



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DIDA
DIPARTIMENTO DI
ARCHITETTURA

DiDA – DIPARTIMENTO DI ARCHITETTURA/ARCHITECTURE DEPARTMENT

C.d.L ARCHITETTURA MAGISTRALE

Curriculum in ARCHITECTURAL DESIGN (D59) - iCAD - Class LM-4 cod. B076 / B018894

a.a.2022- 23

ARCHITECTURE AND ENVIRONMENT LAB

PROF. SSA LAURA ANDREINI (Architectural Design III)

PROF. GIUSEPPE RIDOLFI (Environmental Design)

PROF. LORENZO GIORGI (Environmental control techniques)

Class Overview

The course includes an integrated multidisciplinary education (architectural design, environmental design, techniques for environmental control) focused on the relationship between natural and built environments. The general objective of the course is to provide students with the necessary tools for generating an environmental approach to architectural design. Tools and methods for environmental design of buildings; identifying problems that emphasize the conceptual strategies of form and space, the relationships of the site and the social, technological and environmental determinants. The workshop aims to provide expertise on the development of design, the choice of materials, energy assessments and the use of assessment tools.

Common rules

Each project/assignment deadline as scheduled is mandatory. The student will be able to reach the final exam only if has reached a minimum of 75% of attendance at the lessons.

Program

The course's duration is an academic semester for a total of 144 hours (48+48+48), for which enrolled students receive 18 (6+6+6) academic credits.

All the course's activities require participation and students must have 75% attendance in order to be eligible for the mid-semester evaluations and the final exam.

ARCHITECTURAL DESIGN III - B018895 - 6CFU – PROF. SSA LAURA ANDREINI

Overview

In light of the now widespread awareness that design requires complete appreciation and

Understanding the meaning of “environmental sustainability,” and the universal acceptance of the concept of “sustainability”, the course has the primary objective of exploring this issue, delving into important developments in this area in the contemporary scene.

Buildings must be built with consideration for the environment in which they will be set and responding to the specific social needs that currently pertain first and foremost to the habitat, energy consumption and the emissions the buildings produce. This is clearly not a passing trend but a need in response to a genuine environmental emergency requiring all countries to drastically reduce greenhouse gases, a third of which are produced by human activities connected to housing.

The belief has finally become widespread, in building and architecture as well, that every human action has an effect on the community. Activities related to “building” must, therefore, take on specific responsibilities that require everyone involved to carefully adhere to these criteria, methods, and products that let us work consciously in harmony and with respect for the environment.

The course is highly multidisciplinary, bringing into relationship different realms such as architectural, environmental and landscape design, history and restoration of historical centers, energy analysis, assessment of economic and environmental impact, innovative technologies, building technologies, and new materials, as well as new building techniques.

The Lab is organized with an “on the job” approach to make it dynamic and engaging; classroom lectures are limited in favor of seminars and application exercises. Within the span of a semester, most educational activities will be in the classroom and focused on devising and developing the final project.

Attendance

The student has to be present at each lecture and each desk critique/review. Each project/assignment deadline as scheduled is mandatory. The student will be able to reach the final project only if has reached a minimum of 80% of presence at the lessons. In each Review student will have to show drawings (handmade or printed) in scale (1:500/1:200/1:100/1:50/1:20 are the scale accepted) and handmade model of the project (1:500/1:200/1:100/1:50).

Final exam

10 boards in A0 format containing all the project drawings

historical/urban context analysis

master plan scale 1:1000

project concept

general plans on a scale of 1:500

functional schemes

distributive layouts

plans, elevations, sections on a scale of 1:100

with in-depth studies on a scale of 1:50

Construction details on a scale of 1:20

material indications

renderings and mock-up

3D video of the project or model

illustrated report in A4 format comprising at least 20 pages including the cover page

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ENVIRONMENTAL DESIGN - B018896 - 6 CFU – PROF. GIUSEPPE RIDOLFI

Teaching assistants:

Overview

Attendance

Final exam

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ENVIRONMENTAL CONTROL TECHNIQUES - B018897 - 6 CFU – PROF. LORENZO GIORGI

Overview

The course program handles the learning process required to obtain a consistent knowledge over the practice of environmental control techniques toward the accomplishment of a project driven by a strong architectural design for the production and management of buildings, urban spaces and infrastructures, introducing a further validation methodology, given by computational methods applied to different building typologies and to different environment conditions.

In this context, environmental control techniques will be addressed as the process to address surrounding environmental parameters with respect to devising plans, programs, policies, buildings, or products.

An extensive variety of suites and software applications will be described and applied in relation to the definition of energy ratings and asset rating, the frequency of the calculation methodology (simplified or detailed), the discrepancy between new or existing buildings, the layout of the energy performance certificate, the mutual relation between energy performance and indoor environment quality.

The class attention will be focused on building requirements in terms of controlled environments, well-being, climate control systems, resource consumption; all these aspects will be offered to supply students with investigating opportunities through specific design considerations, related to the built environment, as well as problem solving tools.

Semester activities will provide the means of support to assess capabilities and contributions that building products make to conservation and to the overall consumption of energy, introducing students to the practice of: Building Performance Simulation (B.P.S).

The course will let participants to the understanding and to the control of several aspects of a study case, such: judging compliance with regulations expressed in terms of energy targets: comparing the energy performance of various design alternatives, displaying a standardized level of energy performance of the existing building; assessing

the effect of possible energy conservation measures on the existing building, predicting future energy resource needs of the given study case.

The course schedule offers a consistent set of calculation methods implementing different levels of detail: from the energy use, space heating and cooling of a building to the occupant's perception.

Class atmosphere will encourage students to explore, by doing and manufacturing, a variety of technologies associated with VEM (Virtual Environment Modeling) practices addressed to architectural design through the application of detailed computational method tools. This exploration will be pursued in the context of design principles moving from the general built environment to domestic scale building technology solutions.

The learning process will underpin scientific principles and hands-on experience through experimenting, modeling and making to get familiar with issues and principles related to these topics. The teaching approach throughout the course will be driven to achieve a proactive behavior in students by experiencing, observing and doing, all of which found a proper expression in the final examination project.

Attendance

Course attendance is compulsory.

Please note that no flexibility is allowed when students will not take part in intensive workshop sessions.

Class policy of the course establishes that if the student is not attending compulsory classes or has collected more than three absences, without adequate justification, fails the exam.

In any case, the professor is not responsible for students who are not receiving information due to their truancy although most of the information is accessible online.

Final exam

The submission of:

1. A written work, of both the non-technical summary and the technical report describing the given study case, will provide the ideal vehicle for the evaluation of learning outcomes.
2. A clip presentation, 5 minutes at the most, in supply of investigating opportunities through specific design considerations related to the built environment, as well as design as a problem-solving tool.
3. Open Studio/EnergyPlus model of the final project outcome to prove semester progresses.

About plagiarism:

The University's community is expected to maintain high standards of Academic Honesty and uphold Academic Honesty in his / her activities. The class is against plagiarism and dishonesty. Cheating, appropriation of materials from other authors without crediting them and re-using research or projects done in previous courses without appropriate authorization is a violation of the University's code of academic integrity. The appropriation of work, ideas, words of someone else without attribution, assisting or receiving assistance during test or examination, impeding or damaging the academic work of other students, submitting the same work in more than one course, deliberate falsification and distortion are prohibited.

Students are invited to place clearly sourced references and credits in appropriate ways using standard conventions.

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