



PROGETTO DELLA QUALITA' ENERGETICA DEGLI EDIFICI E DEGLI IMPIANTI

12 CFU - 1° and 2° Semester

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LEARNING OBJECTIVES

▪ QUALITA' ENERGETICA DEGLI EDIFICI E DEGLI IMPIANTI

The scope of this academic course is to provide technical and scientific bases to evaluate the energy performance of buildings and energy systems, as well as to make students capable to approach the preliminary design of the energy systems (solar plants, thermal systems).

To this aim, the most recent technologies for the energy efficiency of buildings and systems will be introduced, as well as the corresponding design approaches. Thermal comfort and Indoor Air Quality will also be addressed. The students will be able to perform Energy Certification of buildings and dynamic energy simulations, and to conceive the building design by being aware of all the requisites introduced by recent legislation on energy efficiency.

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requisites introduced by recent legislation on energy efficiency.

COURSE STRUCTURE

▪ QUALITA' ENERGETICA DEGLI EDIFICI E DEGLI IMPIANTI

Lectures and classwork

▪ LABORATORIO PROGETTUALE DELLA QUALITA' ENERGETICA DEGLI EDIFICI E DEGLI IMPIANTI

Lectures and classwork

DETAILED COURSE CONTENT

▪ QUALITA' ENERGETICA DEGLI EDIFICI E DEGLI IMPIANTI

1. Energy performance of the opaque envelope components
2. Energy performance of the transparent envelope components
3. Natural ventilation and Indoor air quality
4. Controlled Mechanical Ventilation systems
5. Thermal comfort
6. Building integrated photovoltaic systems
7. Dynamic energy simulation for building energy performance
8. Energy certification of buildings
9. Calculation of the thermal loads
10. Efficient technologies for space heating
11. Radiators, fan-coil and control strategies
12. Distribution networks for air and water
13. Solar thermal systems
14. Fiscal incentives for the energy retrofit of buildings

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TEXTBOOK INFORMATION

▪ LABORATORIO PROGETTUALE DELLA QUALITA' ENERGETICA DEGLI EDIFICI E DEGLI IMPIANTI

1. Capozzoli, V. Corrado, A. Gorrino, P. Soma, *Atlante nazionale dei ponti termici - conforme alle norme UNI EN ISO 14683 e UNI EN ISO 10211*. Ed. Edilclima, 2011.
 2. K. Fabbri, C. Marinosci, *Ponti termici negli edifici. Valutazioni, calcolo, correzioni, interventi*. Ed. Wolters Kluwer Italia, 2014 (biblioteca DAU)
 3. A. Magrini, M. Ozel-Ballot, *La ventilazione per una migliore qualità dell'aria*. II^a ed, EPC libri, 2005.
 4. V. Raisa, *Teoria e tecnica della ventilazione*. Ed. Delfino, 2010
 5. G. Moncada Lo giudice, M. Coppi, *Benessere termico e qualità dell'aria*. Ed. Masson, 1997 (biblioteca Polifunzionale, EE-VI-13).
 6. G. Alfano, F.R. D'ambrosio, G. Riccio, *La valutazione delle condizioni termoigrometriche negli ambienti di lavoro: confort e sicurezza*. Ed. CUEN, 1997 (Biblioteca Polifunzionale, EE-VIII-30)
 7. F. Groppi, G. Zuccaro, *Impianti solari fotovoltaici a norme CEI*. Ed. Delfino, 2010 (Biblioteca Polifunzionale, EE-XIII-16)
 8. R. Baruffa, A. Bruschi, *Acustica nei componenti edilizi. Dati sperimentali e criteri di scelta nati dall'esperienza di laboratorio*. Ed. Dario Flaccovio, 2010.
 9. AA. VV. *Manuale di acustica edilizia*. Ed. ANIT, 2011.
 10. M. Lavagna, M. Bonanomi, C. de Flumeri, *Edifici a consumo energetico zero. Orientamenti normativi, criteri progettuali ed esempi di Zero Energy e Zero Emission Buildings*, Ed. Maggioli, 2012 (biblioteca DAU, D-m-38).
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