

AEROSPACE ENGINEERING (LM52)

(Brindisi - Università degli Studi)

Insegnamento AEROSPACE STRUCTURES AND CERTIFICATION (MOD.1) C.I.

GenCod A006605

Docente titolare Saverio LAZZARO

Insegnamento AEROSPACE STRUCTURES AND CERTIFICATION

Insegnamento in inglese AEROSPACE STRUCTURES AND CERTIFICATION

Settore disciplinare ING-IND/04

Corso di studi di riferimento AEROSPACE ENGINEERING

Tipo corso di studi Laurea Magistrale

Crediti 6.0

Ripartizione oraria Ore Attività frontale: 54.0

Per immatricolati nel 2023/2024

Erogato nel 2023/2024

Anno di corso 1

Lingua

Percorso CURRICULUM AEROSPACE SYSTEMS

Sede Brindisi

Periodo

Tipo esame Orale

Valutazione

Orario dell'insegnamento

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

BREVE DESCRIZIONE DEL CORSO

The course introduces to the finite elements method: basic structural schemes are developed and solved using commercial F.E.A. software. Certification issues are analysed in the second part. The course is completed by an experience in Laboratory where a static test is designed, carried out and analysed.

PREREQUISITI

Knowledge of calculus, basic concepts of continuum mechanics, solid mechanics.

OBIETTIVI FORMATIVI

Capability of developing a finite element model for aerospace structural applications
Capability of aerospace structures' engineering analysis and numerical results interpretation
Capability of debugging numerical models
Knowledge of the certification process in the aeronautical field
Knowledge of how a structural certification test is carried out

METODI DIDATTICI

Frontal lectures
Assignments
Laboratory

MODALITA' D'ESAME

Development of a FE model in classroom
Discussion of the certification issues

PROGRAMMA ESTESO

Introduction to the finite elements method. The Galerkin method for the discretization of structures. Resolution of a truss loaded with concentrated loads. The commercial software used for the Finite Elements models development. Simple elements. Masses. Bars. Beams. Panels. Solid models. Materials. Simple structural schemes. The loads. The boundary conditions. The different structural analyses. Linear static analysis. Normal modes analysis. Transient analysis. Buckling analysis. The interpretation of the results. The visualization of the results. Integration of CAD/CAE. Certification specifications in the aeronautical field. CS 23, CS 25, CS VLA, CS VLR. The certification documentation. Certification tests. The flutter certification. A full development of a structural component: from the requirements to the design and calculation; the manufacturing and test with the final interpretation of the numerical and experimental results.

TESTI DI RIFERIMENTO

Handouts prepared by the teacher; engineering books proposed by the teacher (es: NIU, ROARK)