UNIVERSITÀ DEGLI STUDI DI PALERMO

SCHOOL	POLYTECHNIC SCHOOL		
ACADEMIC YEAR	2016/2017		
SECOND CYCLE (7TH LEVEL) COURSE	BUILDING ENGINEERING		
INTEGRATED COURSE	DESIGN OF STRUCTURES AND STEEL CONSTRUCTIONS		
CODE	17660		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	ICAR/09		
HEAD PROFESSOR(S)	CAMPIONE GIUSEPPE	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)	CAMPIONE GIUSEPPE SCIBILIA NUNZIO	Professore Ordinario Professore Associato	Univ. di PALERMO Univ. di PALERMO
CREDITS	12		
PROPAEDEUTICAL SUBJECTS			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	**CAMPIONE GIUSEPPE** Monday 09:00 11:00 stanza secondo piano docente **SCIBILIA NUNZIO** Tuesday 11:00 14:00 Studio docente II piano ed. 8		

DOCENTE: Prof. GIUSEPPE CAMPIONE

TEACHING METHODS	lectures, class exercises and individual exercises in the laboratory for testing materials and structures
ASSESSMENT METHODS	Oral examination and an in progress test. The interview is aimed at determining the student's ability to process the knowledge gained by using them to solve problems and the ability to express the teaching content using a technically correct language. The vote is expressed in thirtieths with possible praise, according to the scheme reported at the bottom of the degree program homepage, i.e. "Metodi di valutazione"
LEARNING OUTCOMES	Knowledge of the design process leading to the definition of reinforced concrete structures, prestressed concrete, steel, with mixed steel-concrete-steel and glass, with reference to approximate and exact methods of analyses constraints.
PREREQUISITES	knowledge of limit state theory, behaviour of reinforced concrete structures, theory of beam

MODULE
MODULE 1 - INTEGRATED COURSE STEEL STRUCTURES AND BUILDING DESIGN

Prof. GIUSEPPE CAMPIONE

SUGGESTED BIBLIOGRAPHY

Pozzati P. e Ceccoli C. “Teoria e tecnica delle strutture, Utet vol.II 1977
Belluzzi O. Scienze delle costruzioni Vol II e III Zanichelli
Leonhardt F. c.a. e c.a.p : calcolo di progetto e tecniche costruttive. Edizioni Tecniche Milano VOl. I-III 1977.
Migliacci A. Progetti di Strutture. Tamburini , Milano 1968.
Migliacci A. Progetto agli stati limite delle strutture. Masson Italia Ed. 1977.
Dispense ad uso interno

AMBIT	50355-Edilizia e ambiente
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54

EDUCATIONAL OBJECTIVES OF THE MODULE

Ability to design an ordinary or pre-stressed concrete structure in accordance with local legislation and bearing in mind the architectural design constraints.

SYLLABUS

Hrs	Frontal teaching
6	Static Analysis of the ordinary reinforced concrete constitutive laws of ordinary concrete and high performance with problems relating to confinement and the viscous effects; stability testing of slender columns c.a .; Cutting-time interaction; diffusive regions and calculation methodologies.
8	direct and indirect foundations ; retaining walls, pools.
10	Statics of prestressed concrete with short and long term effects. Use of prestressed concrete in civil construction and infrastructure.
6	approximate analysis for the determination of the stresses of flat and curved plates and the plates with the corresponding reinforcements
5	recurrent problems in the design of buildings in c.a .: shear walls with and without opening subject to vertical and horizontal forces; design of deep beams and slabs

Hrs	Practice
10	Provide for the exercises for each topic held on the elections of numerical applications to play with both the teacher
9	Provide for the exercises pratical applications in material lab

MODULE
MODULE 2 - INTEGRATED COURSE STEEL STRUCTURES AND BUILDING DESIGN

Prof. NUNZIO SCIBILIA

SUGGESTED BIBLIOGRAPHY

N. Scibilia. Progetto di strutture in acciaio VI edizione. Ed. Flaccovio 2010
S. Arangio, F. Bucchi, F. Bontempi. Progettazione di strutture in acciaio. Ed. Flaccovio 2010
Dispense del corso scaricabili da internet.

AMBIT	50355-Edilizia e ambiente
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54

EDUCATIONAL OBJECTIVES OF THE MODULE

Capacity to design a steel structure or steel concrete composite system in compliance with current legislation, taking into account the architectural design constraints.

SYLLABUS

Hrs	Frontal teaching
1	The historical background of metal structures until the mid-twentieth century.
1	Carbon steel, inox steel, light alloy
1	Laboratory tests. Tensile, bending, hardness and resilience.
1	Strength criteria. The maximum distortion energy (Von Mises).
1	Resistance of beams subjected to axial forces and to bending moments.
1	Ductility of the beams subjected to bending moments.
1	Resistance of the beams subjected to bending moment and shear.
1	Resistance of the beams subjected to axial force and bending moment.
1	Resistance of the beams subjected to torsional moment.
2	Bolted and riveted connections. Tests on the bolt. Connections based on the friction.
2	Welded connections. Damages induced by the welding and controls.
2	Equilibrium stability
1	Stability of the columns subjected to axial force and bending moment.
1	Later torsional stability
2	Structural typologies for buildings in seismic zones
1	Moment resisting frames
1	Concentrically brace frames
1	Eccentric brace frames
2	Composite steel-concrete construction
2	Composite beams and columns
2	Outline of glass structures

Hrs	Practice
4	Wind actions on the buidings
4	Design of single-storey industrial buildings
4	Purlins and coverage of industrial buildings. Floors of multi-storey buildings.
6	Connections, beam to-beam, beam to column and column to foundation
4	Protection techniques against the corrosion: hot dip galvanizing and painting.
4	Protections from the fire