

Introduction to FEA with MSC Apex

Objective:

MSC Apex is a contemporary FEA platform, that enables revolutionary, often patented, technology in a user-environment that is both straightforward and enjoyable to use. The powerful functionality within MSC Apex offers new thinking in how to define a strategy for understanding structural response, from simple components through to complex assemblies with many parts.

To allow you to maximise your engagement with MSC Apex, we've developed an interactive course, which can be taught in a classroom or online environment. This covers the background to Apex's fundamentals, while engaging you in interesting and meaningful user-focused tutorials, all of which are relevant to the types of FEA task you would find in an industrial setting.

The course (taught over two days for classroom or 12 hours online) develops your understanding of the toolset and the many concepts it supports, allowing you to become productive with Apex's functionality very quickly. You'll become familiar with key workflows, improved modeling strategy and the analysis benefits achievable with this new paradigm that Apex offers.

All the taught and tutorial content is built around a real-world CAD representation of a UAV/drone air vehicle, which, through the progression of eight discrete topics, will advance your understanding from simple modeling tasks, through to looking at complex assemblies, model verification and using Apex as part of an external FEA workflow.

Content:

The learning experience is underpinned with a combination of instructor-led explanation and demonstration, in parallel with interactive user tutorials, which develop in involvement through the course.

The course is taught through eight discrete topics, each approximately 90 minutes long. These include;

01. Introduction, covering a brief introduction to FEA, MSC Apex, the user environment and a complete Propeller Blade worked example

02. Model Build (1D/2D), covering 1D/2D modeling strategy/element choices and properties, geometry/idealisation for 1D/2D modeling and a 'Stiffened Plate' worked example

03. Model Build (3D), covering 3D modeling strategy/element choices for both 'Tet' and 'Hex' meshing, geometry/idealisation for solid modeling and a 'Rotor Hub' worked example

04. Model Attribution, covering model attribution, isotropic/2D orthotropic and composite materials, loads and boundary conditions and a 'Loaded Plate' worked example

05. Model Connections, covering glue, edge tie, connector and discrete tie/joints and a 'Glue/Connector' worked example

06. Assembly Modeling, covering part/assembly structure, manipulation, verification and a 'Drone Assembly' worked example

07. Analysis, covering analysis readiness, simulation scenarios, analysis, post-processing and a 'Drone Analysis' worked example

08. External FEA Workflow, covering companion, external MSC Nastran and orphan mesh workflows and an 'External MSC Nastran' worked example

Topic Format: Each topic follows a consistent teaching format, which includes;

1. Overview

How does this topic relate to your modeling and analysis process?

2. Topic Detail

What are the key features that enable this?

3. Tutorial Overview

We show you this in action through a worked tutorial.

4. Worked Tutorial

Your turn to put these concepts into practice.

5. Tutorial Review

We review your tutorial and further work.

Evotech background:

This course is developed and delivered by Evotech CAE Ltd, an MSC UK Business Partner. As Director and Lead FEA Engineer of UK-based Evotech CAE Ltd, Dr Steffan Evans has over 20 years' experience of the practical usage of advanced FEA techniques in diverse industrial settings.

This has included the development and delivery of many training courses and programs covering FEA fundamentals, industry application of the technology, alongside direct teaching in how to get the most from your commercial FEA software.

// We've come from a CAD-embedded FEA background – our new knowledge of Apex will open considerable avenues to improve our product understanding...

I thought I knew Apex before we took the course – this introduced many topics and workflows we just didn't know existed... these will have a huge impact on how we're doing our current and future analysis!

Evotech's Apex training course delivers a great learning experience. The presentation is excellent, guiding the user through a series of well thought out, realistic workshops with subassemblies building to a complete model. Highly recommended for both new and existing users.

Darrel Sinclair, Senior Technical Consultant, MSC Software



Pre-Requisites:

A basic knowledge of strength of materials and CAD modeling is highly recommended. No previous knowledge of FEA is required.

Duration: 2 Days (Class) or 12hrs (online)
Price: On request

For more information email info@evotechcae.com

