

## **WSQ Precision Engineering Framework**

**WSQ COURSE TITLE** : Perform CFD Simulation for Design Verification  
**WSQ COURSE CODE** : PE-MP-355E-1  
**PRODUCT COURSE TITLE** : 1. Introduction to ANSYS CFD  
: 2. Extreme Visualization with EnSight  
**DURATION** : 5 x 8hrs sessions

**\* Singaporeans and Permanent Residents may receive up to 90% funding on course fees from the Singapore Workforce Development (WDA). Terms and conditions apply.**

- This training course is creditable for professional development units (PDUs) by the Professional Engineers Board, Singapore (PEB) under their Continuing Professional Development (CPD) program.
- Students will be awarded a Statement of Attainment (SOA) by WDA upon course completion.

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### **OBJECTIVES**

This module is recommended for engineers who wish to analyze the general fluid flow analysis using general-purpose Computational Fluid Dynamics (CFD) tool. It covers the basic knowledge about CFD, geometry modeling, meshing and fluid domain extraction. It stipulates how to setup the boundary and initial conditions, how to solve and post-process the results, as well as the basic procedures for operating the user-defined functions (UDF) programming and some advanced physics.

In addition, this module highlights how to enhance the visualization of simulations by generating high resolution images, impressed animation movies with 3D effect and virtual reality as well as creating a distributed rendering for very large models. The complete post-processing and visualization product for computational fluid dynamics (CFD), finite element analysis (FEA), fluid-structure interaction (FSI) and engineering data will be focused on.

### **WHO SHOULD ATTEND**

This training course is intended for engineers who are required to perform computational fluid dynamics analyses.

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## PRE-REQUISITES

Engineering knowledge is required. Familiarity with computer (PC or workstation) and knowledge of Computer Aided Engineering (CAE) are useful.

Participants must have completed the following courses:

- [Apply Engineering Simulation Fundamentals](#)

## COURSE SYLLABUS

- Fundamentals of Computational Fluid Dynamics (CFD)
- Solver Basics
- Boundary Conditions
- Solver Settings
- Turbulence Analysis
- Heat Transfer Analysis
- Post-processing
- CFX Expression Language (CEL)
- Moving Zones
- Solver .out File and CCL
- Advanced Visualization
- Transformations
- View and Part modes
- Interactive Query
- Transient Data
- Variables
- Plotting
- Parts
- Viewports
- Annotation
- Flipbook Animation

Each course chapter is followed by "hands-on" workshops and exercises.

## RECOMMENDED FOLLOW-ON COURSES

Depending on the student's interests and applications, the student may take one or more of the following industry-specific modules after the completion of this course:

- Perform Engineering Simulation For Built Environment and HVAC Design (Course Code : PE-MP-357E-1)
- Perform Engineering Simulation For The Electronics Industry (Course Code : PE-MP-359E-1)
- Perform Engineering Simulation For The Marine & Offshore Industry (Course Code : PE-MP-360E-1)
- Perform Engineering Simulation For The Industrial Equipment/ Machinery Industry (Course Code : PE-MP-361E-1)
- Perform Engineering Simulation For The Medtech Industry (Course Code : PE-MP-362E-1)
- Perform Engineering Simulation For The Aerospace Industry (Course Code : PE-MP-363E-1)
- Perform Engineering Simulation For Defence & Homeland Security (Course Code : PE-MP-364E-1)



**About the Singapore Workforce Development Agency (WDA)**

For Singapore's workforce to remain competitive and employable in today's fast changing workplace, they must have knowledge and skills that are relevant, current and sought after by employers to meet the changing needs of Singapore's economy. In response to these needs, WDA was formed to help companies build capabilities and remain competitive so as to contribute to stronger economic growth for Singapore.

For more information, please visit <http://app2.wda.gov.sg/web/Common/homepage.aspx>.

**About the Professional Engineers Board, Singapore (PEB)**

Established in 1971, the Professional Engineers Board, Singapore (PEB) is a statutory board in the Ministry of National Development. PEB aims to set and maintain high standards for registering professional engineers, and to regulate and advance the practice of professional engineering.

For more information, please visit <http://app.peb.gov.sg/>.