# AEROSPACE ENGINEERING (LM52)

(Brindisi - Università degli Studi)

## Teaching FUNDAMENTAL OF HELYCOPTER DESIGN, PRODUCTION AND MAINTENANCE

GenCod A003318

**Owner professor** FRANCESCO NICASSIO

**Teaching in italian** FUNDAMENTAL OF HELYCOPTER DESIGN, PRODUCTION

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**SSD code** ING-IND/04

**Reference course** AEROSPACE ENGINEERING

**Course type** Laurea Magistrale

**Credits** 6.0

**Teaching hours** Front activity hours: 54.0

**For enrolled in** 2019/2020

**Taught in** 2020/2021

**Course year** 2

**Language** ENGLISH

**Curriculum** Percorso comune

**Location** Brindisi

**Semester** First Semester

**Exam type** Oral

**Assessment** Final grade

**Course timetable** https://easyroom.unisalento.it/Orario

BRIEF COURSE DESCRIPTION

*This course provides basic concepts of helicopter systems, with associated structures and substructures. The course intends to reach the "integrated helicopter view" in which each part is connected to the "helicopter main system". This interdisciplinary approach facilitates the scientific development of the students.*

REQUIREMENTS

*In order to attend the course, students must have a deep knowledge of physics (kinematic, static, dynamic, thermodynamic, electrical, optical, acoustic studies...). Overall, skills on aircraft (configurations and main features) are desirable. The knowledge of aerodynamic, flight mechanics, aeronautic structures and propulsion principles could be an aid for the students.*

COURSE AIMS

*The course aims at developing the student's skills of helicopter system. In particular, it is expected that the students will know:*
*- the main features of helicopter structures;*
*- the architecture of the main common helicopters;*
*- the certification specifications about helicopter vehicles;*
*- the helicopter substructures in a correct manner;*
*- the mechanical vibrations;*
*- the fasteners design.*
*The students are encouraged to:*
*- carry out simple planning applications;*
*- estimate order of magnitude of values in case study of a vehicle benchmark;*
*- learn technical terminology (English vocabulary)*

TEACHING METHODOLOGY

*The course is delivered with class activities, where the teacher presents methods, models and experimental experiences.*

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| ASSESSMENT TYPE | *The exam consists of written and oral tests, based on questions, where the student is required to demonstrate his understanding of some specific facts of helicopter configuration.* |
| FULL SYLLABUS | *- Course introduction*<br>*- Basic helicopter structures*<br>*- CS 27 & 29*<br>*- Main and Tail Rotor*<br>*- Flap, Pitch, Lead and Lag Main Rotor DOFs*<br>*- Swashplate*<br>*- Main Command Line*<br>*- Tail Command Line*<br>*- Drive System*<br>*- Main Gear Box and Boundary Conditions*<br>*- Mechanical Vibrations*<br>*- Fasteners* |
| REFERENCE TEXT BOOKS | *This course is a summary of several basic helicopter structures concepts: teaching material has been specifically produced for each lesson and it is provided to the students.* |