



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2017/2018
BACHELOR'S DEGREE (BSC)	MANAGEMENT ENGINEERING
SUBJECT	TECHNICAL PHYSICS
TYPE OF EDUCATIONAL ACTIVITY	C
AMBIT	10657-Attività formative affini o integrative
CODE	03318
SCIENTIFIC SECTOR(S)	ING-IND/10
HEAD PROFESSOR(S)	LA ROCCA VINCENZO Cultore della Materia Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	LA ROCCA VINCENZO Thursday 10:00 11:00 Stanza T128

DOCENTE: Prof. VINCENZO LA ROCCA

PREREQUISITES	For a good understanding of the topics discussed during the lectures, the knowledge of basic concepts of Mathematics and Physics, studied in previous modules, is required.
LEARNING OUTCOMES	<p>Knowledge and understanding. The student at the end of the course will have knowledge of basic topics related to heat transfer, fluid mechanics, thermodynamics and psychrometry. To achieve this objective the course provides: lectures, analysis and discussion of case studies. An oral examination at the end of the module aims to assess if the student has a sufficient knowledge of the topics.</p> <p>Applying knowledge and understanding. The student will be able to actually apply the concepts learnt during the module into some real problems, this include design and validation. To achieve this objective, the course includes lectures and guided practical lessons. Part of the final oral examination will include the resolution of simple exercises.</p> <p>Making judgments. The student will be able to recognize and classify the physical phenomena studied during the module and will be able to deal with them in real practical cases. To achieve this objective, the course includes lectures and guided practical lessons. Part of the final oral examination will include the resolution of simple exercises.</p> <p>Communication skills. The student will acquire the ability to communicate and express the concepts regarding the discipline. It will be able to hold conversations and prepare basic documents related to the heat transfer, fluid mechanics, thermodynamics and psychrometry. To achieve this objective, the course includes lectures and guided practical lessons. Part of the final oral examination will include the resolution of simple exercises.</p> <p>Learning ability. The topics learnt will allow the student to successfully carry on with engineering studies and will, particularly they will ease his learning process when attending the following related modules. To achieve this objective, the course includes lectures and guided practical lessons. Part of the final oral examination will include the resolution of simple exercises.</p>
ASSESSMENT METHODS	<p>The candidate will have to answer at least four oral questions regarding any of the topics covered by the program which can be found in the recommended textbooks. Final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired a critical thinking and is able of taking decisions independently. A successful outcome can be achieved if the student shows a good knowledge and understanding of the topics at least in general terms and reaches a good level of problem solving; good presentation and communication skills are also important to show the examiner confidence on the topics. If these requirements are not met, the outcome of the examination will be negative. The more, however, the examinee with its argumentative and presentation skills can interact with the examiner and the more his knowledge and application capabilities go into detail on the subject of the discipline, the more the assessment is positive. The assessment is carried out of thirty according to the following schedule.</p> <p>Outcome Rating Rating</p> <p>Excellent30-30 laude The candidate shows an excellent knowledge of the topics, excellent communication skills, good analytical ability. The student is able to apply the knowledge to solve problems proposed.</p> <p>Very good 26-29 The candidate has a good knowledge of the subject, good communications skills. The student is able to apply knowledge to solve problems proposed.</p> <p>Good 24-25 The candidate has a basic knowledge of the main topics, discrete properties language, with limited ability to independently apply the knowledge to solve the proposed problems.</p> <p>Satisfactory21-23The candidate does not fully know the main topics but partly know them, satisfactory property language, poor ability to independently apply the knowledge gained.</p> <p>Sufficient18-20 The candidate has a very basic understanding of the main topics and of the technical language, very little ability to independently apply the knowledge gained.</p> <p>InsufficientThe candidate does not show an acceptable knowledge of the topics covered during the module.</p>
EDUCATIONAL OBJECTIVES	The module provides the knowledge for dealing with: Fluid Mechanics, Thermodynamics, Heat transfer and Psychrometry. Purpose of the course, in addition to the study of the theory, is the acquisition of a certain familiarity with the most common and simple calculation techniques. To achieve that it is recommended to attend exercise classes and to carry on with self-study using the suggested textbooks. Preparatory modules: Mathematics, Physics Analysis I and II.

TEACHING METHODS	Lectures and exercise classes.
SUGGESTED BIBLIOGRAPHY	G. Rodono, R. Volpes: Fisica Tecnica (volumi 1 e 2), ARACNE, 2011. G. Rodono, R. Volpes: Dati per la Fisica Tecnica, Palermo 1994. (Dispense) G. Rodono, R. Volpes: Problemi di Fisica Tecnica, Palermo 1994. (Dispense) Dispense: E. Bettanini, F. De Ponte: Problemi di Trasmissione del calore, Patron, Padova

SYLLABUS

Hrs	Frontal teaching
8	Heat transfer
2	Mixed heat transfer forms
2	Hydrostatic
2	Currents flowing in the ducts
1	Resistances to fluid flow
4	The first law of thermodyn
4	The second law of thermodynamics
1	Thermodynamic properties of substances
5	Thermodynamic cycles
2	Thermotechnical measures
4	Working with the humid air
Hrs	Practice
12	Various exercises on the arguments developed during the lectures