



Course Syllabus

Course Code	Course Title	ECTS Credits
ARCH-411	Sustainable Design	4
Prerequisites	Department	Semester
ARCH -232	Architecture	Fall
Type of Course	Field	Language of Instruction
Required	Architecture	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Adonis Cleanthous Michalis Georgiou Petros Lapithis	4 th
Mode of Delivery	Work Placement	Corequisites
Face to face	N/A	None

Course Objectives:

The main objectives of the course are to:

- The course applies environmental design to the efficient and healthy design and operation of buildings and cities. The course aims to tackle the following three main problems:
- How to design, maintain and operate the built environment while minimizing the energy needs.
- How to adapt the environment, fabric and services of existing and new buildings to the different climatic conditions.
- How to improve the environment in and around buildings to provide better health, comfort, security and productivity.
- The course aims to provide a practical and scientific understanding of the impact of climate on building design and the use of energy efficient building design principles for building design and energy rating. The course will develop an understanding of the world's climate and solar radiation and how they impact on the energy rating and design of buildings. This is followed by the practical aspects of energy efficient and passive solar building design and rating.
- This scope brings architecture into contact with other disciplines concerned with buildings and cities, such as engineering, construction, urban planning, landscape architecture, environmental science, art history, and sociology (which is the core of education the first 4 years of the bachelor). Architecture necessarily engages with all of these neighbouring disciplines, but is the only one of them that has design as its specialist skill and knowledge base. Design is a mode of thinking and practice that combines historical and environmental knowledge, logical analysis and creativity.

- Energy and the thermal environment in buildings are studied. The motivation for energy efficiency on an international, national and individual basis is discussed. An investigation of the way in which buildings respond to both the external and internal climatic conditions forms a major part of this course. Case studies are included in the readings, further 'student-led' studies are expected.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Apply the specific knowledge into architectural design
2. Assess and evaluate the environmental impact of materials
3. Create architectural designs that satisfy both aesthetic and technical requirements.
4. Demonstrate understanding of the human and social impact of the built environment upon the inhabitants of that environment: physically, emotionally and psychologically.
5. Analyze contemporary perspectives on the relationship between human behaviour, designed environments and energy efficiency.
6. Evaluate and weigh the design factors affecting indoor comfort and explore concepts, structures and techniques that lie behind the realization of energy conscious design.
7. Demonstrate understanding of the relationship between people and buildings, and between buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale;

Course Content:

- Shows a practical and scientific understanding of the impact of climate on building design and the use of energy efficient building design principles and software for building design and energy rating.
- Climate Sensible building Design: This course considers the principles and practice of designing buildings that are suited to the local climate anywhere in the world. It discusses the approach to design, the choice of materials and construction methods and the selection of appliances for passive solar building.
- Solar Architecture and Health in Buildings: The course looks at solar architecture and health in buildings. It starts with an investigation of design solutions for commercial/institutional design in various climates. As part of this, it looks at 'solar' philosophy and ethics. The course also then looks at sick building syndrome, health and solar design, and healthy building design principles.
- The course presents advanced problems in design dealing with complex and environmental problems emphasizing the planning of varied in size and programming buildings.
- Energy and the thermal environment in buildings are studied. A rigorous investigation of the way in which buildings respond to both the external climate and the internal control systems

forms a major part of this course. The practical design of low heat loss, healthy buildings is discussed.

Learning Activities and Teaching Methods:

Lectures, presentations, tutorials, Practical Exercises and Assignments, projects. Assignments, Diagrams, Presentations, sketchbook, Homework, Mid-Term, Final Assignment Submission.

Assessment Methods:

Attendance/class participation/progress, Weekly Assignments, Midterm Submission and Final Submission

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Energy Manual	Hegger, Fuchs, Stark, Zeumer editors	Birkhauser basel 2008	2008	9783764383300
Modern Construction Envelopes	Andrew Watts	Ambria/V, Vienna	2014	978-3990435595

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Rethinking Technology	Braham, Hale editors	Routledge, London	2007	9780415346542