

Subject Title: THEORY OF PLASTICITY

Course Basic Information			
Academic Unit:	Faculty of Civil Engineering		
Course Name:	Theory of Plasticity		
Level:	MSc		
Course Status:	Elective		
Year of Study:	1 st year, II- semester		
Number of Hours per Week:	2+1		
ECTS Credits:	3 ECTS		
Time /Venue:	According to timetable		
Course Teacher:	Prof. asoc. Dr Misin Misini		
Contact Details:	e-mail: misin.misini@uni-pr.edu		
Course Description			
Course Description	Stress Analysis for Plasticity; Yield Criteria, Elastic Perfectly Plastic Materials, Hardening Rules, The moment-curvature relation, Plastic action in bending and plastic hinges, Plastic analysis theorems, Plastic analysis of beams and frames.		
Course Objectives:	The objective of the course is to develop an understanding of the post-yield behavior of idealized plastic solids and the ability to analyze simple engineering structures such as beams and frames.		
Learning Outcomes:	On completion of this course the students will be familiar to the concept of plastic analysis of plane stress and plane strain problems. They also have sufficient knowledge in various theories of plasticity.		
Student Workload (Consistent with the Learning Outcomes)			
Activity	Hours	Day/ Week	Total
Lectures	2	15	30
Theory/ Lab Work	1	15	15
Practical Work			
Contact Hours with Teacher /Consultations during Office Hours	2	5	10
Field Work			
Colloquium, Seminars	1	4	4
Homework	1	6	6
Self-study Time (in the Library or at Home)	2	2	4
Final Exam Preparation	1	4	4
Evaluations (Tests, Quiz, Final exam)	1	2	2
Projects, Presentations, etc.			
Total			75
Teaching Methodology:			
Teaching Methodology:	<i>Lectures + Exercises</i>		
Evaluation Methods:			
Evaluation Methods:	Attendance 5%; First Evaluation 30%; Second Evaluation 25%; Individual work 10%, Final exam (oral) 30%.		

Basic Literature:	[1] M Misini.: <i>Teoria e plasticitetit, leksione të shkruara, UP, FNA, Prishtinë 2014</i> [2] F.S. Jagxhiu: <i>Rezistenca e materialeve, pjesa e dytë, Prishtinë, 1996</i>
Additional Literature:	[3] W. F. Chen and D. J. Han: <i>Plasticity for Structural Engineers, J. Ross Publishing, 2007.</i> [4] Niko Jacob Lubliner: <i>Plasticity theory, Dover Publications, 2008.</i>

Course Plan:	
Week	Title of the Lecture
Week 1:	Introduction to Plasticity
Week 2:	Stress Analysis for Plasticity
Week 3:	Elastic Perfectly Plastic Materials
Week 4:	Yield Criteria in Three Dimensional
Week 5:	Hardening Rules
Week 6:	The elastic-plastic behaviour of simple bar structures
Week 7:	The moment-curvature relation for the rectangular cross-section
Week 8:	The moment-curvature relation for the arbitrary cross-section
Week 9:	Plastic action in bending and plastic hinges
Week 10:	Plastic analysis theorems
Week 11:	Combination of upper and lower-bound theorems
Week 12:	Plastic analysis of statically indeterminate beams
Week 13:	Plastic analysis of frames
Week 14:	Effects of normal forces on plastic frame behavior
Week 15:	The influence of the transverse force on the full-plastic moment

Academic Policies and Rules of Civility:
<i>Regular attendance of lectures and exercises</i> <i>Mobile phones need to be switched off during class.</i> <i>Attending the class in time.</i>