



Course Code	EDU-CAT-E-FMD-F
Brand & Release	CATIA V5R17
Duration	0.5 day
Language	English
Level	Fundamentals
Method	Companion and ILT

Training Material References

Instructor Foils: EDU-CAT-E-FMD-FI-V5R17 Foils: EDU-CAT-E-FMD-FF-V5R17 Exercises: EDU-CAT-E-FMD-FX-V5R17 Detailed Steps: EDU-CAT-E-FMD-FS-V5R17
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Objectives

<ul style="list-style-type: none">- Generate a solid mesh from a solid model or an existing surface mesh- Generate a solid mesh using Mesh Transformations- Generate a solid mesh using Mesh Extrusions- Analyze Quality of 3D elements- Perform a cutting plane analysis on a solid mesh- Import / Export solid meshes
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Participants' Profile

Structural Analysts

Prerequisites

- FEM Surface

Content

This course will teach you how to generate a 3D tetrahedron mesh by focusing on the transformation methods used to create new mesh models from an existing 2D or 3D mesh. It will teach you how to analyze the quality of the resulting mesh and visualize internal mesh elements.

Introduction to FEM Solid

- What is FEM Solid
- User Interface
- General Process for Solid Mesh Generation
- Accessing the Workbench

Tetrahedron Filler

- What is Tetrahedron Filler
- Tetrahedron Filler Parameters
- Generating Solid Mesh Using Tetrahedron Filler

OCTREE Tetrahedron Mesher

- What is OCTREE Tetrahedron Mesher
- OCTREE Tetrahedron Mesher - Local Parameters
- OCTREE Tetrahedron mesher - Quality Parameters
- OCTREE Tetrahedron mesher - Other Parameters
- Generating Mesh Using OCTREE Tetrahedron Mesher

Sweep 3D

- What is Sweep 3D
- Generating Solid Mesh Using Sweep 3D

Mesh Part Transformations

- What is Mesh Part Transformations
- Solid Mesh Generation Using Translation
- Solid Mesh Generation Using Rotation
- Solid Mesh Generation Using Symmetry

Mesh Part Extrusion

- What is Mesh Part Extrusion
- Solid Mesh Generation Using Extrusion with Translation
- Solid Mesh Generation Using Extrusion with Rotation
- Solid Mesh Generation Using Extrusion with Symmetry
- Solid Mesh Generation Using Extrusion along Spine

Mesh Analysis and Mesh Data Transfer

- Quality Analysis
- Cutting Plane Analysis
- Import/Export Meshes

Exercises

- Ex. 1: OCTREE Tetrahedron Mesher (15min) / All sectors
- Ex. 2: Solid Meshing Using Sweep 3D (5min) / All sectors
- Ex. 3: Mesh Part Transformation (15min) / All sectors
- Ex. 4: Mesh Part Extrusion (15min) / All sectors
- Ex. 5: Master Exercise: Meshing of an Engine Cylinder Block (60min) / All sectors



Course Code	EDU-CAT-E-FMS-F
Brand & Release	CATIA V5R17
Duration	2 days
Language	English
Level	Fundamentals
Method	Companion and ILT

Training Material References

Instructor Foils: EDU-CAT-E-FMS-FI-V5R17
Foils: EDU-CAT-E-FMS-FF-V5R17
Exercises: EDU-CAT-E-FMS-FX-V5R17
Detailed Steps: EDU-CAT-E-FMS-FS-V5R17

Objectives

Define global mesh parameters and local specifications

- Simplify model geometry and boundaries
- Manage multi-domains and define welding connections
- Apply mesh offsets and transformations
- Check interferences and mesh quality
- Import and export meshes

Participants' Profile

Structural Analysts

Prerequisites

- Generative Part Structural Analysis Expert
- Generative Assembly Structural Analysis
- Generative Dynamic Response Analysis
- ELFINI Structural Analysis

Content

This course will teach you how to create a FE model for a complex surface part, and how to simplify geometric data so as to optimize the meshing process. You will learn how to manage surface and beam meshes, modify meshes and node distributions, and perform interference and quality checks.

- Introduction to FEM Surface
- Advanced Surface Mesh
- Surface Mesh
- OCTREE Triangle Mesher
- Mesh Operators
- Mesh Transformations
- Update Mesh
- Mesh Analysis Tools
- Import/Export Meshes
- Welding Connections
- Pre-Processing Analysis Capabilities