AEROSPACE ENGINEERING (LM52)

(Brindisi - Università degli Studi)

Teaching DESIGN AND TESTING OF POWER CONVERTERS AND ELECTRICAL MACHINES C.I.

GenCod A005151

Owner professor Marco PALMIERI

Teaching in italian DESIGN AND TESTING OF POWER CONVERTERS AND

Teaching DESIGN AND TESTING OF POWER CONVERTERS AND ELECTRICAL

SSD code ING-IND/32

Reference course AEROSPACE ENGINEERING

Course type Laurea Magistrale

Credits 5.0

Teaching hours Ore-Attivita-frontale: 45.0

For enrolled in 2018/2019

Taught in 2019/2020

Course year 2

Language INGLESE

Curriculum AEROSPACE ENGINEERING SYSTEMS

Location Brindisi

Semester Secondo-Semestre

Exam type Orale

Assessment

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

BRIEF COURSE DESCRIPTION	The course introduces the main components of an aeronautical electrical system, with a particular focus on power electronics converters and electrical machines.
REQUIREMENTS	Fundamentals of physics. Fundamentals of electrotechnics. Fundamentals of electric measurements theory.
COURSE AIMS	At the end of the course the student will know the main aeronautical electrical system components used to generate, distribute and consume the electric energy on board the aircraft. The autonomy of judgment will be developed both by deepening the design of the experiments and by the critical analysis of experimental data. The part of the course dedicated to the exercises includes group work. Communication skills and learning abilities will also be verified during the oral examination.
TEACHING METHODOLOGY	Whole class teaching (lectures). Computer-aided simulations and laboratory experiences.
ASSESSMENT TYPE	Oral exam (plus written report on the laboratory experiences)

FULL SYLLABUS	Introduction, electric power evolution in aircraft electrical systems and main components of the electrical system. AC\DC electric power conversion. DC\DC electric power conversion. DC\AC electric power conversion. DC Electrical machines (generators\motors) AC Electrical machines (generators\motors) Standards for testing aeronautical electrical and electronic components and documentation for the qualification of an aeronautical devices Laboratory experiences Computer-aided modeling, simulation and analysis of power converters Computer-aided modeling, simulation and analysis of electrical machines
REFERENCE TEXT BOOKS	M. Rashid: "Power electronics Devices, circuits and applications" – Pearson N. Mohan, T. Undeland, W. Robbins: "Power Electronics: Converters, Applications and Design" – Wiley A. Fitzgerald: "Electric machinery" – Mc Graw Hill G. Conte: "Macchine elettriche" - Hoepli I. Moir, A. Seabridge "Aircraft Systems: Mechanical, Electrical and Avionics Subsystems Integration" – Wiley. USA Department of Transportation, Federal Aviation Administration, "Aviation Maintenance Technician Handbook"