Subject title: Examination of Structures

Basic information on the subject	
Academic unit:	**Faculty of Civil Engineering**
Subject title:	**Examination of Structures**
Level:	**MSc**
Subject status:	**Elected**
Year of studies:	**Second year**
Number of classes per week:	**2+2**
Credits - ECTS:	**6**
Time / location:	**According to time table**
Teacher:	**Prof. Dr. Naser KABASHI**
Contact details:	***e*-mail: naser.kabashi@uni-pr.edu**
Course description:	General knowledge for elasto-plasticity behavior the materials in engineering. Effect of properties the materials in examinations the structures. Determination the strains and stresses in different points of structures. Theory of instruments: deflectometer; deformeter; tensometer; clinometer; strain gauges and basic principles for apply. Evaluations and determinations the deformability properties using the measurements: Module of Elasticity; Poisson ratio, etc. Analyses the structures-prototype using the Model analyses. Examinations the structure "In Situ" using the Nondestructive methods: Hammer Schmidt; Ultrasonic method; Pull of Test. Optical Analyses the stresses and strain in models. Examinations the structures-bridges under loading-static and movement loads.
Course objectives:	General data of the theory of Elasticity. Applied the Theory of Instruments in examinations of Structures. Using the different methods for evaluations the structure under the applied loads-static or dynamic loads.
Expected learning outcomes:	At the end of the course student will be able to: - to know to apply the theory of elasticity in examinations the structure or elements of structure using the measurements. - To know the principles of instruments for all parameters using during the analyses of structures. -to understand the Model Analyses of structures using the Prototype and model for interpretation the results. - to know to apply and to evaluate the structure using the nondestructive methods. - to understand the basic of the Optical Theory and fotoelasticity in analyze the models. -To know to analyze the behavior the structure under static or dynamic loads.

Workload that falls on the student (shall correspond with Student Learning Outcomes)			
Activity	**Teaching hours**	**Day/Week**	**total**
Lectures	2	15	30
Theory / Laboratory work / Exercises	2	15	30
Practical work	8	1	8
Preparation for intermediate test	4	2	8
Consultation with the teacher	1	2	25
Field work	4	2	8
Test, seminar paper	2	2	4
Home work	2	4	8
Individual learning (in the library or at home)	1	9	9
Preparing for the final exam	2	5	10
Evaluation time (test, quiz, final exam)	2	3	6
Projects, presentations, etc.	4	1	4
Add any other activity that is not on the chart ...			
Total			**150**
Teaching methods:	- *Lectures and presentations using the practical examples from existing structures, or elements* - *Numerical exercises.* - *Seminars and practical examples.* - *Interactivity during the lectures and exercises* - *work in group*		
Evaluation methods:	*During the semester organize the two tests and evaluations based on the following percents:* *-First evalautions: 25%* *-Second Evaluations 25%* *-Seminars and other activity 10%* *-Presence during the lectures 10%* *-Final exam 30%*		
Basic literature:	*1. N.Kabashi- Shqyrtimet e Konstruksioneve (ligjerata te autorizuara)*		
Additional literature:	2.*Experimental Methods for Engineers; J.P.Holman* *3. Ispitivanje konstrukcija-Vukotic*		

Curriculum development	
Week	**Lecture title**
Week 1:	*General knowledge, properties and behavior of materials and the influence and behavior of structures*
Week 2:	***Factors influencing the results of construction reviews*** • *Non-uniformity of Materials* • *Load application* • *Behavior during the operation of loads*
***Week 3*:**	***The relationship between measured deformations and stress*** • *Analysis based on the theory of elasticity* • *Case studies: a center and two circles and two centers of a circle* • *Graphs*

Week 4:	***The condition of the surface areas when the main directions of expansions and their sizes are not known*** • *Special cases: $\alpha = 0^0; 60^0, -60^0$* • *Special cases: $\alpha = 0^0; 45^0, -45^0$* • *Special cases: $\alpha = 0^0; 45^0, -90^0$*
Week 5:	***Theory of measuring instruments:*** • *Nivelir;* • *displacement measure*
Week 6:	***Theory of measuring instruments:*** • *Strain gauge* • *Deform meter*
Week 7:	***Measuring tapes, types and application in the measurement of expansions in constructions*** • *Working principle: Watson's bridge* • *Application of measuring tapes in practice*
Week 8:	***Mechanical properties of steel*** • *Limit of elasticity and fluidity* • *Percentage elongation* • *Modulus of Elasticity*
Week 9:	***Modulus of Elasticity deformable property of concrete*** • *Methods of determination by direct measurement* • *Comparability of analytical and experimental calculations*
Week 10:	***Evaluation of the quality of concrete in construction*** • *Non-destructive methods:* • *Hamer of Schmid* • *Ultrasonic method* • *Pull Of Test*
Week 11:	***Modeling Analysis*** • *Modeling and geometric parameters of model design* • *Types of modeling similarity* • *Interpretation of results from Model to Prototype*
Week 12:	***Optical analysis of honors-theory basis of photoelasticity*** • *Polarization of light*
Week 13:	***Polariscope, tool for evaluation of stress.*** • *Isochrones and Isoclines* • *Stress Calculation in an analyzed model*
Week 14:	***Examination of constructions with live load up to breaking*** • *Applying loads and bringing the structure to failure* • *Cases of practical examinations*
Week 15:	***Examination of Bridges with live load*** • *Behavior of bridges under the action of static and moving loads* • *Evaluation of deflections, stress and parameters compared to analytical analysis.*

Academic Policies and Code of Conduct
The teacher sets the criteria for regular attendance in lectures and exercises and rules of etiquette such as: keeping calm in class, turning off mobile phones, entering the hall on time, etc.

Note | If the student does not complete the tasks / essay / related to the implementation of the elaboration of the subject, he cannot undergo the exam.