



UNIVERSITÀ
DEGLI STUDI
DI PALERMO

DEIM

Dipartimento di Energia, ingegneria
dell'Informazione e modelli Matematici



Educational Course

Energy Life Cycle Performances of Buildings



LEARNING OBJECTIVES

At the end of this week students will have participated in an Integrated Design Process and will be able to:

Optimise the Passive Energy performance of a Net Zero Energy Building

Optimize and tradeoffs between technical solutions towards optimal Life Cycle performances

Identify energy and environmental hot-spots in the life cycle of buildings

Optimise the renewable energy generation in buildings



The “Energy Life Cycle Performances of Buildings course” will be based on lessons and practical exercises. The course will have as focus the design of life cycle energy efficient buildings and will target both the use stage design and the life cycle oriented one in an integrated approach.

NO FEE is expected from participants.

Ph.D. and Master students are welcome.

Other expenses (e.g. dining, coffee breaks) are due to participants.

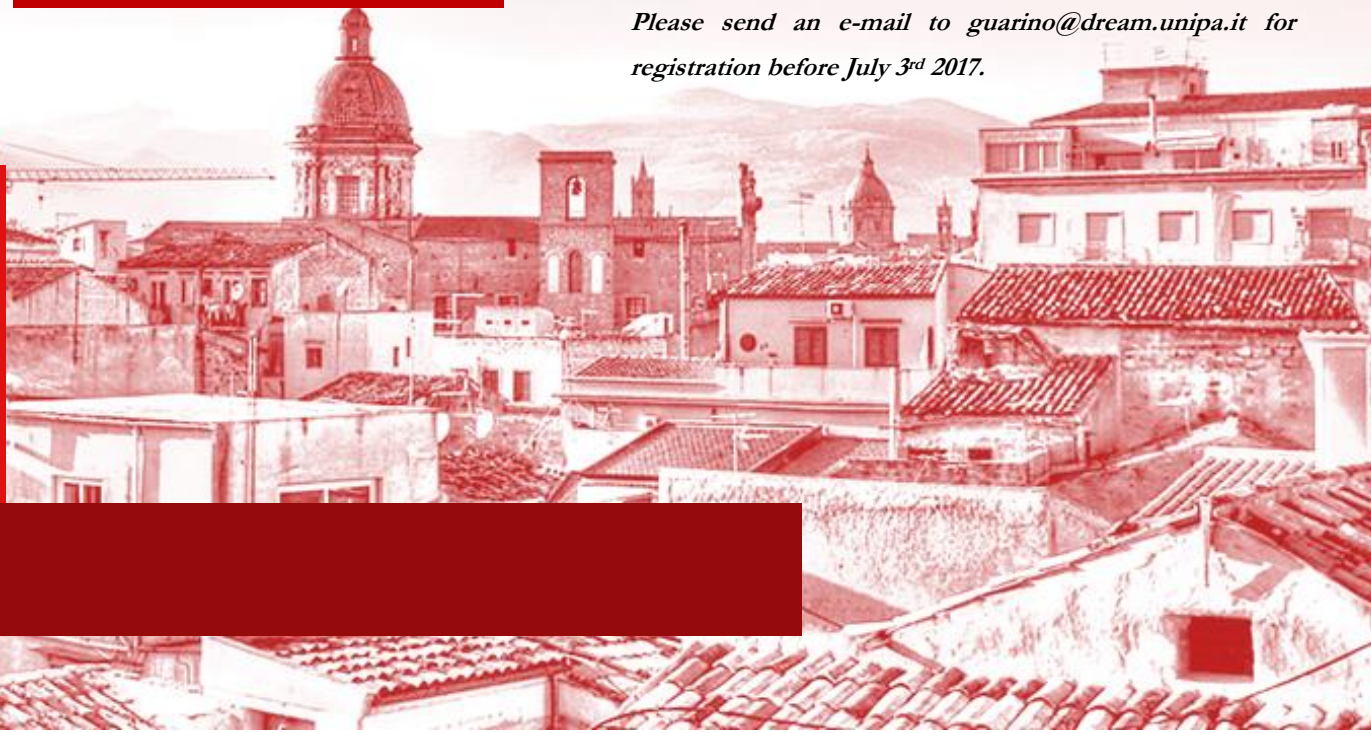
The use of a laptop is required, as well as the pre-loading of specific software packages for the exercises, to be communicated to participants some weeks before the Course.

The maximum number of participants is 25 students.

Please send an e-mail to guarino@dream.unipa.it for registration before July 3rd 2017.

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SCUOLA POLITECNICA
DIPARTIMENTO DI ENERGIA, INGEGNERIA
DELL'INFORMAZIONE E MODELLI MATEMATICI
VIALE DELLE SCIENZE EDIFICIO 9, AULA T 104
PALERMO

10-13 JULY 2017



Energy Life Cycle Performances of Buildings

EDUCATIONAL COURSE

Scientific Directors

Prof. Maurizio Cellura
University of Palermo

Dr. Francesco Guarino
University of Palermo

Prof. Sonia Longo
University of Palermo

Lecturers

Prof. Marco Beccali
University of Palermo

Prof. Federico Butera
Polytechnic of Milan

Prof. Maurizio Cellura
University of Palermo

Prof. Caroline Hachem
University of Calgary

Dr. Francesco Guarino
University of Palermo

Prof. Sonia Longo
University of Palermo

Prof. Marina Mistretta
University of Reggio Calabria

Prof. Eleonora Riva Sanseverino
University of Palermo

Prof. Marzia Traverso
University of Aachen

ABSTRACT

The building sector is one of the most relevant sectors in terms of generation of wealth and occupation, but it is also responsible of relevant consumption of natural resources and generation of environmental impacts.

In the European Union, the above sector is responsible of around 50 to 60% of the use of natural resources, and these percentages will not decrease, without the development of strategies oriented to the reduction of the use of fossil fuels and to the increase in the use of renewable energy technologies.

But this cannot be enough, since in a context where low energy buildings and net (nearly) zero energy buildings are developing and being included in legislations around the world, it is needed to take in consideration the whole life cycle of buildings, since to reach very high performances during the use phase, high energy and environmental impacts can be caused in other life cycle stages.

The course is developed in the context of the educational activities of the PhD in Energy and Information Technologies of the University of Palermo, LCA and sustainable technologies Workgroup of the Italian LCA Network, of the CRIM-SAFRI research centre and under the patronage of the Sustainable Development Solutions Network Youth.

MONDAY 10 July

08:30-9:00 Welcome speeches

09:00-10:00 Prof. M. Cellura "Sustainable development goals and decarbonization of the building sector"

10:00-11:00 Prof. F. Butera "Sustainability in the building sector"

11:00-13:00 Prof. E. Riva Sanseverino "Smart Grid and Smart Cities"

14:00-16:00 Dr. F. Guarino "Fundamentals of bioclimatic architecture and comfort in nZEBs"

16:00-18:00 Dr. F. Guarino - Exercise

TUESDAY 11 July

9:00-12:00 Prof. C. Hachem "Building Envelope design"

12:00-14:00 Prof. C. Hachem - Exercise

15:00-17:00 Prof. M. Mistretta "Net/Nearly Zero Energy Buildings Metrics"

WEDNESDAY 12 July

9:00-11:00 Prof. S. Longo "Fundamentals of Life Cycle Assessment applied to Buildings"

11:00-13:00 Prof. S. Longo - Exercise

14:00-16:00 Prof. M. Beccali "A simplified LCA tool for SHC Systems. Outcomes from IEA-SHC tasks 48 and 53"

16:00-18:00 Prof. M. Traverso "Life Cycle Sustainability Assessment of Buildings"

THURSDAY 13 July

9:00-11:00 Final Exams

11:00-12:00 Certificates Delivery

12:00-13:30 Seminar - "Life Cycle Sustainability Assessment: state-of-the-art and perspectives"