SUBJECT TEACHING GUIDE

G1108 - Thermodynamics and Fluids Mechanics

Degree in Maritime Engineering

Academic year 2016-2017

1. IDENTIFYING DATA					
Degree	Degree in Maritime Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Maritime Engineering				
Discipline	Second Year Subjects Subject Area: Fluid Mechanics and Thermodynamics Module in Common with the Naval Branch				
Course unit title and code	G1108 - Thermodynamics and Fluids Mechanics				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ELECTRICA Y ENERGETICA
Name of lecturer	CARLOS JAVIER RENEDO ESTEBANEZ
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Other lecturers	PAULA LAMO ANUARBE CRISTINA FERNANDEZ DIEGO

3.1 LEARNING OUTCOMES
- Able to solve problems of Fluid Mechanics
- Knowing to solve problems of Thermodynamics

4. OBJECTIVES
Get knowledge of thermodynamics and fluid mechanics, for application to the resolution of practical cases.
Knowing the behavior of fluids and apply it to solve practical cases
Knowledge of the behavior of fluid flow and design methods of ducts and pipes
Knowing the basis of the pinciples of the behavior of hydraulic machines
Know and apply the theoretical principles of thermodynamics
Be able to analyze the behavior of the basic power and cooling cycles

6. COURSE ORGANIZATION	
CONTENTS	
1	SUBJECT PRESENTATION
2	FLUID MECHANICS
2.1	Introduction to Fluid Mechanics
2.2	Fluid Statics
2.3	Fluid Dynamics
2.4	Fluid Flow in Pipes
2.5	Water hammer and cavitation
2.6	Introduction to Hydraulic Machines
2.7	Fluid mechanics Lab: Practice 1: viscosity test (Haake VT550 rotational viscometer). Practice 2: Test of a venturi (Lab test Bank). Practice 3: Test of losses in pipes and fittings (Lab test Bank). Practice 4: Exploded hydraulic machines. Practice 5: Test couplings centrifugal pumps (Bank test lab)
3	THERMODYNAMICS
3.1	Basics concepts
3.2	First law of thermodynamics
3.3	Second law of thermodynamics
3.4	State functions
3.5	Power Cycles
3.6	Refrigetarion Cycles
3.7	Psychrometry
3.8	Tthermodynamics Lab. Practice 1: Simulation of Thermodynamic properties (ProAgua and Progases Programs). Practice 2: Simulation of Power Cycles (ProAgua and Progases Programs). Practice 3: Simulation of refrigeration cycles (ISCOOL / DUPREX Program). Practice 4: Simulation of properties of moist air (Psychro Program)

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Exam 1	Written exam	No	Yes	15,00
Exam 2	Written exam	No	Yes	15,00
Exam 3	Written exam	No	Yes	15,00
Exam 4	Written exam	No	Yes	15,00
Exam 5	Written exam	No	Yes	15,00
Exam 6	Written exam	No	Yes	15,00
Lab report	Work	No	Yes	10,00
TOTAL				100,00
Observations				
Observations for part-time students				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Mecánica de Fluidos y Máquinas Hidráulicas; Claudio Mataix; Ed. Oxford, 2001
Termodinámica Lógica y Motores Térmicos; Agüera Soriano, J.; Ed Ciencia 3, S.A. Problemas Resueltos. Termodinámica Lógica y Motores Térmicos; Agüera, J; Ed Ciencia 3, S.A., 1999
Termodinámica para Ingenieros; Potter, M, Somerton C; Ed MCGrawHill, 2004
Fundamentos de Termodinámica Técnica; Moran M, Shapiro H; Ed Reverte, S.A., 2004
Termodinamica, Rolle, K; Ed Pearson, 2006
Mecánica de los Fluidos e Hidráulica; R. V. Giles; Ed MCGrawHill, 1994
Mecánica de Fluidos Aplicada; Mott, R; Ed. Prentice Hall, 1996