

Helicopters and other aircrafts

Academic Year: (2023 / 2024)

Review date: 11-01-2024

Department assigned to the subject: Aerospace Engineering Department

Coordinating teacher: FAJARDO PEÑA, PABLO

Type: Electives ECTS Credits : 3.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Aerodynamics; Mechanics of Flight; Stability and Integrity of Aerospace Structures;

OBJECTIVES

The goal of this course is to introduce student to the concepts of rotary wing aerodynamics and aeromechanics; helicopter flight mechanics; helicopter operations; and helicopter design. Additionally the description of other types of aircrafts will be addressed and an introduction to the main aspects of helicopters technology.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction to V/STOL Aircrafts
2. Introduction Momentum Theory and Blade Element Theory
3. Axial Flight
4. Forward Flight
5. Helicopter Performances
6. Stability and Control
7. Blade aero-mechanics
8. Helicopter Design

LEARNING ACTIVITIES AND METHODOLOGY

Theory sessions.
Problems and Projects based learning.

ASSESSMENT SYSTEM

In order to pass the subject, two requirements need to be met:

- 1) to have a MINIMUM mark of 4.0/10 in the end-of-term exam;
- 2) to have a minimum overall mark of 5.0/10 (weighing 60% the end-of-term exam mark and 40% the mark of the continuous evaluation).

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

BASIC BIBLIOGRAPHY

- J. Gordon Leishman Principles of Helicopter Aerodynamics, Cambridge University Press, 2002

ADDITIONAL BIBLIOGRAPHY

- A.R.S. Bramwell George Done David Balmford Bramwell's Helicopter Dynamics, Butterworth-Heinemann, 2001