

## Composite Structures Analysis by Finite Element Method

Module of Master E.P.M.A  
European Postgraduate Master  
in Aerospace



### Objectives

The aim of this module is to provide an overview on Finite Element Structural Analysis for composite parts existing in an aircraft.

On completion of this module, delegates will be able to:

- Understand Finite element sizing principles and tools for composite structures
- Appreciate the dependency between these principles and the requirements and also aircraft design constraints
- Describe and analyze FE simulation for individual system
- Understand the influence of FE analysis on reliability, safety and economics of aircraft operation.

### Target Delegates

This module is intended for professionals - engineers or assistant engineers and/or managers- interested in a career on aeronautical maintenance engineering.

### Number of Delegates

16 maximum

### Prerequisite of the module

Basis of theory of finite elements for isotropic materials and Classical Laminate Theory for Composite Materials.

*On demand, a ten hour preparatory reading of reference literature could be send to help the delegate to improve his knowledge on this topics.*

### Lecturers

Lecturers come from University Bordeaux1, LGM<sup>2</sup>B and from composites analysis consultant.

The conferences session will be given by industrials partners from aerospace sector.

### Learning Methods

Courses: 5H00

Course applications: 5H00

Practical works : 16H00

Conferences : 4H00

*Program taught in English.*

### Learning Tools

- Courses, applications and practical works proceedings will be given in paper and CDROM format.
- Workstations with IDEAS and a dedicated finite element analysis software will be used for applications and practical works.

### Dates

Contact us

### Duration

5 days

### Place

University Bordeaux 1 - IMA  
rue Marcel Issartier  
33700 Mérignac

## Programme

Hours	Monday	Tuesday	Wednesday	Thursday	Friday
8H00-9H00		Course: Post Processing	Application: Study of repaired structures	Application: Dynamics	Application: Non linear Simulation
9H00-10H00	Introduction	Application: Analysis of EF simulation			
Break					
10H15-11H15	Course: Type of elements Discretisation of composite structures		Conference	Conference	Conference
11H15-12H15					
Lunch					
14H00-15H00	Application: Introduction to the use of EF software	Application: Thick structures / Sandwich structures	Application: Buckling and post buckling analysis	Conference	Evaluation
15H00-16H00				Course: Non-linear simulations	Debriefing session 30'
Break					
16H15-17H15					

### Theory of finite elements for composites:

- Type of elements; Meshing of composite structures (2H00)
- Post-processing / analysis of results (1H00)

### Practical use of composites finite element software:

- Introduction (1H00)
- Analysis of finite element simulation on thin structures (6H00)
- Thick structures and Sandwich structures (3H00)
- Study of repaired structure (3H00)
- Buckling / post Buckling (3H00);
- Dynamics (3H00)

Large displacement; Non linear behavior (2H00 course + 3H00 application)

Industrial conferences (4H00)

## Certification of the module

A certificate of training is established, at the end of the module, by the Service Commun de la Formation Continue et de l'Apprentissage of the University Bordeaux 1 for each participant, on the basis of attendance sheet.

## Training fees

1 250 € net inclusive of didactical material, coffee-breaks and lunches.

*A company group discount is provided.*

## Responsible of the module

**Dr Jean-Christophe WAHL**

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## Coordination



Service Commun  
de la Formation Continue  
et de l'Apprentissage

### ENGINEERING

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### ENROLMENT

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