

DESCRIPTION OF THE EDUCATIONAL ACTIVITY

Academic year: **2010-2011**

Course title: ***Applied Thermodynamics and Heat Transfer***

Course number: **0612300010**

Type of educational activity: ***characterizing subject***

Subject Group: **ING-IND/10**

Year of study: **2st year "Corso di Laurea"**

Semester: **1st and 2nd**

Total number of credits: **12**

Global workload (n. of hours) : **300**

Number of hours allocated to: lectures, tutorials, laboratory, individual study: **80, 40, 180.**

Name of lecturer: ***Gennaro Cuccurullo and Carlo Renno***

Objectives of the course: ***To give the students the fundamental elements of the applied thermodynamics in order to analyze vapor power systems, refrigeration plants and heat pumps. To use heat transfer principles to understand the behaviour of thermal systems and to illustrate the development of the basic governing differential equations associated with thermal systems.***

Prerequisites: ***Physics 1, Mathematics 2.***

Course contents: ***Fundamental concepts and definition of thermodynamics. First and second law of thermodynamics for closed systems. Fundamental laws related to the study of the open systems. Thermodynamic properties. Thermodynamic systems components. Vapor power systems, refrigeration plants and heat pumps. Steady-state conduction; transient conduction; lumped and distributed systems; thermal and hydrodynamic boundary layer concepts; forced convection (external and internal); free convection; heat exchangers; radiation properties; radiation heat transfer; combined mode heat transfer.***

Recommended reading:

P.Mazzei, R.Vanoli -Fondamenti di Termodinamica-Liguori Editore.

R.Mastrullo,P.Mazzei, R.Vanoli-Termodinamica per Ingegneri-Liguori Editore.

G. Cuccurullo, P. G. Berardi, Elementi di Termodinamica e Trasmissione del Calore - Cues.

Teaching methods: ***lectures, exercises.***

Assessment methods: ***written examination and oral test.***

Language of instruction: ***Italian.***

Additional information: ***further information can be requested by e-mail: crenno@unisa.it; gcuccurullo@unisa.it or read @ of the url: ht.ucoz.com.***