



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Architettura		
ACADEMIC YEAR	2023/2024		
MASTER'S DEGREE (MSC)	ARCHITECTURE		
INTEGRATED COURSE	ARCHITECTURAL BUILDING STUDIO AND TECHNICAL PLANTS OF BUILDINGS - INTEGRATED COURSE		
CODE	19717		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	ICAR/12, ING-IND/11		
HEAD PROFESSOR(S)	SPOSITO CESARE	Professore Associato	Univ. di PALERMO
	GERMANA' MARIA LUISA	Professore Ordinario	Univ. di PALERMO
	MAMI' ANTONELLA	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)	SPOSITO CESARE	Professore Associato	Univ. di PALERMO
	BECCALI MARCO	Professore Ordinario	Univ. di PALERMO
	GERMANA' MARIA LUISA	Professore Ordinario	Univ. di PALERMO
	MAMI' ANTONELLA	Professore Ordinario	Univ. di PALERMO
CREDITS	14		
PROPAEDEUTICAL SUBJECTS	01463 - TECHNICAL ARCHITECTURE 16106 - ARCHITECTURAL TECHNOLOGY 03324 - ENVIRONMENTAL TECHNICAL PHYSICS		
MUTUALIZATION			
YEAR	3		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	<p>BECCALI MARCO Thursday 09:30 11:00 T 208, ed. 9</p> <p>GERMANA' MARIA LUISA Wednesday 11:30 13:30 Presso l'ufficio della Docente (edificio 8 P I scala F4), da concordare previa email (marialuisa.germana@unipa.it)</p> <p>MAMI' ANTONELLA Tuesday 11:30 13:30 Studio del docente presso Dipartimento di Architettura viale delle Scienze ed.8 - Previo appuntamento via mail</p> <p>SPOSITO CESARE Friday 09:30 13:00 Dipartimento di Architettura viale delle Scienze ed.8 - Previo appuntamento via mail</p>		

PREREQUISITES	Basic knowledge of the construction systems, technical elements of building systems and materials. Elements about heat transmission and thermodynamic laws. Capacity of reading the buildings within a performance-oriented approach.
LEARNING OUTCOMES	<p>KNOWLEDGE AND UNDERSTANDING: Knowledge in the field of the architectural technology, of the building elements and of the active and passive systems for microclimatic, lighting and acoustic control for sustainable architecture. Skills in decomposition in technological modules and technical elements of buildings and simulation in the field of a new technological design.</p> <p>APPLYING KNOWLEDGE AND UNDERSTANDING Knowledge of building systems and technical elements, analytical skills on requirements regarding the functions and users and analysis of requirements and performance of the spatial units, systems (technical, of lighting, of conditioning, acoustic) and elements. Skills of selection of references and applicative design of systems and technological details and plant systems in order to reach the energetical and environmental sustainability.</p> <p>MAKING JUDGEMENTS: Independent judgment for a conscious and critical assessment useful to the formulation of project-technological and plant solutions for sustainable architecture.</p> <p>COMMUNICATION SKILLS: Ability to communicate in written-graphic form and orally the reasons of own design choices and the outcomes of the performed analyzes.</p> <p>LEARNING SKILLS: Attitude to lead analysis of requirements and performance of buildings and project hypothesis, documenting on emerging issues and proposed solutions from the production market. Ability of updating and documentation within a technological project.</p>
ASSESSMENT METHODS	<p>The evaluation of learning, on a scale of thirty, will consist of only one final exam. The student will have attend at least 70% of the compulsory attendance hours, to be admitted to the final exam. It will consist of an individual interview during which a discussion will be conducted on design studies prepared during the workshop, and an oral exam on the topics covered. The questions, , open ended and not less than four, and the papers produced will test the learning outcomes and verify:</p> <ul style="list-style-type: none">a) the possession of adequate presentation skills and proper use of technical and graphic language;b) acquired knowledge;c) the ability to reprocess the gained knowledge and transpose it in the proposed design solutions. <p>With regard to the assessment of knowledge, the ability to establish connections between theoretical contents and the solutions related to the different phases of building process, will be assessed from concept to the executive phase.</p> <p>The criteria for defining the assessment thresholds are the following: Excellent (30 - 30 e lode): excellent knowledge of the topics, excellent language skills, good analytical ability, the student is able to apply knowledge to solve the proposed issues effectively and identify correct and appropriate design solutions; Very good (26-29): good mastery of the subjects, full language skills, the student is able to apply knowledge to adequately solve the proposed issues and identify correct and appropriate design solutions; Good (24-25): Basic knowledge of the main topics, discrete language skills, the student is able to apply knowledge to solve proposed issues and identify design solutions although with some uncertainty; More than sufficient (21-23): the student does not have full mastery of the main topics of the program, but he has the knowledge, a satisfying language skills, a limited ability to apply his/her knowledge in problem solving and identifying the design solutions; Sufficient (18-20) : the student has a minimum basic knowledge of the main issues of the program and of the technical language, just enough ability to independently apply the acquired knowledge to solve the proposed issues and identify the design solutions; Insufficient: the student does not have the minimum acceptable knowledge of the main issues of the program and of the technical language, he/she has not the ability to apply his/her knowledge to solve the proposed issues and identify the design solutions.</p>
TEACHING METHODS	<ul style="list-style-type: none">- Lectures and graphic elaborations in the classroom- Graphic elaborations- Graphs of analysis and intervention

	<ul style="list-style-type: none">- Seminars- Inspections
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PREREQUISITES	Basic knowledge of the construction systems, technical elements of building systems and materials. Elements about heat transmission and thermodynamic laws. Capacity of reading the buildings within a performance-oriented approach.
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TEACHING METHODS	<ul style="list-style-type: none">- Lectures and graphic elaborations in the classroom- Graphic elaborations- Graphs of analysis and intervention

	<ul style="list-style-type: none"> - Seminars - Inspections
DOCENTE: Prof.ssa MARIA LUISA GERMANA' - <i>Lettere O-Z</i>	
PREREQUISITES	<p>Basic knowledge of the construction systems, technical elements of building systems and materials. Elements about heat transmission and thermodynamic laws.</p> <p>Capacity of reading the buildings within a performance-oriented approach.</p>
LEARNING OUTCOMES	<p>KNOWLEDGE AND UNDERSTANDING: Knowledge in the field of the architectural technology, of the building elements and of the active and passive systems for microclimatic, lighting and acoustic control for sustainable architecture. Skills in decomposition in technological modules and technical elements of buildings and simulation in the field of a new technological design.</p> <p>APPLYING KNOWLEDGE AND UNDERSTANDING Knowledge of building systems and technical elements, analytical skills on requirements regarding the functions and users and analysis of requirements and performance of the spatial units, systems (technical, of lighting, of conditioning, acoustic) and elements. Skills of selection of references and applicative design of systems and technological details and plant systems in order to reach the energetical and environmental sustainability.</p> <p>MAKING JUDGEMENTS: Independent judgment for a conscious and critical assessment useful to the formulation of project-technological and plant solutions for sustainable architecture.</p> <p>COMMUNICATION SKILLS: Ability to communicate in written-graphic form and orally the reasons of own design choices and the outcomes of the performed analyzes.</p> <p>LEARNING SKILLS: Attitude to lead analysis of requirements and performance of buildings and project hypothesis, documenting on emerging issues and proposed solutions from the production market. Ability of updating and documentation within a technological project.</p>
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TEACHING METHODS	<ul style="list-style-type: none"> - Lectures and graphic elaborations in the classroom - Graphic elaborations - Graphs of analysis and intervention - Seminars - Inspections

MODULE TECHNICAL PLANTS OF BUILDINGS

Prof. MARCO BECCALI

SUGGESTED BIBLIOGRAPHY

Slides e dispense distribuite dal docente (Notes and slides distributed by the teacher)

Yunus A. Cengel, Dall'O' G., Sarto L.; Fisica tecnica Ambientale con elementi di acustica e illuminotecnica; McGraw-Hill, Edizione: dal Giugno 2017 in poi, ISBN: 883861556X

Magrini A, Maggioni L.; La progettazione degli impianti di climatizzazione negli edifici, EPC Libri, Edizione Ottobre 2010, ISBN: 978-88-6310-292-5

AMBIT	50662-Discipline fisico-tecniche ed impiantistiche per l'architettura
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54

EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims to apply in the design stage, the knowledge learned on basic course (Fisica tecnica ambientale) of the main elements of the building envelope and the main technological systems serving the same.

In particular, through the practical design method, the application aspects will be compared with the regulatory requirements and with the good construction practice. The materials and construction packages that can be used to obtain optimal energy performance of the building envelope are also described as well as the main plant typologies for the microclimatic and luminous control of the buildings.

The course aims to provide the necessary knowledge for modern energy design with respect to environmental comfort with passive and active solutions. The student will learn the use of some calculation software also aimed at the energy efficiency of buildings.

SYLLABUS

Hrs	Frontal teaching
1	Introduction
2	Recall of the characteristics of the materials used in construction. Insulating materials. Global thermal transmittance.
2	Solar radiation, solar paths, climatology
3	Daylighting of buildings
3	Artificial lighting systems
4	Heat balance of buildings. Heat and cold production plants, HVAC systems
4	Space heating plants and systems components
4	Fundamentals of air conditioning. Air Handling processes. Air distribution
4	Building acoustics
4	Renewable energies for buildings
Hrs	Practice
23	Exercise: thermal design of walls, HVAC plants, lighting, acoustics

MODULE
ARCHITECTURAL BUILDING STUDIO

Prof.ssa ANTONELLA MAMI' - Lettere A-E, - Lettere A-E

SUGGESTED BIBLIOGRAPHY

- Quaderni del Manuale di Progettazione Edilizia, Le tecnologie e le tecniche (a cura di A. Gottfried), Hoepli Editore 2006, ISBN 9788820336226
 - Sposito A., Sposito C., "Architettura sistemica. Materiali ed elementi costruttivi", Collana Politecnica, Maggioli Editore, Santarcangelo di Romagna (RN) 2011, 3° edizione, ISBN 9788838760616.
 - Tecnologia. Dispensa didattica a cura di F. S. Brancato
 - Torricelli M.C., Del Nord R., Felli P., Materiali e tecnologie dell'architettura, Laterza, 2007, ISBN 8842060534, qualsiasi edizione

AMBIT	50669-Discipline tecnologiche per l'architettura e la produzione edilizia
INDIVIDUAL STUDY (Hrs)	88
COURSE ACTIVITY (Hrs)	112

EDUCATIONAL OBJECTIVES OF THE MODULE

In the Architectural Construction Studio, the student will develop the first experiences of technological design of a building system and its technological units, applying the study of technologies learned theoretically in the first year. The experience will be basically aimed at the dominant themes in the productive, social, cultural and local economy, with a focus on environmental sustainability, and addressing the different phases that characterize the building process, from the concept to the execution and exploitation of the work, within a approach of requirements and performance.
 At the end of Laboratory, the student must have developed the ability to conceive, design and adequately represent the elements of an architectural complex (structures, walls, roofs, curtain walls, connections, finishes), monitoring the role of materials and construction procedures.

SYLLABUS

Hrs	Frontal teaching
10	Analysis of architectural project
10	Analysis of the requirements and of the performance
10	Technological analysis
10	Choice of design solution
16	Representation of the technological project
16	Representation of the executive details
Hrs	Practice
6	Editing
26	Revision of works
8	Seminars

MODULE
ARCHITECTURAL BUILDING STUDIO

Prof.ssa MARIA LUISA GERMANA' - Lettere O-Z, - Lettere O-Z

SUGGESTED BIBLIOGRAPHY

- . Arbizzani E. Progettazione tecnologica dell'architettura, Maggioli Editore.
- Quaderni del Manuale di Progettazione Edilizia, "Le tecnologie e le tecniche" (a cura di A. Gottfried), Hoepli Editore 2006 (ISBN: 9788820336226).
- Sposito A., Sposito C., "Architettura sistemica. Materiali ed elementi costruttivi", Collana Politecnica, Maggioli Editore, Santarcangelo di Romagna (RN) 2011, 3° edizione (ISBN: 978 88387 6061 6).
- Campioli A., Lavagna M., "Tecniche e Architettura", CittaStudi Edizioni - De Agostini Scuola, 2013 (ISBN: 978-8825173703).
- Torricelli M.C., Del Nord R., Felli P., "Materiali e tecnologie dell'architettura", Laterza, 2007 (EAN: 9788842060536).
- Puglisi V. Cazzaniga M. "Costruire un Edificio. Tecniche, sistemi e materiali costruttivi", II edizione, Maggioli, 2019.

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At the end of Laboratory, the student must have developed the ability to conceive, design and adequately represent the elements of an architectural complex (structures, walls, roofs, curtain walls, connections, finishes), monitoring the role of materials and construction procedures.

SYLLABUS

Hrs	Frontal teaching
10	Analysis of the contextual conditions; of the users' activities and of the distribution system
10	Analysis of the design requirements
20	Technological analysis and choice of design solution
32	Representation of the technological project and of the executive details
Hrs	Workshops
32	Editing and revisions
Hrs	Others
8	Seminars