

## Hydraulic Machines

Academic Year: ( 2019 / 2020 )

Review date: 10-02-2020

Department assigned to the subject: Thermal and Fluids Engineering Department

Coordinating teacher: HUETE RUIZ DE LIRA, CESAR

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

## REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Fluid Mechanics. Ordinary Differential Equations, Physics

## DESCRIPTION OF CONTENTS: PROGRAMME

- 1 Introduction to hydraulic machinery
- 2 Review of fundamental fluid mechanics
- 3 Ideal Theory of Hydraulic machines
- 4 2D Theory of Hydraulic machines
- 5 3D Theory of Hydraulic machines
- 6 Dimensional Analysis and Similarity
- 7 Cavitation
- 8 Coupling systems with hydraulic systems

## ASSESSMENT SYSTEM

The work of the students is evaluated during the whole course by grading exercises that will be proposed periodically. At the end of the academic period, a final exam will complete the grade of the students in a 60% exam 40 % exercises basis

<b>% end-of-term-examination:</b>	60
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	40

## BASIC BIBLIOGRAPHY

- S.L. Dixon and C.A. Hall Fluid Mechanics and Thermodynamics of Turbomachinery, Elsevier, 2013

## ADDITIONAL BIBLIOGRAPHY

- Round GF Incompressible flow turbomachines , Elsevier, 2004