UNIVERSITY OF TRIESTE

DEPARTMENT OF ENGINEERING AND ARCHITECTURE

Prof. Daniele Zaccaria

Course of

Scienza delle Costruzioni

(Mechanics of Solids and Structures)

Civil and Environmental Engineering
Industrial Engineering
Naval Engineering

9 credits for about 90 hours (Sep 2014 – Dec 2014)

GENERAL CONCEPTS

- **Physical Quantities, Vectors and Tensors**
- **Structural Models**
- **Introduction to Solid Mechanics**
- **Mechanical Behavior of Materials**
- **Introduction to Rod Mechanics**

STRESS AND STRAIN IN SOLID AND ROD MECHANICS

- **Analysis of Stress**
- **Analysis of Strain**
- **Rod Loads and Deformation**
- **System of Rigid Rods**
- **Statically Determinate Structures**
- **Principle of Virtual Work**
- **Linear Elastic Constitutive Equations**
- **Strain Energy Function**

LINEAR ELASTICITY

- **Linear Isotropic Elastic Solids**
- **Theory of Rods for Technical Purposes**
- **Bernoulli-Euler Theory**
- **Plane Mass Geometry**
- **Saint-Venant's Problem**
- **Torsion Problem**
- **Center of Shear**

SIMPLE PROBLEMS

- **Tension**
- **Bending**
- **Bending and Tension**
- **Torsion**
- **Shear**

STATICALLY INDETERMINATE STRUCTURES

- **Solution of Statically Indeterminate Structures**
- **Dislocations**
- **Symmetric Structures**
- **Frames and Trusses**