



Dipartimento di Architettura e Territorio – dArTe

Corso di Studio in Architettura quinquennale – Classe LM-4

Degree course:	Architecture LM4
Course code	60100
Lecturer:	Michele Buonsanti
Course name:	Morfologia Strutturale
Disciplinary area:	Engineering
Disciplinary field of science:	ICAR08
University credits – ECTS:	6
Teaching hours:	60
Course year:	Third
Semester:	Second

Synthetic description and specific course objectives

The proposed course will be to furnish theoretical and methodological aspects with the goal to transfer fundamental information, for the skill formation, to develop either stress and strain analysis on elastic solid, extending to mono, bi, and three-dimensional structural systems toward a individual skill formation about structural design.

Course entry requirements

Strength of Materials and Structures (Science of Construction)

Course programme

The relationship form-structure: equilibrium principles.. The resistant structural figures for form: structures to arc, surfaces spatial curves. The resistant structural figures for mass: the carrying wall, the beam and the systems mixed beam - wall. Systems combined of beams: the plates. The element structural rope: methods of stabilization. Surfaces of coverage produced by plain tenso-structural systems. Analysis of the stress state for the different typologies, through simplified methodologies approximate. Design and check of the simplified structural elements.

Expected results

Skill to easily individualize the stress state within plain and three-dimensional solid. Ability for exemplification of the equivalent static schemes and them analysis. Analytical development, simplified to the goals of a structural pre-sizing with following strength analysis.

Course structure and teaching

Lesson: (30 hours/year inside classroom)

Exercise: (30 hours/year inside classroom)

Student's independent work

Research, development and analysis of a select structural typology, with the purpose to develop a complete process of analysis and structural design.

Testing and exams

Two final checks. The first one, through design test and, the second one, by some questions oral test.

Suggested reading materials

- 1-Timoshenko S.P., Hystory of Strength of Materials, Dover Pb.New York, 1983
- 2-Benvenuto E., Radelet-de Grave P., Between Mechanics and Architecture, Birkhauser,Basel,1995
- 3-Timoshenko S.P., Woinowsky-Krieger S., Theory of Plates and Shells, McGraw-Hill, Singapore, 1976
- 4-Majowiecki M., Tensostrutture: progetto e verifica, CISIA, Milano, 1985
- 5-Migliacci A., Progetti di Strutture, 2voll., Terza Ed., Masson Editore, Milano, 1990
- 6-Leonhardt F., C.A. & C.A.P. Calcolo di progetto e tecniche costruttive, voll. II & III, ETS, Milano, 1986