

Autodesk® Algor® Simulation CFD – Course Agenda

- Introduction
 - Course Overview
 - Overview of Services and Support
 - Installing and Running Algor
 - Algor User's Guide
 - My Account Area
 - Tutorials
 - Webcasts
 - Web Courses
 - Updates
 - Version Numbers
 - How to Obtain an Update
 - How to Receive Technical Support
 - Background of FEA
 - Fluid Flow Review
 - Equations Used in the Solution
 - Limitations of CFD
 - Basic FEA Concepts
 - Nodes and Elements
 - Degrees of Freedom
 - Element Connectivity
 - Types of Elements
 - The General Flow of an Analysis in FEMPRO
- Example Using FEMPRO
 - Group Example: Steady Fluid Flow
- Basics of Fluid Flow Analysis
 - Fluid Flow Elements
 - Meshing Options
 - Fluid Generation
 - External
 - Internal
 - Tetrahedral and Boundary Layer Meshes
 - Example of Internal Fluid Generation and Boundary Layer Meshing
 - Loading Options
 - Prescribed Inlet/Outlets
 - Prescribed Velocity
 - Pressure/Traction

- Load Curves
- Turbulence
 - Surface Prescribed Turbulence Conditions
 - Wall Roughness
 - Reviewing the Results
- Individual Exercise
- Results Evaluation and Presentation
 - Result Types
 - Reaction Forces
 - Velocity
 - Pressure
 - Vorticity
 - Vorticity Precision
 - Flow Rate
 - Stress
 - Presentation Options
 - 3-D Visualization of 2-D Elements
 - Slice Planes
 - Particle Paths
 - Streamlines
 - Individual Exercise
- Additional Loading Options
 - Using a Fan Surface
 - Fan Swirl Effects
 - Example of Fan Surfaces
 - Overview of Rotating Frames of Reference
 - Applying a Rotating Frame of Reference
 - Number of Rotating Frames of Reference
 - Example of a Rotating Frame of Reference
 - Individual Exercise
- Open Channel Flow
 - Open Channel Flow Overview
 - Loads Not Available for Open Channel Flow Analysis
 - Initial Fluid Volume
 - Results Unique to Open Channel Flow
 - Volume of Fluid
 - Open Channel Flow Example
- Multiphysics
 - Natural Convection (Couple Fluid Flow and Thermal)
 - Forced Convection (Uncoupled Fluid Flow and Heat Transfer)

- Fluid Structural Interaction (FSI)
- Thermal Stress
- Joule Heating
- Result Options
- Group Example: Coupled Fluid/Thermal
- Group Example: Uncoupled Fluid/Thermal/Stress
- Individual Exercises
- Self-Study
 - Fluid Flow Formulation Options
 - Mixed GLS Formulation:
 - Segregated Formulation:
 - Penalty Formulation:
 - Porous Media
 - Example of Flow through Porous Media
 - Using Porous Media in a Fluid Flow Analysis
 - Example of Using Porous Media in a Steady Fluid Flow Analysis
 - Self-Study Exercise: Flow through Porous Media with Gravity
 - Transient Mass Transfer Overview
 - Meshing Requirements
 - Defining Species
 - Loading Options
 - Analysis Parameters
 - Result Types
 - Species Concentration
 - Mass Flux
 - Mass Rate of Face