

Subject Title: Mathematical Methods in Engineering

Course Basic Information			
Academic Unit:	Faculty of Civil Engineering		
Course Name:	Mathematical Methods in Engineering		
Level:	MSc		
Course Status:	Elective		
Year of Study:	I / I semester		
Number of Hours per Week:	2+2		
ECTS Credits:	6		
Time /Venue:	According to the Timetable		
Course Teacher:	Prof. Dr. Abdullah Zejnullahu		
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Course Description			
Course Description	<p>In the framework of this subject will be addressed:</p> <p><i>Differential equations:</i> differential equations of the first order, differential equations of higher orders with special emphasis on linear differential equations with constant coefficients and their numerical solution.</p> <p><i>Infinite series:</i> infinite series of numbers. Endless series of functional, polynomial series and Fourier series and the application of the series in solving differential equations.</p> <p><i>Multiple integrals:</i> double integrals, triple integrals, and application of double and triple integrals in the field of building construction.</p> <p><i>Bend lined and surface integrals:</i> bend integrals, surface integrals and application of these types of integrals in the field of building construction.</p>		
Course Objectives:	<ul style="list-style-type: none"> - to enable students to solve tasks from the contents of the file, - for students to expand their professional competence by using materials elaborated, - to provide students with knowledge of the case the extent that they should be able to apply the knowledge in the construction industry, - to develop skills extent that students can make mathematical models to practical problems and thereafter to solve. - 		
Learning Outcomes:	<p>After completing this course students can:</p> <ul style="list-style-type: none"> - to draw up mathematical models of practical problems, - to solve mathematical models, - to interpret in practice solutions results from mathematical models. 		
Student Workload (Consistent with the Learning Outcomes)			
Activity	Hours	Day/ Week	Total

Lectures	2	15	30
Theory/ Lab Work	2	15	30
Practical Work			
Contact Hours with Teacher /Consultations during Office Hours	1	5	5
Field Work			
Colloquium, Seminars	10	2	20
Homework	1	15	15
Self-study Time (in the Library or at Home)	2	15	30
Final Exam Preparation	7	3	21
Evaluations (Tests, Quiz, Final exam)	4	1	4
Projects, Presentations, etc.			
Total			150

Teaching Methodology: The lessons are taught through lecture material provided and been properly followed by exercises, the exercise of practical tasks as well as continuous duty at home.

Evaluation Methods: Activity: 10%
First test: 30 %
Second test: 30%
Final exam: 30%

Basic Literature: - **A. Zejnullahu, F. Berisha: Matematika III, 1997, UP-FNA.**

Additional Literature:

- Richard L. Burden, J.Douglas Faires: Numerical Analysis, 1997, Brooks/Cole Publishing Company, USA.
- Margarita Qirko, Syti Hysko: Analiza Numerike, 2004, Universiteti Politeknik i Tiranes.

Course Plan:

Week	Title of the Lecture
<i>Week 1:</i>	Introduction to the content, aim and division of the subject
<i>Week 2:</i>	Equation of first level
<i>Week 3:</i>	Equation of high levels
<i>Week 4:</i>	Liner differential equation and constant coefficient
<i>Week 5:</i>	Numerical solution of differential equation
<i>Week 6:</i>	Unlimited numerical serials
<i>Week 7:</i>	First test
<i>Week 8:</i>	Functional series, Fourie Series
<i>Week 9:</i>	Application of series
<i>Week 10:</i>	Multiple integrals
<i>Week 11:</i>	Application of multiple integrals

<i>Week 12:</i>	Bend lined integrals
<i>Week 13:</i>	Surface integrals
<i>Week 14:</i>	Application of bend lined and surface integrals
<i>Week 15:</i>	Second test

Academic Policies and Rules of Civility:

The student is obliged to attend at least 80% of the lectures and tutorials. Plagiarism is considered to be the greatest academic crime. Anyone caught having plagiarized (whether coping, paraphrasing from different kinds of materials without acknowledging sources, presenting other people's work/ideas as their own and so forth) will receive a failing grade and might be subject to disciplinary measures. Students and teachers have to confine to ethical conducts.