

5-Day COMSOL Multiphysics® Online Training Course Agenda

- **Day 1: Introduction to the COMSOL Multiphysics® Software and GUI**

During this session, we will guide attendees through the GUI and highlight different steps in the modeling workflow. After this session, you will be comfortable in formulating a multiphysics problem in COMSOL Multiphysics®. We will also show you how geometry parameterization, material definition with functional inputs, and detailed analysis of results can be implemented.
- **Day 2: CAD Techniques: Building and Importing Geometries**

This session will introduce attendees to geometry modeling concepts used to create solid and boundary objects in the 1D, 2D, and 3D environments. Attendees will learn about the techniques involved in geometry creation to ensure a good mesh. We will also show you how the solution time for your analysis can be optimized by techniques like eliminating unwanted details, singularities, and the use of symmetry. During the hands-on session, attendees will follow the instructor to build a 3D geometry in COMSOL Multiphysics®.
- **Day 3: Meshing**

In this session, attendees will be introduced to various meshing features of COMSOL Multiphysics®. We will discuss in detail meshing techniques such as boundary layer meshing, automatic remeshing, adaptive mesh refinement, and time-dependent remeshing. During the hands-on session, the instructor will guide attendees to explore the different meshing aspects required for modeling a range of application areas, such as electromagnetics, structural mechanics, and heat transfer.
- **Day 4: Understanding Solvers and Convergence**

This session will introduce attendees to the different solver options available in COMSOL Multiphysics® and will provide an overview of the importance of using specific solvers for different physical phenomena. We will show you how to solve linear and nonlinear equations, how to handle nonlinear systems efficiently, and how issues arising from discontinuities can be overcome. After this session, you will be comfortable manoeuvring the standard solver options available in the software.
- **Day 5: Visualization of Simulated Results**

Attendees will get an overview of the various visualization options available in COMSOL Multiphysics®. You will learn to create and format 1D, 2D, and 3D plots as well as create animations out of results, export results to text files, and create reports. This session will also introduce the Application Builder, a built-in tool in COMSOL Multiphysics®. With the Application Builder, you can quickly turn your COMSOL models into easy-to-use custom apps that your colleagues or customers can access.

Schedule and Assignments

Each lecture session is scheduled for 2.5 hrs (starting at 10 a.m. EDT).

One-on-one sessions are scheduled (for 45 min) at 9 a.m. EDT, before the lecture session starts for that day.

Date	Lecture Session	One-on-One Session
7/6	10 a.m. to 12:30 p.m., EDT	No one-on-one session
7/7	10 a.m. to 12:30 p.m., EDT	9 to 9:45 a.m., EDT
7/8	10 a.m. to 12:30 p.m., EDT	9 to 9:45 a.m., EDT
7/9	10 a.m. to 12:30 p.m., EDT	9 to 9:45 a.m., EDT
7/10	10 a.m. to 12:30 p.m., EDT	9 to 9:45 a.m., EDT
7/13	No lecture session	9 to 9:45 a.m., EDT

While ending the Day 1 lecture session (i.e., on July 6), we will discuss the assignment questions for Day 1. These assignments should be submitted by the attendees (same day) by 11:30 p.m. EDT. After each lecture session, we will discuss assignment questions, which attendees need to work on and submit by 11 p.m.

In addition to these daily assignments, we also plan to give one course assignment. As this is going to be a little more involved of an assignment, we plan to discuss the different questions/options on July 6, and attendees need to select one question and start working on that. Later, attendees will need to submit the detailed report by July 17.