Subject Title: Structural Stability

Course Basic Information	
Academic Unit:	**Faculty of Civil Engineering**
Course title:	**Structural Stability**
Level:	**MSc**
Course Status:	**Elective**
Year of Study:	**1st year, II- semester**
Number of Classes per Week:	**2+1**
ECTS Credits:	**3 ECTS**
Time /Location:	**According to timetable**
Teacher:	**Prof.Asoc.Dr. Fatos Pllana**
Contact Details:	*e*-**mail: fatos.pllana@uni-pr.edu**
Course Description:	Included in this course is the Linearized Theory of second order and Stability of multi-element systems, which is treated by analytical and numerical methods. Also, the stability of the plates, the buckling of the rectangular plates is treated as well as and circular ones.
Course Goals:	The aim of this course is for the student to be acquainted and trained with basic knowledge in the field of stability of structures.
Expected Learning Outcomes:	Upon completion of this course the student will be at able to know, understand and use notions correctly basic construction science, in order to as much as possible easily cope with the difficulties that await him during and after these studies.

Student Workload (should be in compliance with student's Learnign Outcomes)			
Activity	2	15	30
Lectures	1	15	15
Theory/ Lab Work/Exercises	0	0	0
Practical Work	2	2	4
Consultations with the teaher	2	2	4
Field Work	0	0	0
Test, seminar paper	2	2	4
Homework	2	2	4
Lectures	1	2	2
Self-study (library or home)	1	2	2
Preparation for final exam			
Assessment time (test, quiz, final exam)			
Projects, presentations, etc.			
Total			**75**
Teaching Methods:	*It is taught within the course where each hour of lectures is accompanied by an example to clarify the lecture held. The student*

	compiles the tasks foreseen in the exercises in the form of elaborations which at the end of the semester he is obliged to submit.
Assessment Methods:	*The following assessments are held during the semester:* *- mandatory presence,* *- Written exam 40%* *-Theoritical exam 60%*
Primary Literature:	*Musa Stavileci: Teoria e strukturave STABILITETI, UP FNA Prishtinë 2003*
Additional Literature:	*[1] Chen W.F.,Lui E.M.: Structural Stability Theory and implementation, Elsevier, New-York-Amsterdam-London* *[2] Softa F.: Teoria e strukturave Qëndrueshmëria, Pllakat, Membranat, Tiranë, 1990* *[3] Timoshenko S.: Theory of Elastic Stability, Mc graw-Hill, 1961* *[4] Chajes A.: Principles of Structural Stability Theory, Prentice - Hall Engl.Clifts, 1974* *[5] Hoff N.J.: The analysis of Structures, New York, 1985*

Designed teaching plan	
Week	**Title of the Lecture**
Week 1:	*Hypotheses used to simplify equations in Linear theory of elasticity* *Basic literature, p.5*
Week 2:	*Second-order linearized theory. Understanding about neutral equilibrium Differential equation of pressed and bent rod.* *Basic literature, p.17*
Week 3:	*The problem is inhomogeneous. The problem of superposition. Impacts from distributed load. Impacts from temperature change.* *Basic literature, p.31*
Week 4:	*Application of some numerical methods for calculating the critical force - method of finite differences -matric method* *Basic literature, p.42*
Week 5:	*Second order theory and stability of multi-rod systems method of forces* *Basic literature, p.54*
Week 6:	*-method of deformations Stiffness matrix for different types of rods* *Basic literature, p.56*
Week 7:	*Element type "k"* *Element type "g"* *Element type "g-g"* *Element "console"* *Basic literature, p.57*
Week 8:	*Stiffness matrix for rod system* *Application in concrete examples* *Basic literature, p.62*
Week 9:	*Initial parameter method* *Application for solving the tasks of the Second Order Theory* *Basic literature, p.90*
Week 10:	*Implementation for solving more complex problems* *Matrix formulation of the initial parameter method* *Basic literature, p.98*
Week 11:	*Implement the initial parameters method for solving e stability problems*

	Basic literature, p.101
Week 12:	***Energy method***
	Application for critical force calculation
	Basic literature, p.107
Week 13:	***The method of Rayleigh***
	Rietz's method
	Galorkin method
	Basic literature, p.111
Week 14:	***Plate stability***
	-the buckling of rectangular tiles
	Basic literature, p.124
Week 15:	***-the buckling of circular plates***
	(simply supported plate)
	(fixed plate)
	Basic literature, p.132