Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Strength of Materials				
TEACHER: Nicola M. Auciello				
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Language: italian				
ECTS: cfu 9	n. of hours: 90	Academic year: 2019.20	Campus: Potenza	Semester: I,II

TOPICS
Study of elastic solids.
Beam theory and its applications

TEACHING METHODS (please tick one or more options)
x Theoretical lessons
x Tutorials in classroom
□ Tutorials in laboratory
□ Project works
□ Technical visits
Other activities (please specify) _____

TEXTBOOKS

- You sharpen theoretical and examples furnished during course
- V. Franciosi, Fondamenti di Scienza delle Costruzioni, Vol. 1,2,3. Ed. Liguori, Napoli.
- V. Franciosi, Problemi di Scienza delle Costruzioni. Vol. 1, 2, 3. Ed. Liguori, Napoli.
- E. Viola , Esercitazioni di Scienza delle Costruzioni, Vol. 1, 2. Ed. Pitagora

ON-LINE EDUCATIONAL MATERIAL
web address: http://profauciello.altervista.org/

LEARNING OUTCOMES
Ability to set up and solve problems related to the behavior of structures through the procedures set out during the course.

REQUIREMENTS
Calculus I and II, Geometry, Mathematical Physics

EVALUATION METHODS (please tick one or more options)
□ Intermediate verifications
x Written examination
□ Discussion of a project work
□ Practical test
x Oral examination
Other methods (please specify) _____

DETAILED CONTENT
Introduction to vector and tensors, linear transformation, antisymmetric and symmetric transformation. Configuration of continuum bodies, analysis strain. Analysis stress: the concept of stress. Elastic stress-strain realation and formulation of elasticity problem; Isotropic materials. Failure Criteria: Tresca's CriterionEnergy principles and introduction to variational methods; principle of virtual work, principle of stationary potential energy, principle of Betti. The elementary theory of beams: De Saint Venant theory; axial force, bending, shear end torsion of the beam. Elastic stability: columns and beam-column; buckling of Long Slender Columns. Structural Analysis: analysis of statically structures. Analysis of statically indeterminate structures by the force method; applications of tress and beams.

SEMINARS BY EXTERNAL EXPERTS YES x NO □

FURTHER INFORMATION