

WSQ Precision Engineering Framework

WSQ COURSE TITLE	: Perform Engineering Simulation for the Electronics Industry
WSQ COURSE CODE	: PE-MP-359E-1
PRODUCT COURSE TITLE	: 1. ANSYS Multiphysics Simulation For MEMS
	: 2. ANSYS Workbench Mechanical – Heat Transfer
	: 3. Introduction to ANSYS Icepak
	: 4. ANSYS Drop Test Analysis
DURATION	: 8 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.

OBJECTIVES

This module, focusing primarily on applications in the Electronics industry, is recommended for engineers who wish to perform engineering analyses related to Electronics products and processes. The standard stipulates how to:

1. Perform coupled physics analyses by setting up the multiphysics simulations and interpreting the multiphysics simulation results
2. Analyze thermal response of structures and components, focusing on performing steady-state, transient, linear and nonlinear thermal analyses
3. Evaluate cooling solutions with air flow dynamics for their device designs apart from optimizing the performance.
4. Perform drop test analyses in order to investigate and validate the failure of products

WHO SHOULD ATTEND

This training course is intended for engineers in the Electronics industry who are required to perform engineering simulation to validate their designs.

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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](#)
- [Perform Structural Simulation For Design Verification](#)
- [Perform CFD Simulation For Design Verification](#)

COURSE SYLLABUS

- Fundamentals of Multiphysics Coupling
- Direct Couple-Field Analysis
- Thermoelectric Coupling Analysis
- Electro-Structural Coupling Analysis
- Sequential Coupled-Field Analysis
- Multi-Field Solvers (single code MFS)
- Coupled-Field Analysis
- Multiple-Code MFX
- Fluid-Structure Interaction (FSI) Analysis
- Fundamentals of Heat Transfer Analysis
- Nonlinear Thermal Analysis
- Transient Analysis
- Radiation Heat Transfer Analysis
- Phase Change Analysis
- Fundamentals of Electronics Thermal Analysis
- Geometry Creation and Meshing methods
- Board Level Simulation Analysis
- Basic Meshing & Non-Conformal Meshing
- Solution Settings
- Transient Analysis
- Optimisation Setup and Parameters Setting
- Radiation Analysis on PCB
- Zoom-in Modeling Analysis
- MCAD/ECAD Import Options
- Plasticity Definitions
- Contact and Transient Phenomena for Drop Test Analysis
- Nonlinear Static Analysis
- Dynamic Analysis
- Import or Create Model for Analysis
- Drop Test Analysis
- Solving Solution
- Post-Processing of Results

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



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/>.