Degree course	Architecture U.C.
Course code	ARM81
Lecturer	Francesca Giglio
Course name	Innovative technologies for the project
Disciplinary area	D
Disciplinary field of science	ICAR 12
University credits - ECTS	6
Teaching hours	60
Course year	IV
Semester	I

Synthetic description and specific course objectives

The course is part of the disciplinary Architectural Technology and is aimed at the acquisition of specific skills on the design of building systems, components and advanced materials for the building structure, according to criteria of technological innovation and environmental sustainability.
For the purpose of qualifying the Study Course objectives, it's intend to acquire a method and provide design tools able to cope technological problems and design that characterize the contemporary building and developing innovative technological solutions and realization processes, through theoretical contributions, analysis of case studies, experimental activities through, the technical contributions of companies specialized in the production of high-performance and ecological materials or technical elements.
In line with the skills characterizing the architect generalist (Directive EC 2005/36), basic training objective is to investigate theoretically and operationally related issues, in making architecture, the choices of the use of materials construction of building components and building systems, in relation to aspects closely related to the evolution of construction techniques, reduce consumption, the sustainability of manufacturing processes, through a systemic approach to the project.

Course entry requirements

It 's required basic knowledge of the fundaments of architectural technology, with particular reference to technological and environmental system of the building, in addition to knowledge of elements of technical physics.

Course programme

The contents of the course, are focused on technological innovation, quality, and building systems with reference to the reasons and the consequences of evolution of production activity, in contemporary constructive language. The conceptual framework and operational, therefore, focuses on the theories, tools and methods to achieve an innovative design from the point of view of product technologies, process and information technology, starting from the evolutionary dynamics of materials and construction process, until identification related building systems that can be used, investigated with respect to their applications in specific cases studies identified.
Based on this framework, the joint general class, a purely seminar, will focus on:
Part I:
- Innovation and technology transfer in constructive character definitional and theoretical/ operational aspects
- The evolutionary dynamics of materials, components and systems of the building (structure and envelope);
- Innovation constructive and technical information: the new information tools for the project
part II
The second, more operational, is expressed through a close examination criticism of some traditional

materials in their innovated use in the field of construction, and some innovative materials, describing the evolution of the "material" to the "building system" through features and applications in sample case studies. Among the issues discussed:
- Materials, saving resources and energy efficiency: the production offer of advanced manufacturing systems
- Products and components for high-performance building envelope (VIP, TIM, PCM, photo catalytic materials).
- Tradition and innovation: the use of brick in the facade systems

Expected results

Students will gain knowledge and specialist skills in particular concerning:
- The critical ability to address the complexity of the relationship between technical choices, innovation and constructive contemporary languages
- Knowledge of tools and strategies for technologies aimed at the professional design practice
- Knowledge of the criteria for selection of materials, products and components in relation to their effects on the environment in a constructive solution.

Course structure and teaching

Lectures *(hours/year in lecture theatre): 32*
Practical class *(hours/year in lecture theatre): 20*
Practical / Workshops *(hours/year in lecture theatre):8*

The educational activities include, in addition to theoretical lessons, technical seminars by experts / professionals, meetings with companies in the sector.

Student's independent work

Each credit, will be completed by the specific activity of the student (15 hours per credit), which will cover their own individual study activities, according to the bibliography provided and the directions of teaching. The activity of analysis and research, will be characterized by the preparation of drawings, technical-constructive and thematic dossiers on innovative construction systems and related case studies, in order to build your own logical path / deductive and objectives outlined by the course responsible .

Testing and exams

The course includes some intermediate verifications progress of exercises and learning. The assessment of the level of learning acquired by the student during the whole training will be undertaken in relation to:
- The presence during the theoretical lessons and activities;
- The theoretical knowledge acquired during the course of lessons, verified through an oral test;
- The ability of application of such knowledge through the performance of activities.

The course includes the performance of exercises to be carried out for the most part during school hours.
The examination includes an oral interview which will be verified in the knowledge of the matters and a discussion of the papers and tutorials, as specified by the teacher during the course.
It will require, in addition to the predisposition of an executive nature and technical-constructive, the preparation of a technical file-thematic material on the evolution and construction of a building system, which will, for the purposes of correspondence between teaching and research , to implement the level of expertise on the topics covered.

Suggested reading materials

- Arbizzani E. (2008) Tecnologia dei sistemi edilizi, Maggioli editore, Santarcangelo di Romagna
- Gasparri J. (2008) "L'innovazione tecnologia e la sostenibilità nelle costruzioni", Edicom (GO)
- Giordano R. (2010), I prodotti per l'edilizia sostenibile, Sistemi Editoriali Esselibri, Napoli.
- Perriccioli M. A cura di) (2010), "Officina del pensiero tecnologico", Alinea, Firenze
- Sinopoli N., Tatano V. (a cura di) (2002) "Sulle tracce dell'innovazione. Tra tecnica e architettura", Franco Angeli (MI)

The course will also provide bibliographic references on specific topics

Web site:
www.modulo.net
www.ediliziainrete.it
www.edilportale.it

www.infobuildenergia.it

Other didactic material
Specific sector journals:
Arketipo, Azero, Costruire in laterizio, Detail, Modulo, Progettare.