ANSA/META for structures made of laminated composites Online Course

Length: 4 hours

Dates:

Friday May 9th : 14:30 – 18:30 (EEST)

Course Description:

This course provides an introduction to composite materials and the use of ANSA and META for composite analysis

Learning Objectives:

By the end of the course, participants will be able to create a solution model, modify it by adding layers or adjusting layer orientation, and post-process results using the composite toolbar

Software used:

- ANSA

Audience: Students

Prerequisites: Participants should have an engineering background. Basic knowledge of ANSA is necessary

Modules in this course:

Day 1

- ANSA – Multiscale Modeling of Composites
  - General Intro to Composite Materials
  - Mean Field Homogenization – Linear & Non Linear Material Models – Material Cards
  - RVE Generator – Linear & Non Linear FE Homogenization – Material Cards
- ANSA – Laminated Composites
  - Material orientation
  - Introduction to Laminate Tool
  - Laminate properties – Layers definition
  - Laminate Convert plugin (from 2D to 3D Models)
  - Reporting – Plybook generation
- Accessing Composite Results in META
  - Introduction to Composite Toolbar
  - Criteria Calculation methods
  - Materials setup
  - Read results
  - Query – 2D plots – Material & Results evaluation

Session 2:

- Manual meshing techniques (Spacing, CFD mesh, Improve)
- Detect and manage geometry features with the Feature Manager (sharp edges, trailing/leading edges etc.)
- Using the Quality Criteria tab
- Batch Meshing setup
- Size Boxes and Size Field for local mesh refinement
- Checking the surface mesh with Checks Manager and quality improvement
- The Octree/Wrap function

Session 3:

- Layers generation (important options and settings)
- Volume Mesh algorithms (Tetra, HexaInterior etc.)
- Generate Layers and Volume Mesh with Batch Mesh manager
- Checking and fixing volume mesh quality

Session 4:

- The use of DECKS menu for the setup of a case
- Proper PID definition in order to setup correctly the case for a CFD run.
- Demonstration of the output for a test case

- Basic use of META - How to load a model and results.
- Labels and Fringe options.
- The use of User calculations.
- The use of Cut Planes and CFD Post toolbar.
- Generation of streamlines and isofunctions.

You can find useful video tutorials on our YouTube channel at the following links:

physics on screen

- ANSA tutorials
- META tutorials