

Learning Module

Multiphysics Analysis in Opera 3d

This two-day course covers Opera's capabilities for coupling electromagnetics, thermal and stress analyses to solve multiphysics problems. Lectures and practical sessions are designed to give you both theoretical background and hands-on experience in modelling various multiphysics scenarios.

Objectives

The course includes:

- Thermal Analysis.
- Mechanical Analysis (static and modal stress).
- Coupling electromagnetic and thermal analyses.
- Coupling electromagnetic and mechanical analyses.
- Using Python to couple complex multiphysics problems.
- Case studies of coupled electromagnetic and thermal analyses: particle beam heating, induction heating and quench simulations.
- Case studies of coupled electromagnetic and mechanical analyses: split pair magnet coil and synchronous reluctance motor.

Knowledge Prerequisites

We recommend completing the Introduction to Opera-3d training course before taking this course.

Brands

Simulia

Available Releases

SIMULIA 2021, SIMULIA 2020

Duration

16 hours

Discipline

OPERA

Language(s) for selected release

English

Contents

Overview - Multiphysics Analysis with Opera-3d

- 1 - Introduction to Multiphysics
- 2 - Thermal Analysis
- 3 - Using Opera EM Results in Thermal Calculations
- 4 - Coupling EM and Thermal Analyses using Tables
- 5 - Thermal-Electromagnetic Coupling Examples
- 6 - Stress Analyses
- 7 - Coupled Static Stress and Electromagnetic Simulations
- 8 - Examples of Coupled EM and Mechanical Simulations