

# Course : SolidWorks - Simulation Calculation Advanced

Official Dassault Systèmes course, SolidWorks exam preparation

Practical course - 2d - 14h00 - Ref. SWV

 4,4 / 5

NEW

This course enables you to deepen your skills in advanced analysis to optimize the design of parts and assemblies. It covers key areas such as frequency analysis, buckling, fatigue, thermal analysis and impact testing, helping to anticipate mechanical stresses and improve product reliability. You'll learn how to optimize part topology to reduce weight while maintaining performance. This course is designed to help you master simulation tools and understand the physical phenomena that influence design.

## Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Perform structural and thermal analyses in SolidWorks Simulation
- ✓ Analyze and optimize the structural behavior of SolidWorks models
- ✓ Master frequency analysis, drop testing and optimization

## Intended audience

Design office technicians, draftsmen, engineers. Anyone with experience of 3D design software.

## Prerequisites

Avoir suivi la formation « SolidWorks Simulation Calcul Base » (Réf. SWU) ou avoir des connaissances équivalentes.

## Certification

This training course provides the foundations needed for CSWP-Simulation certification, although it is not specifically dedicated to the exam.

[Comment passer votre examen ?](#)

### PARTICIPANTS

Design office technicians, draftsmen, engineers. Anyone with experience of 3D design software.

### PREREQUISITES

Avoir suivi la formation « SolidWorks Simulation Calcul Base » (Réf. SWU) ou avoir des connaissances équivalentes.

### TRAINER QUALIFICATIONS

The experts who lead the training courses are specialists in the subjects covered. They are approved by the publisher and certified for the course. They have also been validated by our teaching teams in terms of both professional knowledge and teaching skills for each course they teach. They have at least three to ten years of experience in their field and hold or have held positions of responsibility in companies.

## Practical details

### Teaching methods

Training in French. Official course material in digital format and in English. Good understanding of written English.

## Course schedule

### 1 Frequency analysis of parts

- Principle of modal analysis.
- Analyse fréquentielle avec déplacements imposés.
- Frequency analysis without imposed displacement.
- Frequency analysis with loading.

#### Hands-on work

Case study: diapason

### 2 Frequency analysis of assemblies

- Contact management.

#### Hands-on work

Case study: engine mount

### 3 Buckling analysis

- Linear buckling analysis.
- Buckling safety factors to assess the stability of our design.

#### Hands-on work

Case study: particle separator

### 4 Load case management in simulation

- Load cases.
- Use the load case manager tool to combine loads.

#### Hands-on work

Case study: scaffolding

### 5 Under modeling

- Under modeling.
- Parent study (study on an isolated part of the scaffolding).
- Child study (study on an isolated part of the scaffolding).

#### Hands-on work

Case study: scaffolding

### ASSESSMENT TERMS

Assessment of targeted skills prior to training.

Assessment by the participant, at the end of the training course, of the skills acquired during the training course.

Validation by the trainer of the participant's learning outcomes, specifying the tools used: multiple-choice questions, role-playing exercises, etc.

At the end of each training course, ITTCERT provides participants with a course evaluation questionnaire, which is then analysed by our teaching teams. Participants also complete an official evaluation of the publisher.

An attendance sheet for each half-day of attendance is provided at the end of the training course, along with a certificate of completion if the participant has attended the entire session.

### TEACHING AIDS AND TECHNICAL RESOURCES

The teaching resources used are the publisher's official materials and practical exercises.

### TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training course.

### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you have specific accessibility requirements? Contact Ms FOSSE, disability advisor, at the following address: psh-accueil@orsys.fr so that we can assess your request and its feasibility.

## 6 Topology analysis

- Topology analysis.
- Definition of optimization limits and objectives.
- Application of manufacturing control to design.

### Hands-on work

Case study: mechanical linkage of a bicycle rear shock absorber

## 7 General thermal analysis

- Thin components.
- Fundamentals of thermal analysis.
- Steady-state thermal analysis.
- Transient thermal analysis.
- Transient analysis with time-varying loading.
- Transient thermal analysis using a thermostat.

### Hands-on work

Case study: chip assembly

## 8 Thermal analysis with radiation

- Steady-state analysis with radiation.

### Hands-on work

Case study: spotlight assembly

## 9 Advanced thermal stresses-2D simulation

- Thermal stress analysis.
- Thermal analysis with 2D simplification.
- Thermal stress analysis.
- Comparison with a 3D approach.

### Hands-on work

Case study: metal expansion joint

## 10 Fatigue analysis

- Review of fatigue (stages of fatigue failure, cycle fatigue, high-low).
- Fatigue based on life-stress (S-N).
- Thermal study.
- Thermal stress study.
- Fatigue terminology.
- Fatigue study.
- Fatigue study with permanent loading.

### Case study

## 11 Variable amplitude fatigue

- Variable amplitude fatigue study.

### Hands-on work

Case study: suspension

## 12 Drop and impact test simulation

- Drop test analysis.
- Rigid floor drop test.
- Fall test on elastic floor.
- Drop test with elastoplastic material model.
- Drop test with contact interaction.

### Hands-on work

Case study: camera

## 13 Optimization analysis

- Optimization analysis.
- Static and frequency analysis before optimization.
- Optimization analysis.
- Design study.

### Hands-on work

Case study: press frame.

## 14 Pressure vessel analysis

- Analysis of a pressurized container.
- Flange and cover for manhole nozzle.

### Hands-on work

Case study: pressurized tank