Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: Technical Physics				
TEACHER: DI TOMMASO Rocco Mario				
e-mail: rocco.ditommaso@unibas.it		website:		
Language Italian				
ECTS: 9	n. of hours: 90	Academic year: 2014-15	Campus: Potenza	Semester: Annual

TOPICS
Applied Thermodynamics, Heat Transfer and Heating Plants

TEACHING METHODS (please tick one or more options)
☐ Theoretical lessons
☐ Tutorials in classroom
☐ Tutorials in laboratory
☐ Project works
☐ Technical visits
Other activities (please specify) _____

TEXTBOOKS
Problemi di Termodinamica Applicata Boeche, A.Cavallini, S. Del Giudice Cleup - Padova

Termodinamica Applicata A. Cavallini, L. Mattarolo - Cleup - Padova

Trasmissione del Calore C. Bonacina, A. Cavallini, L. Mattarolo - Cleup – Padova

ON-LINE EDUCATIONAL MATERIAL
web address:

LEARNING OUTCOMES
The course is aimed to solve simple problems in modeling thermo-fluid-dynamic processes and energy systems.

REQUIREMENTS
Mathematical Analysis 1st; Physics 1st

EVALUATION METHODS (please tick one or more options)
☐ Intermediate verifications
☐ Written examination
☐ Discussion of a project work
☐ Practical test
☐ Oral examination
Other methods (please specify) _____

DETAILED CONTENT
Basic concepts of thermodynamics: introduction: thermodynamic systems, equilibrium states, processes. The First Law of thermodynamics: application to closed and open systems. The Second Law of thermodynamics: statements and irreversibility. Cycles and processes for power and refrigeration plants (Otto, Brayton, Rankine, vapor-compression cycle); heat transfer mechanisms, the Fourier's equation, the one-dimensional steady-state solution for plane and cylindrical geometry; electrical analogy and equivalent thermal network; transient conduction (the lumped capacitance method); forced convection in internal and external flows, dimensionless numbers; thermal radiation, black body, gray surfaces, radiation exchanges.

SEMINARS BY EXTERNAL EXPERTS YES ☐ NO ☐

FURTHER INFORMATION