



Introductory CFX Training Course

COURSE NO: CFX10004 **LENGTH:** 4 Days

CFX is a world leading CFD code providing highly accurate results and robust solutions for a wide range of CFD problems. CFX is supported in the ANSYS Workbench interface, providing all the stages of a full CFD simulation conveniently existing within a single environment. This introductory course is intended for new users and will expose you to all elements of CFD modeling (from Pre- to Post-processing) and aims to bring you to a comfortable level in tackling your own CFD problems. You will learn about geometry and meshing techniques, CFD modelling procedures and how to modify and enhance your simulation using the CFX Expression and Command Languages.

Note: Day 1 of this course is also available as a separate course covering ANSYS DesignModeler for geometry creation and modification.

DesignModeler is integrated into ANSYS Workbench and provides modeling functions unique for CFD simulations that include detailed geometry creation, CAD geometry modification simplification and parametric modelling tools. ANSYS Unified Meshing Interface (including CFX-Mesh) is a highly-automated meshing tool within the ANSYS Workbench environment, and is closely coupled to ANSYS DesignModeler for geometry creation and meshing. Participants will develop the skills required to create and edit geometry and use this to prepare a volume mesh for the CFD analysis.



Day 1: Introduction to ANSYS Design Modeler

Time: 9.00am – 5.00pm

1. Introduction to Workbench and Design Modeler Overview (~30 min)

Instructor Guided Demo (~15 min)

2. Working with CAD (~30 min)

Workshop 1: Cut Material & Enclosure (~15 min)

Workshop 2: Fill, Face Delete, Enclosure, and Slice (~30 min)

Break (~15 min)

3. Sketching Mode (~30 min)

Workshop 3: Static Mixer (~30 min)

Lunch (~60 min)

4. Basic 3D Geometry (~30 min)

Workshop 4: Catalytic Converter (~40 min)

5. Advanced 3D Geometry (~30 min)

Workshop 5: Bubble Column (~30 min)

Break (~15 min)

Workshop 6: Circular Vent (~30 min)

6. Parametric Modeling (~20 min)

Workshop 7: Pulley Model (~30 min)



Day 2: Introduction to ANSYS Meshing Application

Time: 9.00am – 5.00pm

1. Meshing Application Overview (~30 min)

Workshop 1: Catalytic Converter Mesh (~40 min)

2. Common Meshing Application Controls (~45 min)

Workshop 2: Edge Sizing for a Swept Mesh (~40 min)

Break (~15 min)

3. Swept Meshing (~15 min)

Workshop 3: Swept Mesh for Pipe Elbow (~15 min)

Lunch (~60 min)

4. CFX-Mesh Geometry and Regions (~30 min)

Workshop 4: Aircraft Engine-Airframe (~30 min)

5. CFX-Mesh: Mesh and Preview (~30 min)

Workshop 5: Static Mixer: Basic Settings, Mesh Controls and Inflation (~40 min)

Break (~15 min)

Workshop 6: Extruded Mesh (~30 min)

6. CFX-Mesh: Virtual Topology (~15 min)

Workshop 7: Virtual Topology for Aircraft Engine-Airframe (~30 min)



Day 3: Introduction to ANSYS CFX (Part 1)

Time: 9.00am – 5.00pm

1. Introduction to CFX (~30 min)

Instructor Guided Demo (~15 min)

2. CFX-Pre Domains and Boundary Conditions (~40 min)

Workshop 1: Duct Bend with Vanes (~45 min)

Break (~15 min)

3. CFX-Pre Solver Control (~30 min)

Workshop 2: Room Study (~45 min)

Lunch (~60 min)

4. CFX-Pre Expression Language (~15 min)

Workshop 3: Site Assessment (~45 min)

5. CFX-Solver Manager (~15 min)

Workshop 4: Inline Mixer (~45 min)

Break (~15 min)

6. CFX-Post (~20 min)

Instructor Guided Demo (~15 min)

Workshop 5: Mixing Tube (~45 min)



Day 4: Introduction to ANSYS CFX (Part 2)

Time: 9.00am – 5.00pm

1. Domain Interfaces (~10 min)

Workshop 1: Conjugate Heat Transfer (~45 min)

2. Sources and Additional Variables (~20 min)

Instructor Guided Demo (~15 min)

Workshop 2: Catalytic Converter (~45 min)

Break (~15 min)

3. Initialization (~10 min)

4. Transient Simulations (~20 min)

Workshop 3: Brake Rotor (~45 min)

Lunch (~60 min)

Workshop 4: Paint Mixer (~45 min)

5. Output Control and Out File (~15 min)

Instructor Guided Demo

Workshop 5: Tank Flush (~45 min)

6. CFX Command Language (~10 min)

Workshop 6: Scripting and Batch Processing (~45 min)

Break (~15 min)

User-Specific Problems OR Additional Topics (if time permits)