

# AEROSPACE ENGINEERING (LM52)

(Brindisi - Università degli Studi)

## Teaching COMPUTER AIDED DESIGN FOR AEROSPACE APPLICATIONS

GenCod A005152

Owner professor Marta DE GIORGI

**Teaching in italian** COMPUTER AIDED DESIGN FOR AEROSPACE

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**SSD code** ING-IND/15

**Reference course** AEROSPACE ENGINEERING

**Course type** Laurea Magistrale

**Credits** 6.0

**Teaching hours** Front activity hours: 54.0

**For enrolled in** 2024/2025

**Taught in** 2024/2025

**Course year** 1

**Language** ENGLISH

**Curriculum** AERONAUTICS DESIGN

**Location** Brindisi

**Semester** Second Semester

**Exam type** Oral

**Assessment** Final grade

**Course timetable**

<https://easyroom.unisalento.it/Orario>

### BRIEF COURSE DESCRIPTION

Computer aided design aims at provide to the students the knowledge regarding the design process and 3d modelling from a theoretical and practical point of view. The course includes the teaching of the 3D modelling software Catia V5, with particular attention to the surface modelling in the Generative Shape Design module.

### REQUIREMENTS

Sufficiency in geometry and linear algebra.

### COURSE AIMS

#### Overview

Computer aided design aims at developing engineering design skills with a particular focus on the proficient use of modern CAD-integrated analysis tools.

#### Learning Outcomes

After the course the student should be able to

\* acquire detailed knowledge and understanding of the most recent advances in 3D computer aided design.

\* know the fundamental building blocks for creating parametric geometry.

### TEACHING METHODOLOGY

Theoretical and practical lessons

### ASSESSMENT TYPE

The exam consists of two cascaded parts (maximum overall duration: two hours).

The first part is closed book; the student is asked to illustrate some theoretical topics.

The second part, that starts when the student has completed the first part, consists in modelling, using CATIA, a given mechanical/aeronautical component and outputting the detail drawing.

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## FULL SYLLABUS

Introduction: CAD/CAM/CAE systems in the industrial product development cycle.  
Geometric modeling methods and techniques. CAD tools evolution and wireframe modelling.  
Surface modelling. Solid modelling.  
The representation schemes of solid geometry: CSG, B-rep, finite elements, schemes by enumeration of occupied spaces .  
Curves and surfaces used in the CAD modelling .  
CATIA V5: Introduction  
CATIA V5: The sketching  
CATIA V5: Part Design  
CATIA V5: Assembly Design  
CATIA V5: Generative Shape Design  
CATIA V5: Drawing

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## REFERENCE TEXT BOOKS

- Lee Kunwoo, "Principles of CAD/CAM/CAE Systems", Addison Wesley Longman
- Mortenson M.E., "GeometricModelling", John Wiley and Sons, 1997.
  - Ibrahim Zeid, "Mastering CAD/CAM", McGrawHill
  - Michel Michaud, CATIA–Core Tools, McGrawHill
  - slides of the lessons