cenit

TRAINING FOR SIMULIA

Version 1.0

TRAINING CATALOG

GOLD PARTNER
DASSAULT SYSTEMES

Trainings
for SIMULIA

1. SIMULIA Abaqus Trainings

Level 1

1.1. Introduction to Abaqus/CAE or Keyword Version

Content

- Linear and nonlinear structural analysis
- Static, dynamic, and heat transfer analyses
- Material models
- Loads and boundary conditions
- Contact modeling
- Element selection
- Modeling with "Parts" and "Assemblies"
- Working with CAD geometry and imported meshes
- Mesh generation techniques
- Creating, starting, and monitoring analyses
- Evaluating and displaying results
- Using "restarts" to continue analyses

Learning objective

This training course provides a comprehensive introduction to Abaqus/CAE GUI or as a Keyword Version via Input deck. All modules are presented and practiced in workshops. In addition, the relevant solver functions are explained so that participants are able to create and solve their own FEM models. The course has a special focus on:

- Using Abaqus/CAE to create complete finite element models
- Application of Abaqus/CAE to run and monitor simulations
- Using Abaqus/CAE to display and evaluate simulation results
- Solving structural mechanical problems with Abaqus/Standard and Abaqus/Explicit including the influence of material nonlinearity, large deformation, and contact

Prior knowledge

Basic knowledge of the finite element method (FEM) is helpful.
Good knowledge of structural mechanics is mandatory.

Course ID

Classroom training: SIMULIA022
Virtual training: SIM022

Training duration

3 days

1. SIMULIA Abaqus Trainings

Level 1

1.2. Introduction to Abaqus/Standard and -/Explicit

Content

- Basic modeling techniques, input syntax
- Linear and nonlinear statics
- Element selection
- Adaptive load incrementation and convergence criteria
- Interpretation of Abaqus results
- Geometric, material, and contact nonlinearities
- Linear elasticity and metal plasticity - restarting analyses
- Problem-adapted contact modeling
- Natural frequency calculations
- Linear and nonlinear dynamics
- Data transfer between Abaqus/Explicit and Abaqus/Standard

Learning objective

The training provides an introduction to solving linear and nonlinear problems using Abaqus/Standard and Abaqus/Explicit. Participants will also learn the structure and syntax of Abaqus input files.

Prerequisites

Basic knowledge of the finite element method (FEM) is helpful. A good knowledge of structural mechanics is mandatory. The course does not build on other courses.

Course ID

In-person training: SIMULIA001
Virtual training: SIM001

Training duration

3 days

1. SIMULIA Abaqus Trainings

Level 1

1.3. Introduction to fe-safe

Content

- Overview of fatigue and service life, and insight into fe-safe
- Use of FEM calculations in fe-safe
- Use of groups and surface quality in fe-safe
- Scale-and-combine loading
- Dataset sequential loading
- Multiple loading of blocks
- Material properties for fatigue
- Finite life algorithms
- Algorithms for infinite life

Learning objective

The training course covers the service life calculation of arbitrarily complex FEM models. Depending on the FEM analysis, stresses, strains, or temperatures are imported into fe-safe. These results can be used to predict component life or for specialized stress- or strain-based fatigue analysis. Multiaxial stress conditions often arise during operation. This is precisely where fe-safe is suitable for examining complex load histories in greater detail and determining the service life and location of failure.

Prerequisites

Basic knowledge of the finite element method (FEM) is required.
Good knowledge of structural mechanics is also required. Knowledge of CAE is helpful.

Course ID

Classroom training: SIMULIA1001
Virtual training: SIM1001

Training duration

2 days

1. SIMULIA Abaqus Trainings

Level 2

1.4. Determining Contact and Convergence in Abaqus/Standard

Content

- Understanding how nonlinear problems are solved in Abaqus
- Developing a convergent Abaqus model
- Identifying possible modeling errors in the event of convergence difficulties
- Definition of general contact and contact pairs in Abaqus/Standard
- Definition of suitable surfaces (rigid or deformable)
- Modeling of friction-affected contacts
- Modeling of large sliding paths between deformable bodies
- Resolving penetrations in press fits

Learning objective

This training course provides detailed insights into contact and convergence issues in nonlinear problems using Abaqus/Standard. Simulating highly nonlinear phenomena often requires special modeling techniques. Through practical examples, the seminar introduces typical models where contact and convergence challenges are likely to occur and demonstrates possible solutions.

Prerequisites

The seminar is intended for users with prior experience in structural analysis using Abaqus.

Course ID

In-person training: SIMULIA004
Virtual training: SIM004

Training duration

3 days

1. SIMULIA Abaqus Trainings

Level 2

1.5. Thermomechanical Simulation with Abaqus/Standard

Content

- Introduction to heat transfer
- Thermal analysis methods
- Thermal loads, boundary conditions, and interfaces
- Thermal stress analysis (sequentially coupled, fully coupled)
- Adiabatic analyses

Learning objective

In this training, you will learn how to consider both thermal and mechanical properties—often a critical factor in the development process. With Abaqus, you can handle steady-state and transient heat transfer problems, including convection and radiation, in both linear and nonlinear scenarios.
For thermal stress calculations, the temperature field can be coupled sequentially. Alternatively, deformations and temperatures can be determined simultaneously in a fully coupled thermo-mechanical analysis.
The seminar covers fundamental concepts as well as real-world requirements and challenges.

Prerequisites

The seminar serves as a supplement to the introductory course on Abaqus/Standard and Abaqus/Explicit.

Course ID

Classroom training: SIMULIA002
Virtual training: SIM002

Training duration

2 days

2. **3D**EXPERIENCE® SIMULIA

Level 1

2.1.Basis Training

Content

- Navigating the 3DExperience platform
- Collaborative spaces, dashboards, data management
- Lifecycle principles: maturity, task management, revision control
- Parametric modeling
- Geometry preparation techniques
- Networking options
- Creating simulation scenarios
- Starting local or cloud analyses
- Evaluating and presenting results
- Iteration loops with the MODSIM approach

Learning objective

After completing the training, participants will have mastered the entire MODSIM workflow on the **3D**EXPERIENCE® platform – from adapting geometry for model building to interpreting simulation results. Based on these results, targeted adjustments can be made to the geometry and the development process can be significantly accelerated through iterative loops. accelerated. In addition, participants will learn to manage all data within the PLM context and consistently apply the Single Source of Truth (SSOT) principle in practice.

Prior knowledge

A basic understanding of the finite element method (FEM) and CAD modeling is recommended.

Course ID

In-person training: SIMULIA1002
Virtual training: SIM1002

Course duration

3 days

3. SIMULIA CST Studio Suite Trainings

Level 1

3.1. Basis Trainings

Content

- Introduction to the CST Studio Suite graphical user interface
- Building geometries within CST Studio Suite
- Model construction using templates
- Setting unit systems, frequencies, environment, and boundary conditions
- Overview of material models
- Definition of excitation via discrete ports and waveguide ports
- Evaluation of 2D/3D (field) results
- Selection of the appropriate solver for different high-frequency applications
- Applying parametric sweeps and optimization methods with the time-domain and frequency-domain solvers
- Evaluation of various quantities such as S-parameters, voltages, currents, 3D near and far fields
- Evaluation of special results using post-processing templates

Learning objective

This training course offers an introduction to CST Studio Suite

Prerequisites

Knowledge of electrical engineering

Course ID

In-person training: SIMULIA015
Virtual training: SIM015

Training duration

1 day

3. SIMULIA CST Studio Suite Trainings

Level 2

3.2. Microwave & Antenna Simulation

Content

- Design and simulate antennas using various solvers
- Visualize and extract primary results (S-parameters, near-field distribution, far-field) and advanced results through post-processing, including potential bandwidth and SAR
- Edit imported CAD models
- Design a simple matching network
- Use hybrid solvers to simulate more complex RF systems

Learning objective

This course will familiarize you with the high-frequency solvers used to simulate various antenna types. The course also covers specific topics such as SAR calculation in the human body.

Prior knowledge

Experience with CST Studio Suite is required. Ideally, participants will have completed the CST Studio Suite basic training course.

Course ID

In-person training: SIMULIA024
Virtual training: SIM024

Training duration

1 day

3. SIMULIA CST Studio Suite Trainings

Level 2

3.3. EMC Simulations

Content

- Using templates to select the optimal solution settings for EMC applications
- Setting up networks in EMC simulations
- CST Design Studio for circuit and system simulation and co-simulation
- Workshops on:
  - DC-DC converters
  - EMC filters
  - Conducted interference
  - Shield attenuation

Learning objective

This training course demonstrates examples of how to use CST Studio Suite software in EMC simulation.

Prior knowledge

Knowledge of electrical engineering and EMC is required. Participants should have successfully completed the CST Studio Suite basic training course.

Course ID

Classroom training: SIMULIA016
Virtual training: SIM016

Training duration

1 day

About us

CENIT empowers sustainable digitalization. With a broad solutions and services portfolio, CENIT enables clients to optimize their horizontal and vertical business processes. Our solutions are based on innovative technologies in: product lifecycle management, the digital factory and enterprise information management. With interdisciplinary knowledge of the processes involved and their considerable expertise in the field, CENIT consultants provide customers with end-to-end advice to ensure that solutions are implemented with an understanding of the entire value chain.

With a holistic approach and based on trusted partnerships, CENIT takes responsibility for solutions on behalf of our clients. From the initial consultation to the introduction of innovative IT solutions, right through to ensuring a cost-effective operation. The CENIT team adapts to each client, taking a practical approach, which enables measurable operational optimizations. CENIT has been helping prestigious customers in key industries to gain competitive advantages for over 30 years.

CENIT has nearly 900 employees worldwide who work with customers from: automotive, aerospace, industrial equipment, tool and mold manufacturing, financial services, and trade and consumer products industries.

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