

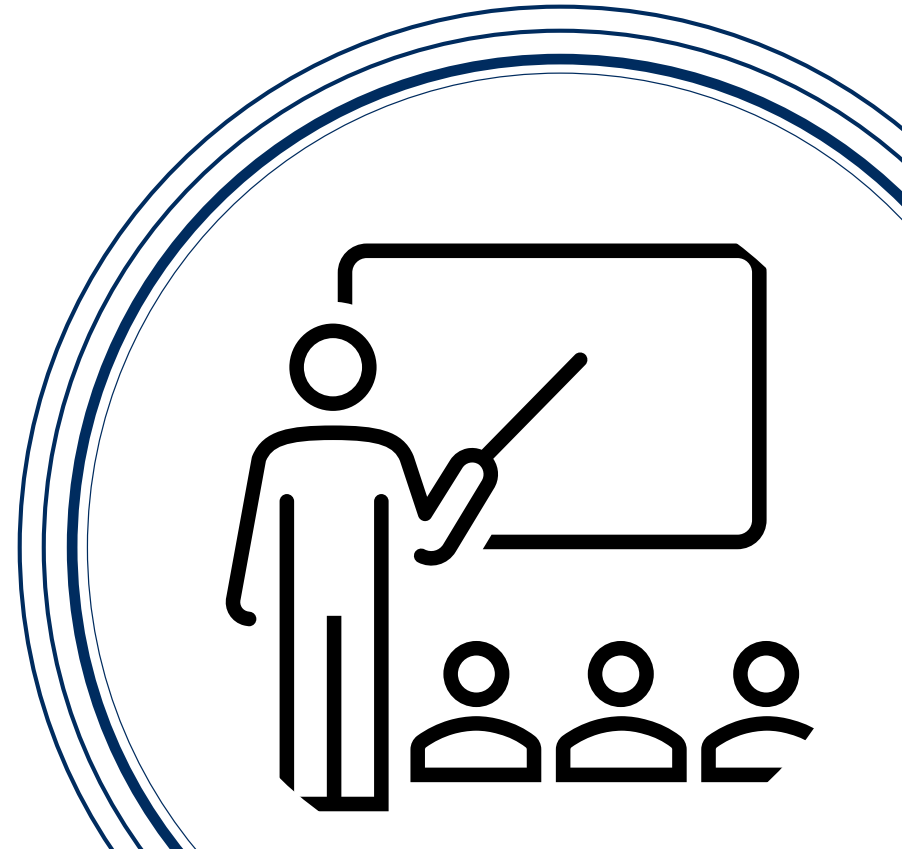
# How CADFEM services foster simulation in the academic world?

CADFEM Suisse

**CADFEM**<sup>®</sup>

**Ansys** /

ELITE  
CHANNEL PARTNER



# Program

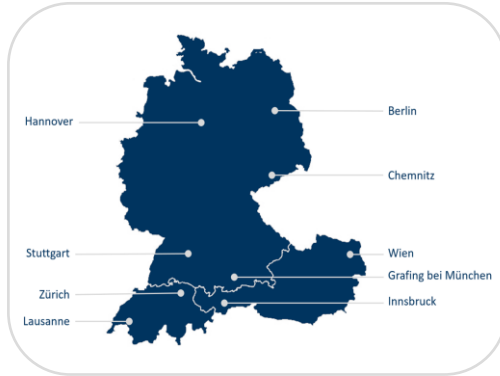
- CADFEM and Ansys
- Academic collaborations
- Academic and industrial collaborations
- Services for students
- Services for educators
- Academic licensing
- pyAnsys

# Program



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# Partner with CADFEM - Simulation is more than software



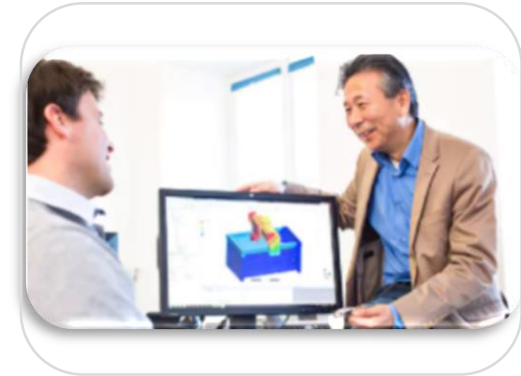
## **CADFEM in D/A/CH/L**

- 220 Employees
- 9 Locations
- Family Business
- Ansys Partnership since 1985
- Ansys Elite Channel Partner
- > 2.300 Customers



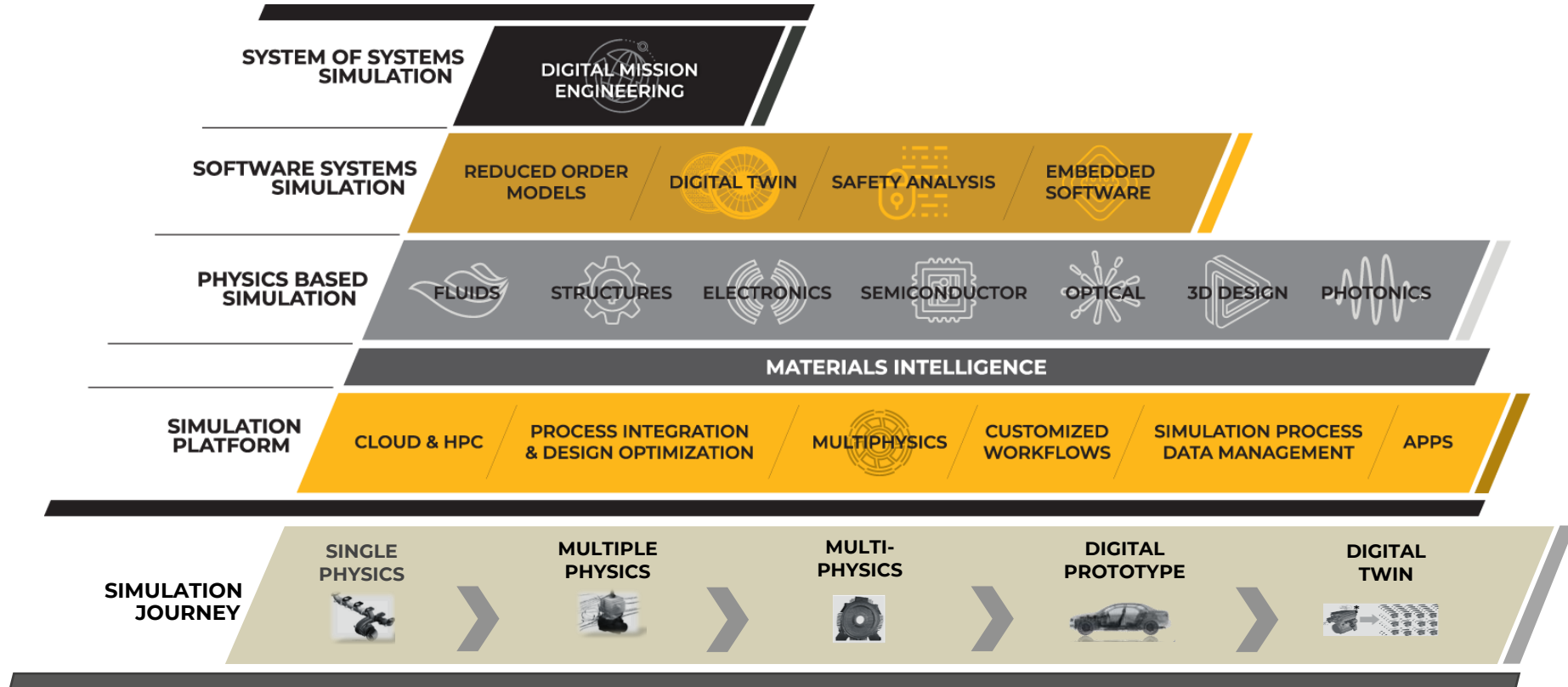
## **Products**

- Ansys Simulation Software and complementary Tools
- CADFEM Ansys Extensions
- CAE-optimised hardware solutions
- Simulation as a Service



## **Service and knowledge**

- >130 Ansys specialists
- Local technical support
- Software- & Engineering-Training
- Simulation capability and Expertise
- IT Management
- Consulting

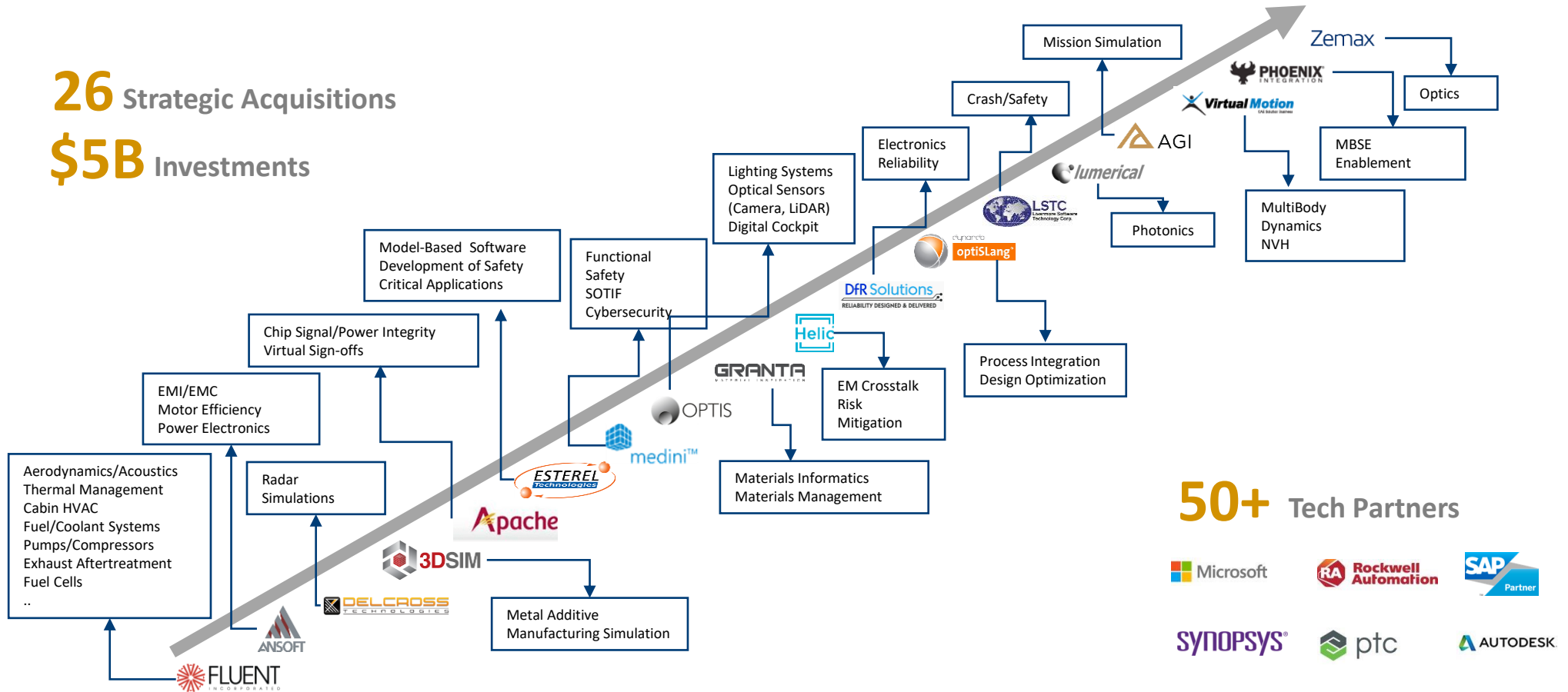


# Ansys Invests in Best-in-Class Physics and Multiphysics

CADFEM®

26 Strategic Acquisitions

\$5B Investments



50+ Tech Partners

Microsoft

Rockwell Automation

SAP Partner

SYNOPSYS®

ptc

AUTODESK

***Ansys is the global leader in multiphysics simulation***

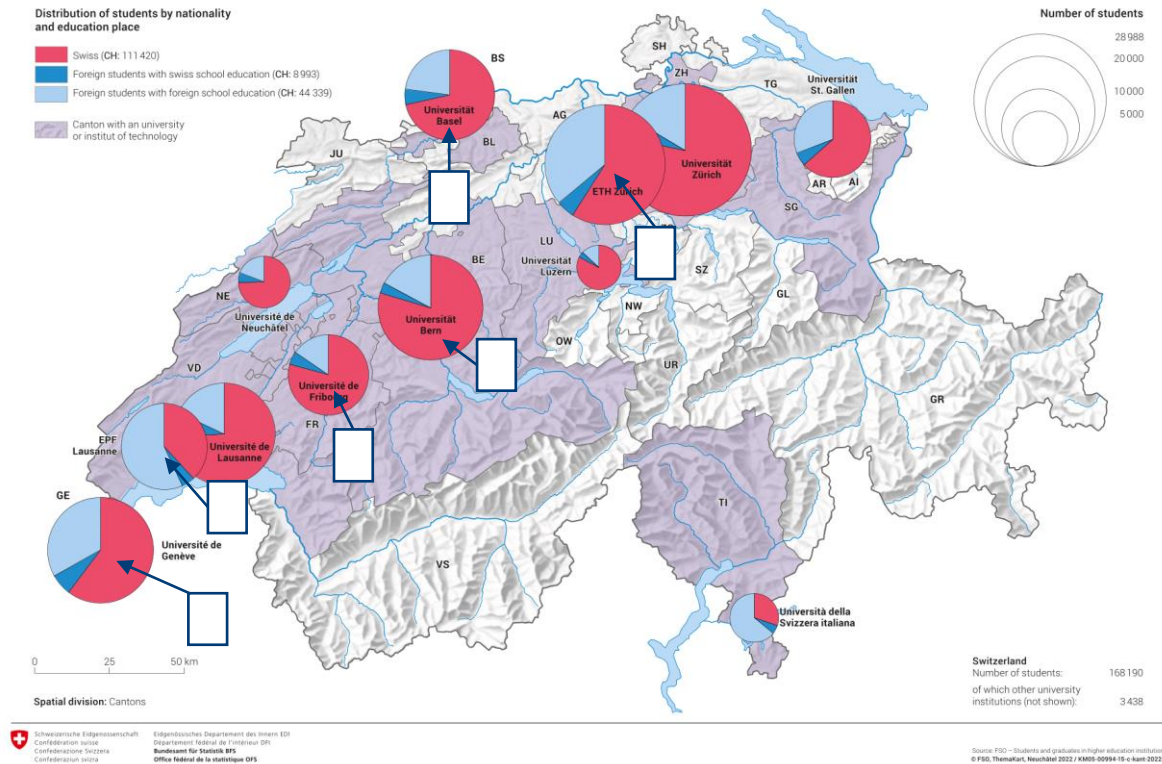
# Program



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# Collaboration of CADFEM and universities and institutes of technology

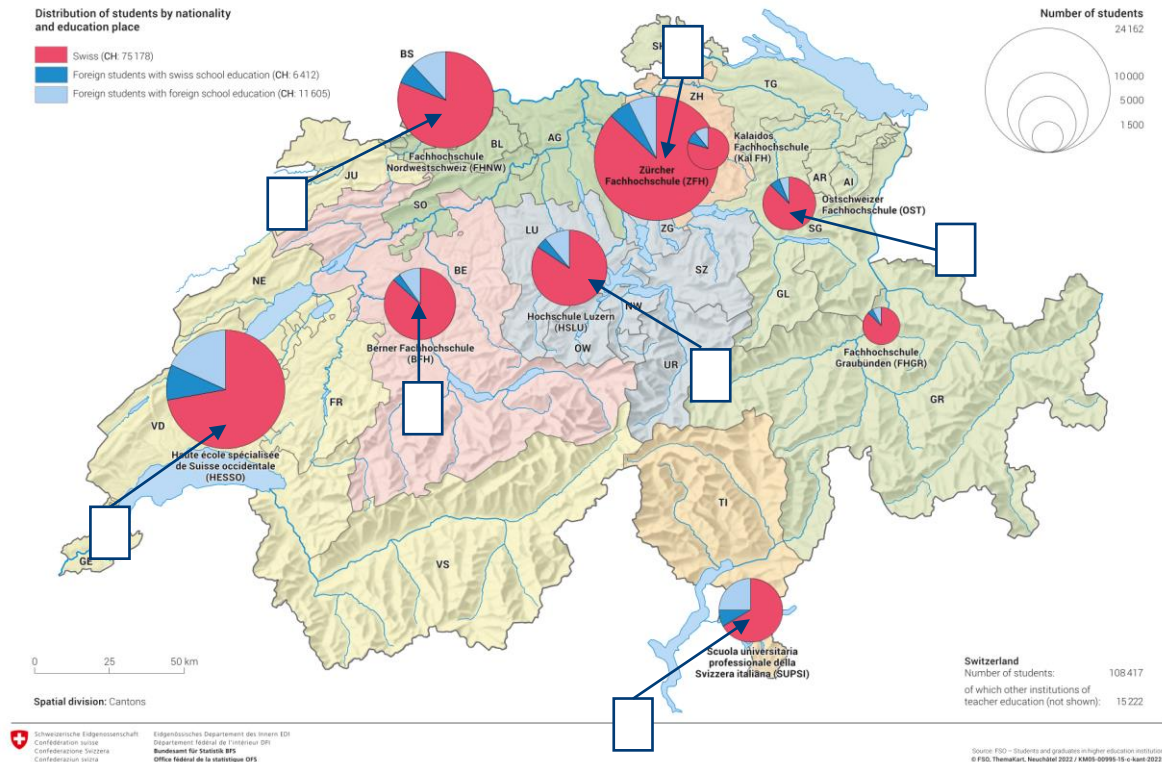
Situation and size of universities and institutes of technology in Switzerland, 2021/22





## Collaboration of CADFEM and universities of applied sciences

### Situation and size of universities of applied sciences in Switzerland, 2021/22



# Program



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# Fostering collaboration between academia and industry

- Innosuisse projects
- NTN Booster projects
- User meetings organised at university Campus (OST, EPFL, SUPSI)

# Program



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# CADFEM Student Website: [students.cadfem.net](https://students.cadfem.net)



## CADFEM® student

LEARN ANSYS FOR FREE

ANSYS SOFTWARE FOR STUDENTS

SPONSORING FOR STUDENT TEAMS

Free eLearning courses developed and given by our engineering team, with certificate upon completion



ELEARNING

DE

### Start with Ansys Discovery

Learn how 3D CAD design and simulation work right from the first idea for a new product: you can easily represent initial statements about mechanical load capacity, temperature and flow behavior.

START WITH ANSYS DISCOVERY



ELEARNING

DE

### Start with Ansys Mechanical

Already heard about finite elements in the lecture? Perfect! In this course you will practice the individual steps of an FE analysis with professional simulation software together with experienced engineers.

START WITH ANSYS MECHANICAL



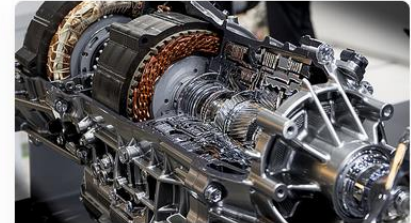
ELEARNING

EN/DE

### Start with Ansys Fluent

In this course, flow simulation (i.e., CFD) is the focus: you will learn techniques using practical examples for the simulation of internal and external flows with heat transfer.

START WITH ANSYS FLUENT



ELEARNING

DE

### Start with Motor-CAD

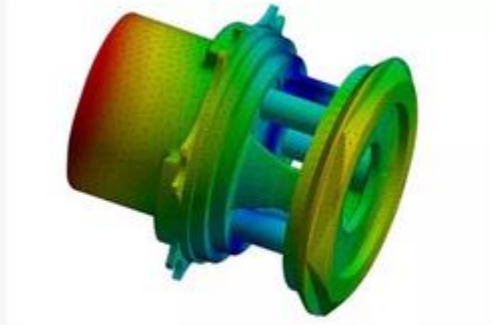
Experienced developers use modern simulation methods to take into account not only electromagnetic but also thermal and mechanical effects in the initial concept phase for motors. In this course, you will learn it too.

START WITH MOTOR-CAD



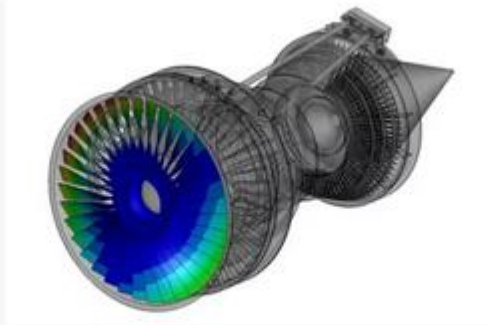
# Free Ansys software for students:

Mechanical, CFD, Discovery



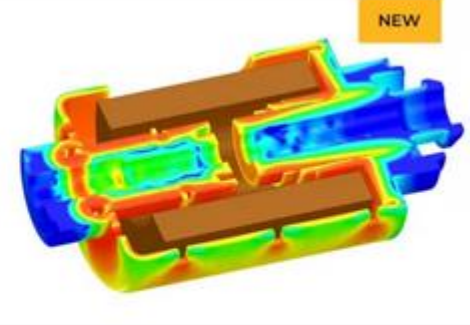
Ansys Student

Explicit dynamics

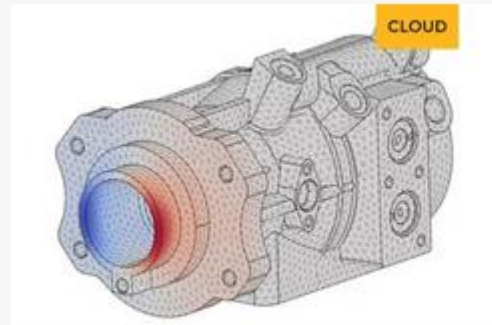


Ansys LS-DYNA Student

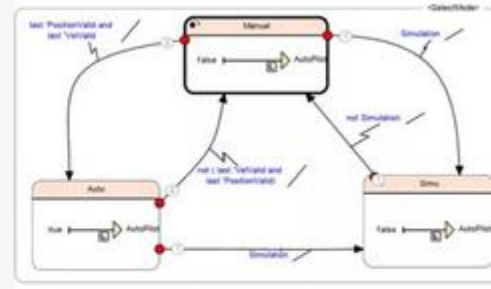
Explicit dynamics



Ansys Electronics Desktop Student



Ansys OnScale



Ansys SCADE Student



# Student team sponsoring DACH wide

**Get a  
SPONSORSHIP**  
package for your team too

REQUEST CADFEM SPONSORSHIP →



**20  
STUDENT TEAMS**  
simulate with support from CADFEM





**15  
FREE LICENSES**  
for each sponsored team



**120  
PARTICIPANTS**  
in the FS Beginners' Workshop

LEARN MORE ABOUT TRAINING COURSES →

# Student Teams supported by CADFEM in CH

EPFL



Swiss Solar Boat

*ACE*  
SOLAR  RACING

  
CELLSIUS





# Formula Student kick-off for all teams: 28-29 Sept

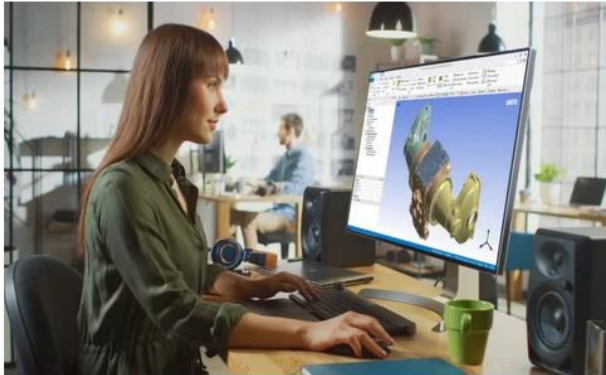


# Ansys Innovation Space/Courses

Forum for students: [www.forum.ansys.com](http://www.forum.ansys.com)

Free eLearning courses for students: [www.courses.ansys.com](http://www.courses.ansys.com)

## STRUCTURES



### LEARN SIMULATION

Getting Started with Ansys Mechanical

## STRUCTURES



### LEARN PHYSICS

Hyperelasticity

## STRUCTURES



### LEARN PHYSICS

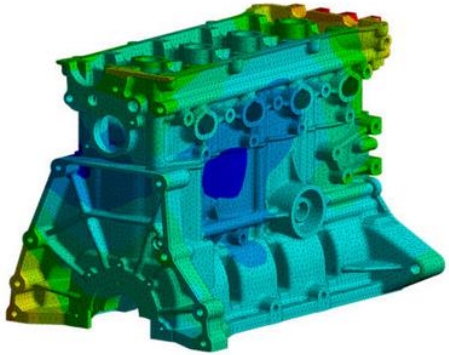
Harmonic Analysis of Structures

# Program



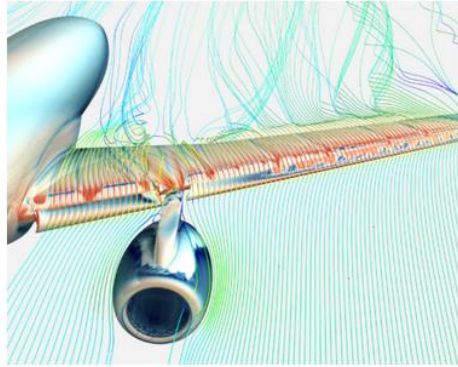
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# Education resources: [Ansys Educator Hub](#)



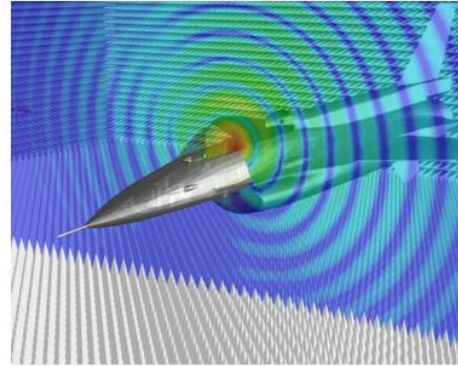
## Structures

[FIND RESOURCES](#) →



## Fluids

[FIND RESOURCES](#) →



## Electronics

[FIND RESOURCES](#) →



## Materials

[FIND RESOURCES](#) →

# Funded Curriculum Opportunities

## Invitation for Curriculum Proposals

As part of our ongoing mission to support the teaching of engineering, science, and design, Ansys invites educators of accredited educational institutions **to submit proposals to create innovative curricula or the evolution of existing courses in undergraduate engineering departments' Ansys simulation tools**. The courses should combine Ansys technologies with proven teaching and assessment methods, such as active learning techniques and project-based learning, which improve and enhance education and prepare students to make an impact on day one of their careers.

Selected projects will receive a **grant and relevant technical guidance** for creating or evolving an existing course or set of courses. An **individual course** will receive up to **\$5,000**, and for a **series of courses** within a university department(s), additional funds will be considered up to **\$25,000**.

For this active invitation, Ansys will award up to \$125,000. Although any proposal focused on undergraduate courses will be considered, for this round, proposals that include the incorporation of Ansys tools into **an electronics/electrical engineering course or a sustainability** course are preferred.

### Key Dates:

- Proposal submissions are now open
- Proposal submissions deadline: September 29, 2023
- Notification of recipients: Ansys will make award announcements no later than November 17, 2023
- Start of projects: From January 2024
- Incorporation of curriculum: 2024-2026 academic year, as completed

More information: <https://www.ansys.com/academic/educators/funded-curriculum>

# Program



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**Multiphysics Campus solution** – Academic licence managed centrally  
combined research & teaching instances, many HPC cores

The ANSYS software contained in this package provides the ability to perform:

- Structural (static & dynamic) physics simulations with **Mechanical**, **LS-DYNA**, **Motion**
- Fluid flow physics simulations with **Fluent**, **CFX** and **ROCKY**
- Fluid-structural interaction & other coupled physics simulations
- Electrostatics and magneto-static simulation with **Maxwell**
- Low frequency electromagnetic Simulations with **Maxwell**
- High frequency (RF) & signal integrity (SI) simulations with **HFSS** and **Siwave**
- Design & simulate integrated circuits (ICs), printed-circuit boards (PCBs), communication infrastructures (**Ansys Electronics Desktop**), and electro-mechanical systems (**Mechanical**)
- Optical simulation – ray tracing and optomechanical studies with **Zemax** and **Speos**
- Robust design optimization and process integration with **OptiSlang**

# Program

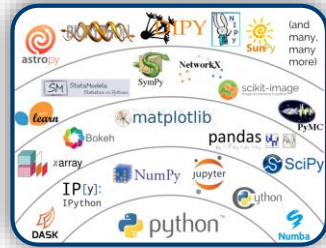


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# PyAnsys Ecosystem

CADFEM®



Python + Ansys

py[Ansys]

Work in Progress

PyDiscovery – Discovery API (Geometry)

PyNexus – Reporting API

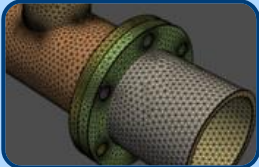
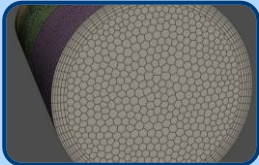
PyDyna – LS Dyna API

PyEnight – Enight API

Pre-Processing

PyPrimeMesh

Meshing API  
Fluid/Structures



Product

PyFluent

Fluent Solver  
PostProcessing



PyTwin

Twin Runtime  
Evaluate models



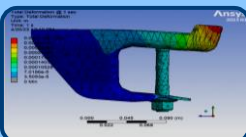
PyMAPDL

APDL solver  
Mechanical model



PyMechanical

Mechanical App  
Tree Access



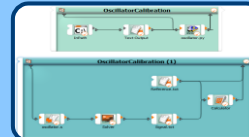
PyAEDT

AEDT suite  
Scripting access



PyOptislang

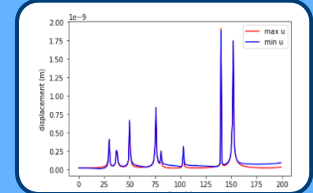
Optislang project  
Nodes access



Post-processing

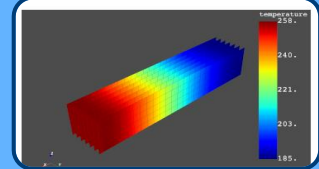
PyDPF-Core

Read and  
manipulate data  
scalable and robust



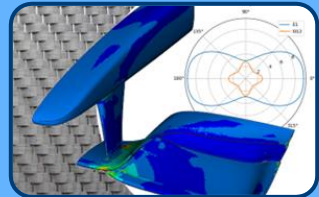
PyDPF-Post

streamlined post-  
processing API



PyDPF-  
Composites

Layered  
composites post-  
processing API



# PyAnsys – How to get started

## Documentation:

- <https://docs.pyansys.com/>

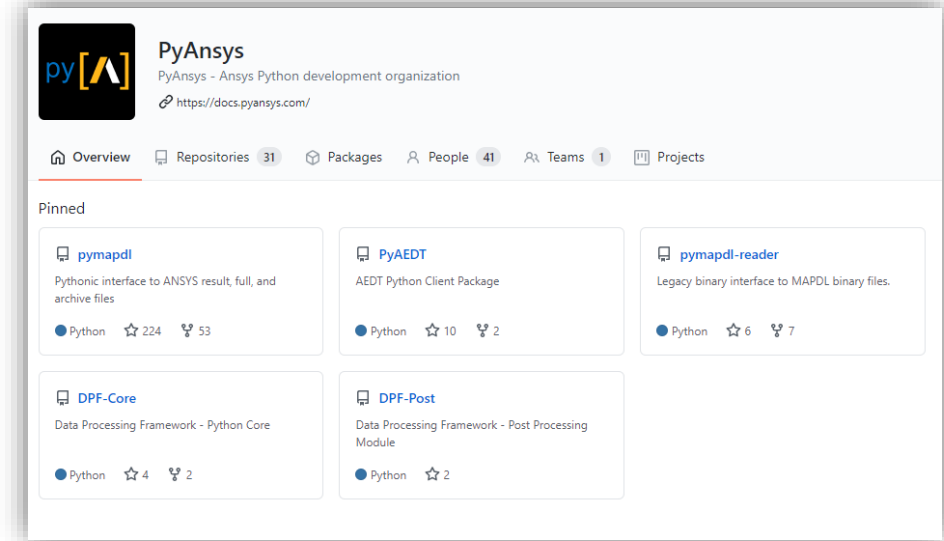
## Direct links:

- <https://mapdl.docs.pyansys.com>
- <https://dpfdocs.pyansys.com>
- <https://postdocs.pyansys.com>
- <https://aedtdocs.pyansys.com>
- <https://fluentdocs.pyansys.com>
- <https://pypim.docs.pyansys.com>
- <https://grantami.docs.pyansys.com>

## Youtube Videos:

- [Python Scripting](#)
- [PyMAPDL Start](#)

Source Code: <https://github.com/pyansys>



# Training : Mechanical scripting and pyAnsys

## Day 1: Key parts of Ansys Mechanical scripting:

- Recording: an Easy Way to Produce Your First Script
- Smart Geometry Recognition
- Accessing the Structure Tree
- Automated Postprocessing

## Day 2: Additional information on pyAnsys

- Using Python Objects in Mechanical (Pre- & Post Object, Properties, etc.)
- Data Processing Framework (DPF) for powerful post-processing
- Different PyAnsys modules (PyMechanical, PyDPF, PyMAPDL, etc.)

# CADFEM Academic Simulation Award



The CADFEM Academic Simulation Award is a **Swiss academic** annual contest open to students of **Switzerland**. They submit their academic project to a jury of three professors from the main Universities in Switzerland, and a senior engineer from CADFEM (Suisse) AG. Prizes for the best projects, for each category (Bachelor, Master) are awarded every year.

Prizes for each category, Bachelor and Master separately:

- 1<sup>st</sup> place: CHF 1500
- 2<sup>nd</sup> place: CHF 900
- 3<sup>rd</sup> place: CHF 600

More information: <https://www.cadfem.net/ch/en/cadfem-informs/cadfem-academic-simulation-award.html>

# CADFEM

Simulation is more than Software

[www.cadfem.net](http://www.cadfem.net)



**CADFEM**<sup>®</sup>

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