

Academic Year: (2019 / 2020)

Review date: 08-10-2019

Department assigned to the subject: Bioengineering and Aerospace Engineering Department

Coordinating teacher: IANIRO , ANDREA

Type: Compulsory ECTS Credits : 3.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Students are expected to have a basic knowledge of aerodynamics and fluid mechanics.

OBJECTIVES

The goal of this course is that the student acquires knowledge about experimental methods in aerodynamics and about the methodology for the design of an experiment.

DESCRIPTION OF CONTENTS: PROGRAMME

Theoretical fundamentals of experimental aerodynamics: Buckingham pi theorem, fundamental equations and non dimensional numbers.
 Statistical data characterization and elements of data processing
 Experimental facilities and wind tunnel testing
 Aim and principles of flow visualization
 Flow pressure measurements
 Temperature and heat-flux measurements
 Density-based methods
 Thermal Anemometry
 Laser Anemometry
 Volumetric Velocimetry
 Measurement of wall shear stresses
 Force and moments measurements

LEARNING ACTIVITIES AND METHODOLOGY

Theory sessions.
 Problem sessions working individually and in groups.
 Lab-sessions and homeworks

ASSESSMENT SYSTEM

- 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 (weighting 25% the end-of-term exam mark and 75% the mark of the continuous evaluation).

% end-of-term-examination:	25
% of continuous assessment (assignments, laboratory, practicals...):	75

BASIC BIBLIOGRAPHY

- Alexander J. Smits, T. T. Lim Flow Visualization: Techniques and Examples, ICP, 2012
- Stefano Discetti, Andrea Ianiro Experimental Aerodynamics, CRC Press , 2017