

Module Title and Purpose	<p>1. Module Title, Code</p> <p>THEORY OF ELASTICITY AND PLASTICITY 30-TEP-307</p> <p>Elective professional</p>
Module Delivery	<p>2. Aims / Goals of the Module</p> <p>Appropriating areas from the theory of elasticity and plasticity theory needed to solve the problems of the theory of structures.</p>
	<p>3. Contents:</p> <p>Introduction and definition of deformability continuum (History and classification of continuum mechanics) Basics of vector and tensor calculus (Euclid's E^3space, Transformations of coordinates, Operations with tensors). Model of material continuum deformation (Lagrange's and Euler's principles of body deformation) Stress tensor and its properties. (Stress state surrounding the point, Equilibrium equation, Statical acceptability, Component transformations, Eigen values). Deformation tensor and its properties (Displacement and deformity gradients, Finite deformations, Infinitesimal deformations, Kinematic acceptability, Compatibility equation). State and constitutive equations (Laws on states, Material rigidity and flexibility tensor, Potential of linear-elastic body). Boundary phenomena in theory of elasticity and their solutions (Boundary phenomenon formula, solutions and their properties). Potential energy of solid deformable body and energy principles and theorems. Numerical procedures applied in solving boundary phenomena in theory of elasticity. Plane conditions in theory of elasticity (Plane stress and deformation, Airy function of stress in rectangular and polar coordinates, Solution properties of plane phenomena and some potentials of boundary phenomena). Space phenomena in theory of elasticity (Torsion, Semispace, Thin boards). Introduction to theory of plasticity and basic criteria of plasticity (Plasticity models, Principles of plastic flow, Plasticity constant). Constitution laws in material flow theory (Misses-Levy and Prandtl-Reuss equations, Incremental procedures in flow theory). Some potentials of plasticity.</p> <p>4. Literature / Indicative Reading List:</p> <p>[1] F. Jagxhiu: Rezistenca e materialeve I dhe Rezistenca e materialeve II,</p> <p>[2] dispencat: Teoria e elasticitetit, Teorija e plasticitetit prej autorit F. Jagxhiu</p> <p>[2] G. E. Mase: Theory and Problems of Continuum Mechanics, McGraw-Hill Company, 1970.</p>

	<p>5. /Teaching and Learning Methods: Lectures, exercises, consultations and mid-term test.</p> <p>Total Contact Hours: 28+28+3=59 hours</p> <p>Range of other Learning Methods:</p> <p>Total Study Hours: 66 hours</p> <p>Total contact and study hours :125 hours</p>
Module Assessment	<p>6. Module Learning Outcomes :</p> <p>Students trained for the application of the theory of elasticity and plasticity theory in solving the problems of concrete structures and steel Constructions</p>
	<p>7. Assessment Methods:</p> <p>Attendance in classes, Mid-term test 1, 2 , written exam, oral exam.</p> <p>Number, type and weighting of elements:</p> <p>Attendance: 8%, Mid-term test 1: 20%, Mid-term test 2: 20%, written exam: 26%, oral exam: 26%. Total 100%.</p>
Module Management	<p>8. ECTS Credit Points and Duration</p> <p>5 ECTS, one semester, (III)</p>
	<p>9. Contact Person</p>
Compiled by:	M. Stavileci
Data / Date	