various types of delivery methods and contract types</p> <ul style="list-style-type: none"> • Communication creativity and effectively • Relationship Skills; • Responsibility to work and to the co-workers • Responsible decision-making
2.	RISK ANALYSIS IN DECISION MAKING PROCESS	<p>Nature, typology and dynamics of risk & risk management, apply them to strategic and tactical problems and illustrate their tools and techniques</p> <p>(4 projects+ Achievement tests)</p>	<p>Students are working in groups of 3, they select the group members. The group divide the tasks between the members.</p> <p>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.</p> <p>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</p>	<p><i>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.</i></p> <ul style="list-style-type: none"> • 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



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				<p>and effectively</p> <ul style="list-style-type: none"> • Relationship Skills; • Responsibility to work and to the co-workers • Responsible decision-making
3.	EVACUATION CALCULATION MODELING	<p>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</p>	<p>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.</p> <p>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</p>	<ul style="list-style-type: none"> • Employ a variety of teaching tools, with the aim to stimulate interest and motivation in the students, thus boosting the learning process. • <i>Develop schemes to get students involved in learning: Motivation to initiate learning, and to maintain engagement during learning.</i> • <i>Work actively with course content to have a clear structure and learning objectives- students can explore and navigate the course</i> • <i>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.</i> • <i>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.</i> • <i>Reflective teaching:</i>



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				<i>Working on solutions based on case-by case situation.</i>
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.	<ol style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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



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		<p>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.</p> <p>Knowledge of these concepts is critical to be known before conducting any further fire design or analysis.</p> <p>*Content is tailored for DRM&FS students who have not taken Reinforced concrete course in their studies.</p>	<p>there is an integration of all different concepts in a single project</p>	<p>structural member such as beam, column and slab.</p> <ul style="list-style-type: none"> • Ability to understand and design reinforcement detailing. • Communication creativity and effectively • Relationship Skills; <p>8. Responsibility to work and to the co-workers</p>
6.	Landscape Perspectives in DRM&FS	GIS Applications in Wildfire and Forest fire risk assessment	<p>Following a Project Based Learning (PBL) and Problem Oriented Research (POR) methodology the students are introduced into an interactive working environment.</p> <p>The students have selected a specific case study among Skopje, Novi Sad and Banja Luka.</p> <p>Students were self-organised</p>	<p><i>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.</i></p> <ul style="list-style-type: none"> • To understand the concepts of hazard assessment, elements at



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			<p>into groups of 4 members. The group divide the tasks between the members. In case of guidance they have been assisted by the instructor.</p> <p>During the practical sessions of the semester each student is responsible for practicing and producing the GIS materials.</p> <p>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.</p> <p>While during the semester each student is evaluated individually for individual assignments.</p> <p>The students are continuously encouraged by being considered and treated as colleagues more than students.</p>	<p>risk mapping, vulnerability assessment, and risk assessment</p> <ul style="list-style-type: none"> • 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	<p>The course content is delivered through: Lectures, Presentations, Handouts from various sources etc.</p> <p>The Lectures are organised in the form of open</p>	<ul style="list-style-type: none"> • Mastering academic content; • Learning how to think critically and solve problems regarding concrete durability; • Understand and be able



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		<p>environment, sea environment, soil environment, industrial environment.</p> <p>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</p>	<p>discussions in order to get a direct feed back of the students related to the respective topic.</p> <p>-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.</p>	<p>to apply various concepts of concrete durability</p> <ul style="list-style-type: none"> • 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	<p>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.</p>	<p>The course is a combination of lectures, dialogue, group work and exercises.</p> <p>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.</p> <p>Of a very interest for the student was the invitation of the experts in floods assessment and</p>	<ul style="list-style-type: none"> • 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



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		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
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