THE GLOBAL ENGINEERING CONFERENCE ON SUSTAINABLE DEVELOPMENT AND WORLD FEDERATION OF ENGINEERING ORGANISATIONS EXECUTIVE COMMITTEE MEETINGS.

15th - 18th October 2024, Kigali, Rwanda

Theme: Engineering Innovations for a Sustainable Future

@RwandaEngineers | www.engineersrwanda.rw | geco.ier.rw

Platinum Sponsor dar

Ministry of Infrastructure

Under the patronage of unesco

World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

FAEO

THE GLOBAL ENGINEERING CONFERENCE ON SUSTAINABLE DEVELOPMENT AND WORLD FEDERATION OF ENGINEERING ORGANISATIONS EXECUTIVE COMMITTEE MEETINGS.

15th - 18th October 2024, Kigali, Rwanda

Bridging the Skills Gap in Engineering Education

Ansys

Platinum Sponsor dar

@RwandaEngineers www.engineersrwanda.rw geco.ier.rw

Ministry of Infrastructure

Under the patronage of unesco

World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

FAEO

Hello, it’s nice to meet you

Stella Kaniaru

Lou Major

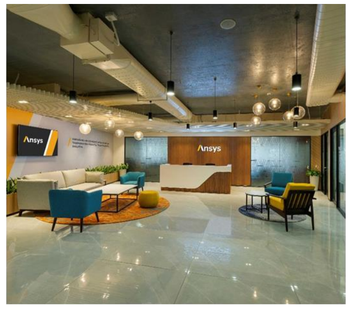
Agenda

- An introduction to Ansys
- The Ansys Academic Program
- The Engineering Skills Gap
- Partnerships that work

Over 50 years of innovation, starting with an idea…







/ 1970

Ansys is founded by John Swanson in his garage in Canonsburg, PA and they had **2 employees**.

/ 1994-1996

Ansys becomes the company's official name in 1994 and later goes public in 1996. They now have **235 employees**.

/ 2024

Ansys is the industry-leader in simulation software with over **6,200 employees** with offices in **40+ countries**

34 Acquisitions

SASI

ANSYS

ANSYS

Ansys

Accelerating the Digital Transformation

FOCUSED

Simulation is all we do.
Over 50 years of leading technologies in all physics areas. Largest development team focused on simulation.

GLOBAL

5,200+ Full-Time Employees
90+ Offices Worldwide

COMMITTED

93% 2022 Customer Satisfaction Score

PROVEN

$2.27 Billion USD
2023 Revenue

29
STRATEGIC ACQUISITIONS

$5B+
INVESTED IN ACQUISITIONS

350+
TECHNOLOGY PARTNERS

3,000+
UNIVERSITIES IN 90 COUNTRIES

ROCKY
DYNA MORE
C&R TECHNOLOGIES
aws
onscale
Motor Design Limited
SAP
PHOENIX INTEGRATION
Zemax
AGI
Rockwell Automation
lumerical
SYNOPSYS
optiSLang
LSTC Livermore Software Technology Corp.
ptc
DfR Solutions RELIABILITY DESIGNED & DELIVERED
Apache
FLUENT
OPTIS
GRANTA
Microsoft
ANSOFT
medini™
AUTODESK
Ansys

…Enabling continuous development

1903

The Wright brothers designed and flew the first airplane called the Kitty Hawk Flyer capable of a 12 second controlled flight.

Today

Modern-day airplanes feature sophisticated avionics, enhanced safety systems, increased fuel efficiency, and capabilities for long-haul travel at high speeds

Ansys: Multiphysics simulation leaders

Electronics

To figure out how all the electronics will connect with each other, and how to keep them from getting too hot or too cold.

3D Design

Like a sketchpad, to try out different designs for the shape of the plane

Embedded software & Safety

To create and test important software like the flight controls and make sure everything meets safety rules

Fluids

To simulate how air flows around a plane which helps to improve speed and efficiency

Connect

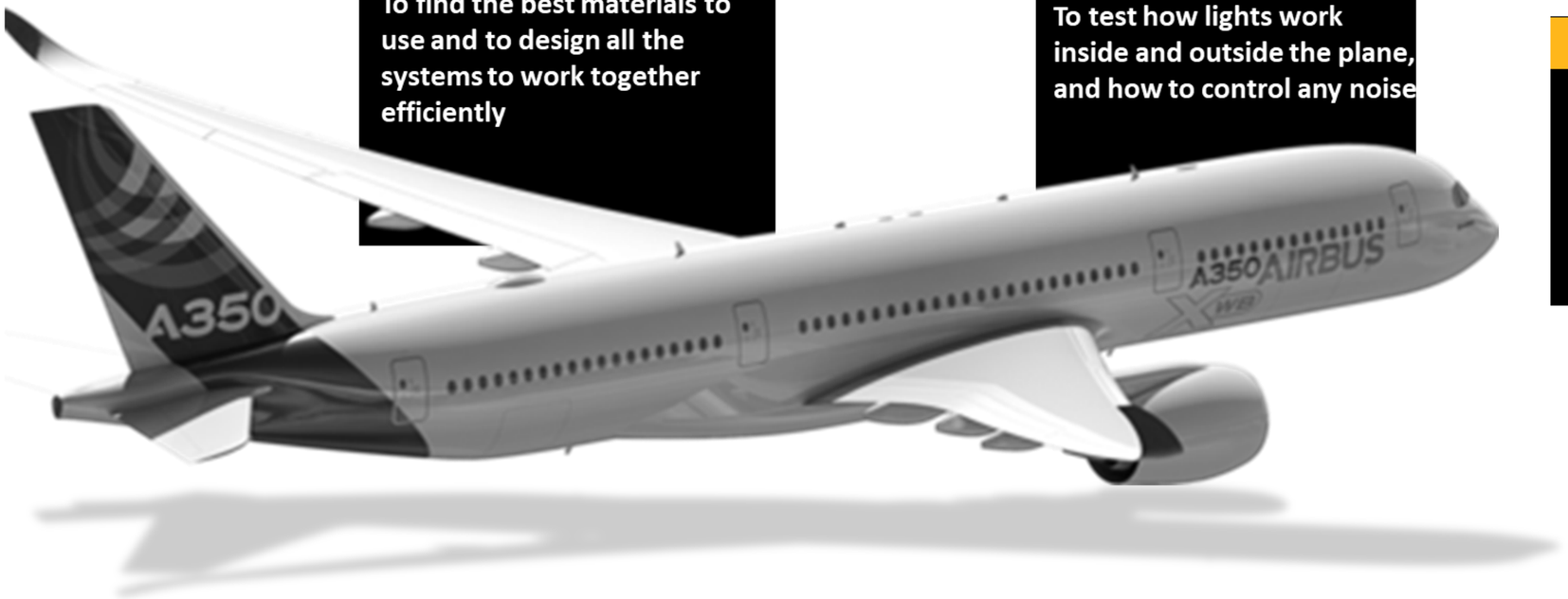
To find the best materials to use and to design all the systems to work together efficiently

Optics & Acoustics

To test how lights work inside and outside the plane, and how to control any noise

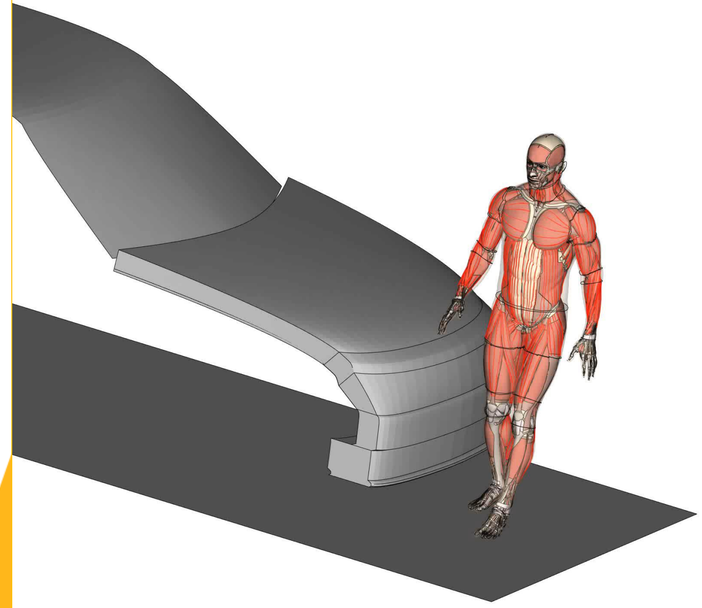
Structures

To test how all the materials work, how parts will move around and even what will happen if a bird hits the plane!



Multiphysics simulation in action

Multiphysics simulation in action



Driving Innovation at World-Class Companies

Ansys

The Ansys Academic Program

The Ansys Academic Program

Mission:

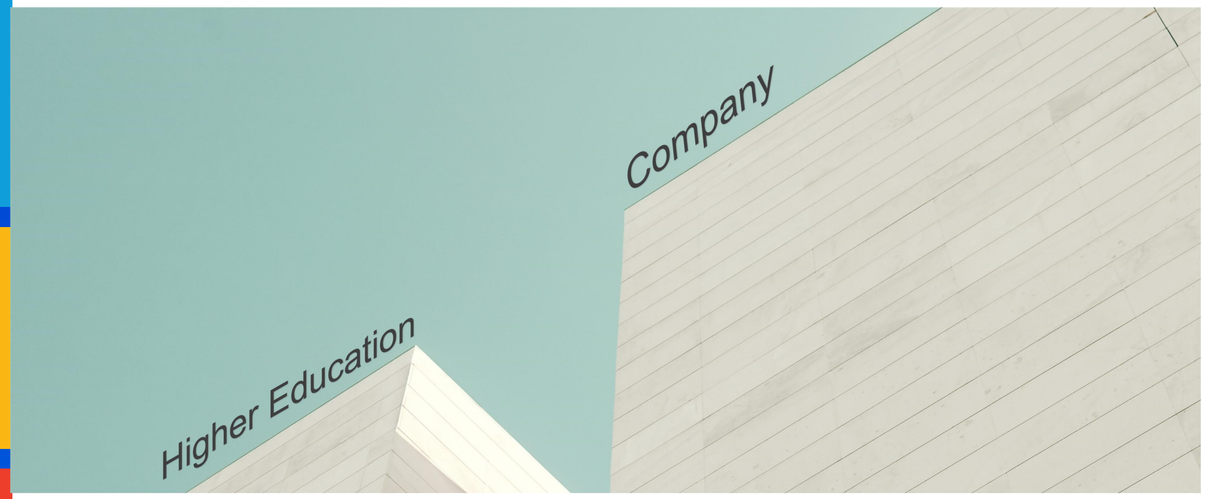
To foster and support the use of simulation in engineering, science and design curricula by providing students, educators, and researchers access to industry-leading simulation software, partnerships, learning and education resources.

30+

Dedicated Team Members

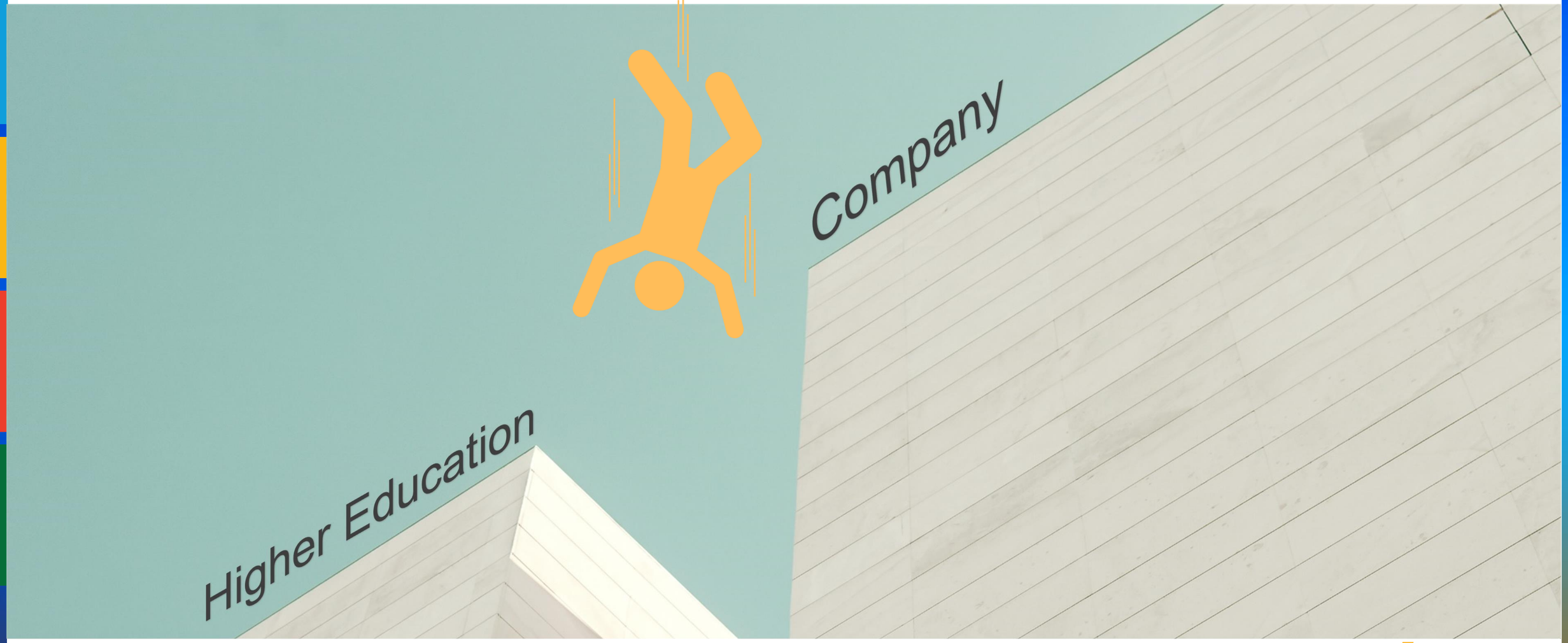
Ansys

The engineering skills gap



A skills gap : **“a lack of skills or abilities found in a potential employee, leading to challenges in gaining employment post-graduation”**

Falling into the skills gap



Attempting to bridge the gap

Three/Four/Five years to cover the fundamentals required to apply the cutting-edge technology

↓

And the amount is only increasing

↓

What needs to be focused on?

Bridging the gap: the evolving engineering curriculum

Fundamental & advanced engineering concepts

Pedagogical approaches

Ansys

The growing use of simulation in engineering

60 %

of engineers at best-in-class companies use simulation

Projected Simulation Use Trajectory

2005
1 in **22** Engineers

2020
1 in **5** Engineers

2030
All Engineers

AEROSPACE & DEFENSE

TRANSPORTATION

HIGH-TECH

HEALTHCARE

INDUSTRIAL EQUIPTMENT

ENERGY

CONSTRUCTION

Ansys

Industry-academic partnerships are necessary

> ***While there are several university success stories, academic leadership must work more proactively and closely with industry to define and implement a next-generation 21st Century engineering curriculum.***

CIMdata – Need for a 21st Century Engineering Curriculum (Jan 2019)
2019)

Ansys Academic Partnerships

Funded Curriculum Partnerships

Student Team Partnerships

STEM Partnerships

Funded curriculum partnerships

Increase students' employability by including in-demand skills in courses

Support to innovate curriculum with industry-standard tools, with the goal of increasing student engagement, retention and success

Increase visibility with co-authored engineering education conference presentations and publications

Share work with the engineering education community via Ansys Education Resources

Ansys

Funded curriculum partnerships

Overview

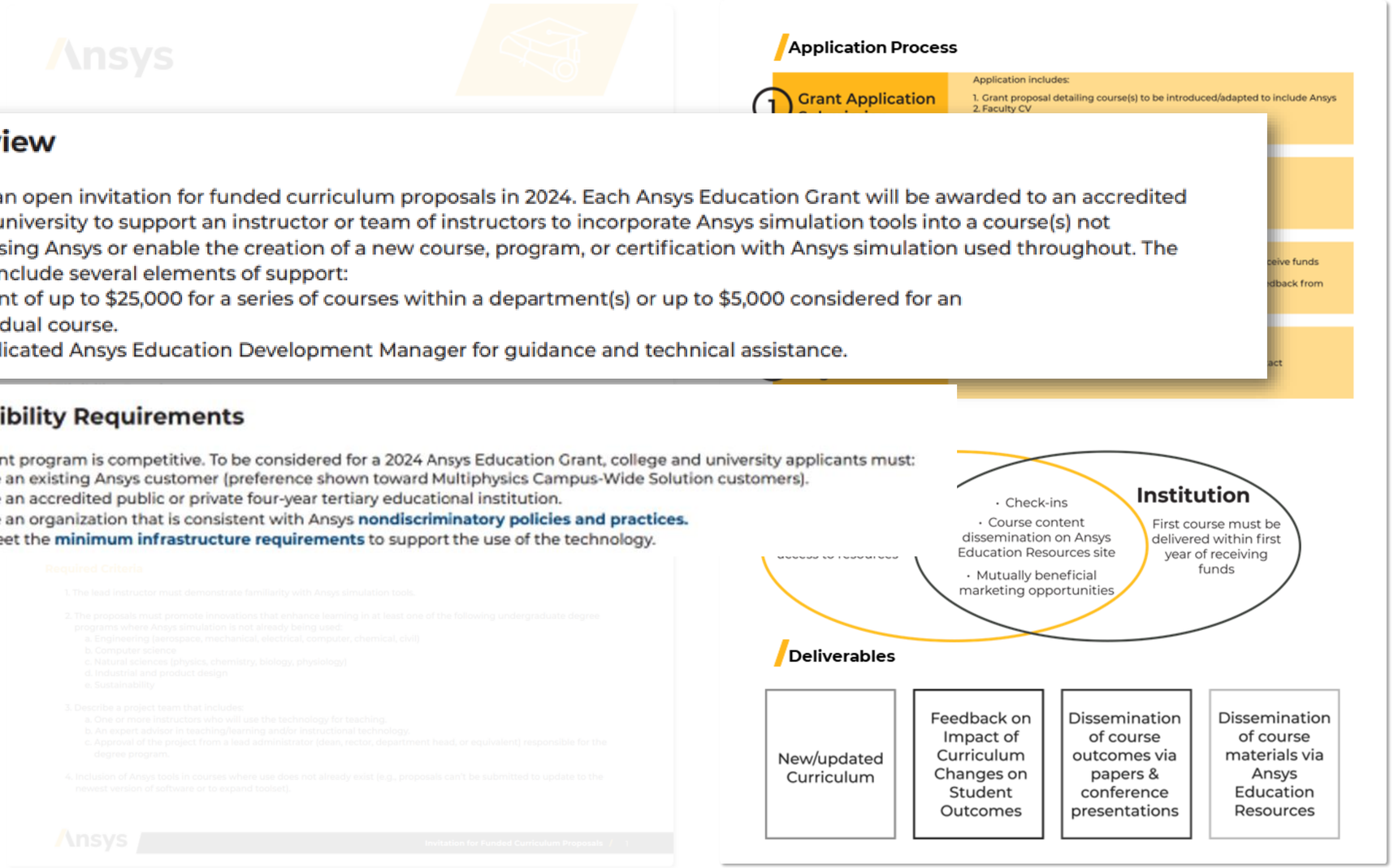
Ansys has an open invitation for funded curriculum proposals in 2024. Each Ansys Education Grant will be awarded to an accredited college or university to support an instructor or team of instructors to incorporate Ansys simulation tools into a course(s) not currently using Ansys or enable the creation of a new course, program, or certification with Ansys simulation used throughout. The grant can include several elements of support:

- A grant of up to $25,000 for a series of courses within a department(s) or up to $5,000 considered for an individual course.
- A dedicated Ansys Education Development Manager for guidance and technical assistance.

Eligibility Requirements

This grant program is competitive. To be considered for a 2024 Ansys Education Grant, college and university applicants must:

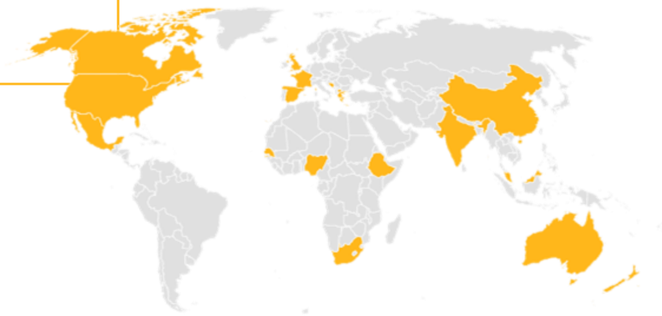
- Be an existing Ansys customer (preference shown toward Multiphysics Campus-Wide Solution customers).
- Be an accredited public or private four-year tertiary educational institution.
- Be an organization that is consistent with Ansys **nondiscriminatory policies and practices.**
- Meet the **minimum infrastructure requirements** to support the use of the technology.

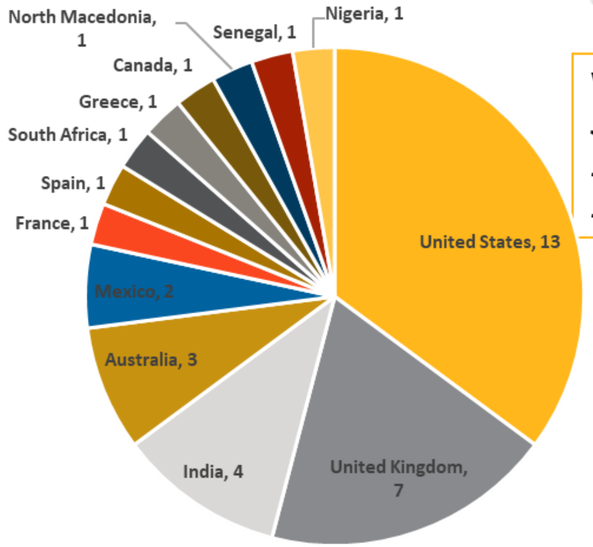


Funded curriculum partnerships… so far

Oct 2022 → June 2024

To date we have received
72 proposals from
67 universities in
18 countries



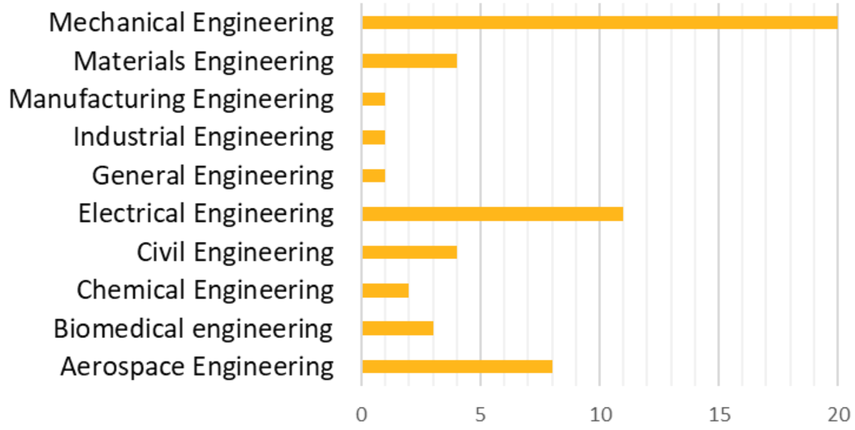


We are currently working with
35 universities in
13 countries impacting around
10,000 students

85 courses are being created/updated across
10 engineering disciplines, powered by
22 different Ansys tools

We have
24 new teaching resources in development

Engineering Disciplines



Powered by

- ACP
- CFX
- Design Modeler
- Discovery
- Granta EduPack
- Fluent
- HFSS
- Icepak
- LS Dyna
- Lumerical
- Maxwell
- Material Designer
- Medini
- OptisLang
- Rocky
- RedHawk
- SCADE
- Sherlock
- STK
- Thermal Desktop
- Twin Builder
- Zemax

Ansys

Some exciting outcomes

"Teaching with Ansys Fluent software will give the students mastery in CFD tools, which will make them competitive for the local and international job market, postgraduate studies, and product design innovation."

— Olabode Thomas Olakoyejo, Ph.D., senior lecturer, University of Lagos

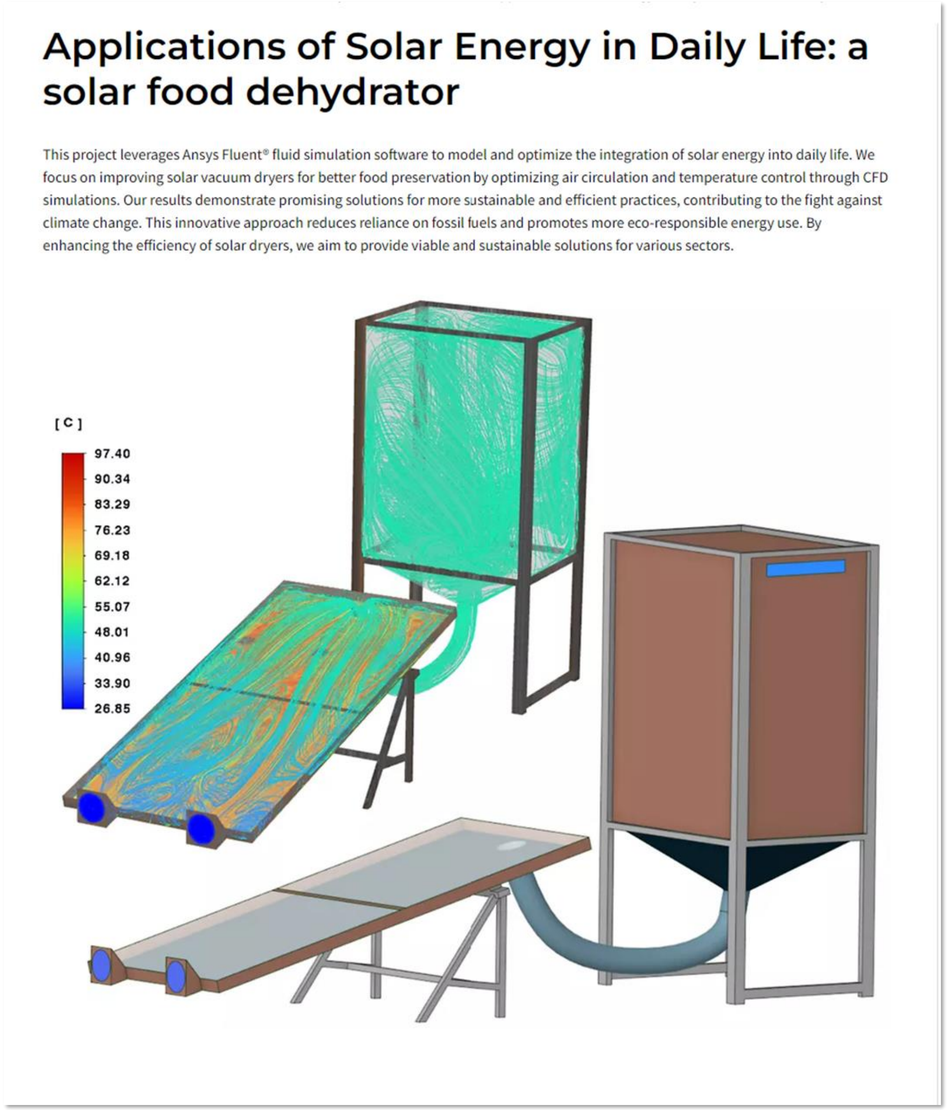
University of Lagos, Nigeria

Reinforcing its commitment to supporting the next generation of engineers, Ansys announced that it would contribute $250,000 toward funded curriculum proposals. Through two successful open calls supported by the Ansys Academic Program, Ansys invited educators of accredited academic institutions from around the world to submit proposals to reshape existing undergraduate engineering curricula or develop new curricula using Ansys' simulation tools in strategic ways. The first open call gave priority to proposals that spanned multiple courses in a department and included simulation in at least one first- or second-year course while the second focused on undergraduate engineering courses covering sustainability or electronics topics.

University of Lagos (UNILAG) senior lecturers Olabode Thomas Olakoyejo, Ph.D. (far left), and Olayinka Adewumi, Ph.D. (center left), with former graduate student Ibrahim Fetuga (center right), welcomed undergraduate engineering students to an Ansys workshop and training session in March.

Ansys

Collaborative teaching resources



Dr. Oumar Drame
Cheikh Anta Diop
University of Dakar
Senegal

Invitation for Funded Curriculum Opportunities

You are **teaching** a course in **Engineering, Science, Design and/or Sustainability**.

You want to create an **innovative** curriculum to prepare students for their career.

Ansys **supports** you

Submit a **proposal**

- ✓ Existing Ansys customers
- ✓ Undergraduate courses
- ✓ Combination of Ansys technologies
- ✓ Proven teaching and assessment methods
- ✓ **For this round proposals for multiple courses/ as part of a department wide/cross departmental courses are preferred.**

Closing date is

March 30th 2025

Grants available:

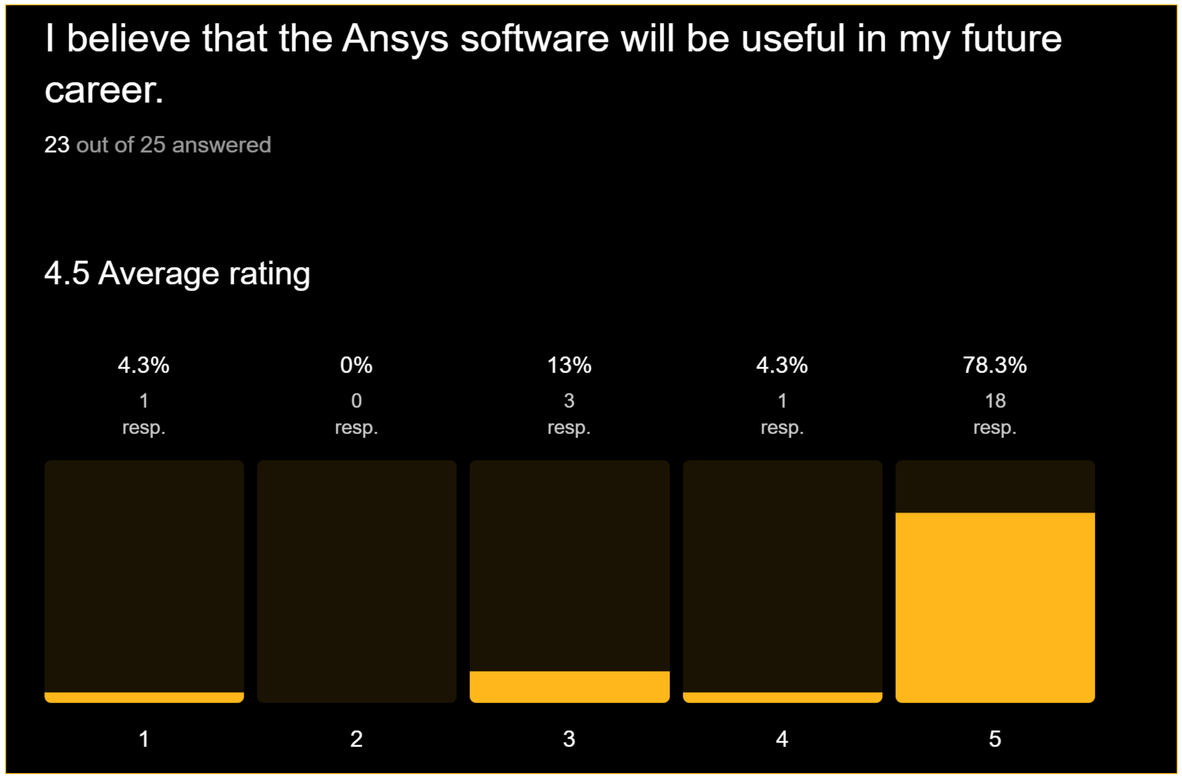
Up to **$5,000** for a single course

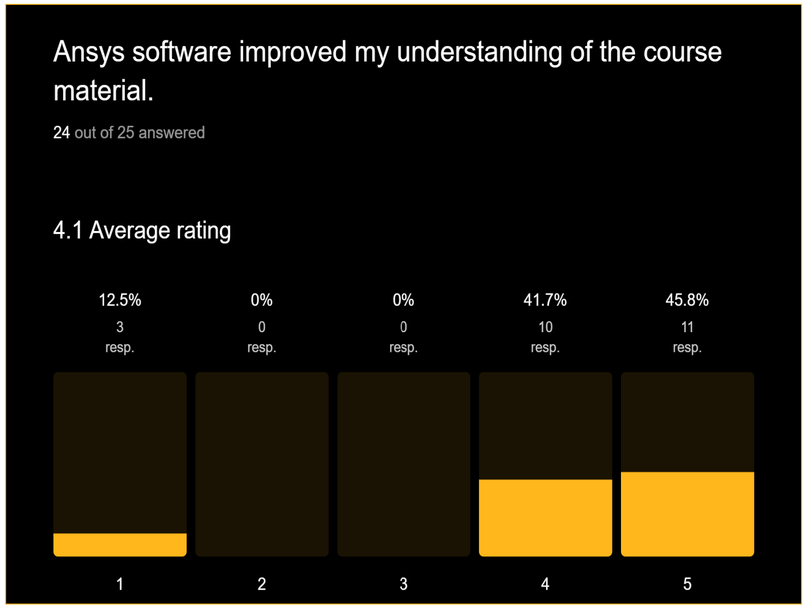
Up to **$25,000** for a series of courses

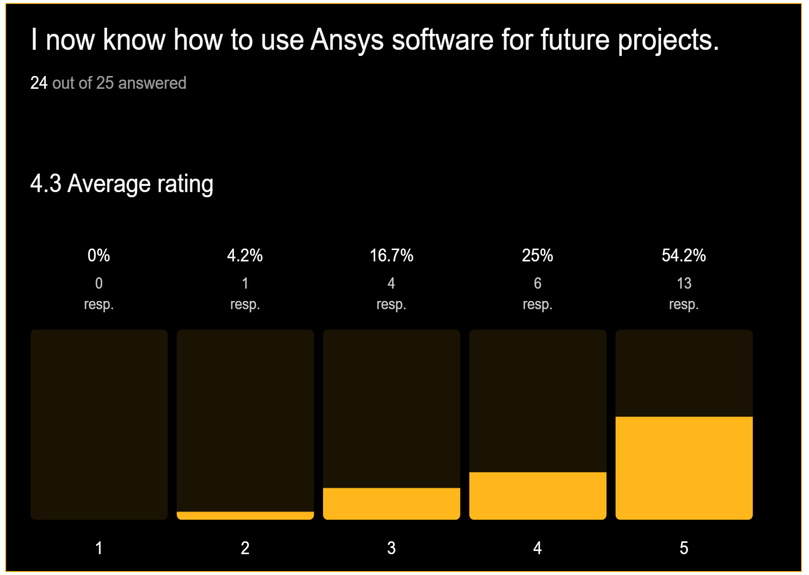
Students’ feedback

1
Strongly disagree

5
Strongly agree







Partnering with student design teams

Student Design Teams

Ansys partners with student teams competing in a variety of competitions by providing access to free research software, learning resources, and support.

REQUEST PARTNERSHIP ▸

LEARNING RESOURCES ▸

Partnering with student design teams

Ansys has sponsored 800+ student teams in these competitions:

- Formula Student
- Solar Challenge
- Electronic Design Competition
- Solar Splash
- SpaceX Hyperloop Pod Design
- Human Vehicle Challenge (HPVC)
- Many more!

What can these student teams get from Ansys?

Student Team Partnerships

Free Software, Resources, and Support Utilized by Teams Globally

Student teams using Ansys have a competitive edge and gain a skillset required to be successful in the real world. Ansys provides university-based student teams free research software, resources, and support. Student teams using Ansys participate in a range of global competitions including but not limited to Formula SAE (FSAE), Hyperloop Pod Competition, Solar Car Challenge, F1 in Schools, and a variety of autonomous vehicle and rocket design challenges.

Free online training for all

Ansys Innovation Courses

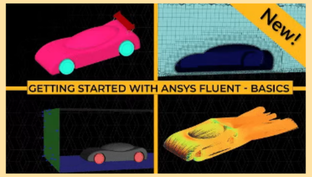
Ansys Innovation Courses are award-winning, free, online physics and engineering courses designed for educators, students and engineers to enhance simulation and physics learning.

EDISON AWARDS WINNER 2021

Hundreds of free online courses

LEARNING PATH
Fundamentals of Optics
6+ HOURS | 6 COURSES
FREE

COMPLETION BADGE
Click to Check Availability



LEARNING PATH
Getting Started with Ansys Fluent - Basics
6+ HOURS | 8 COURSES
FREE

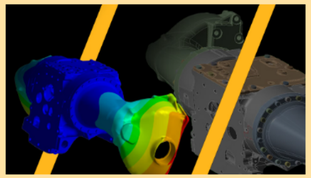
COMPLETION BADGE
Click to Check Availability

LEARNING PATH
Getting Started with Ansys Discovery
6+ HOURS | 5 COURSES
FREE

COMPLETION BADGE
Click to Check Availability

LEARNING PATH
Basics of Fluid Dynamics
6+ HOURS | 7 COURSES
FREE

COMPLETION BADGE
Click to Check Availability



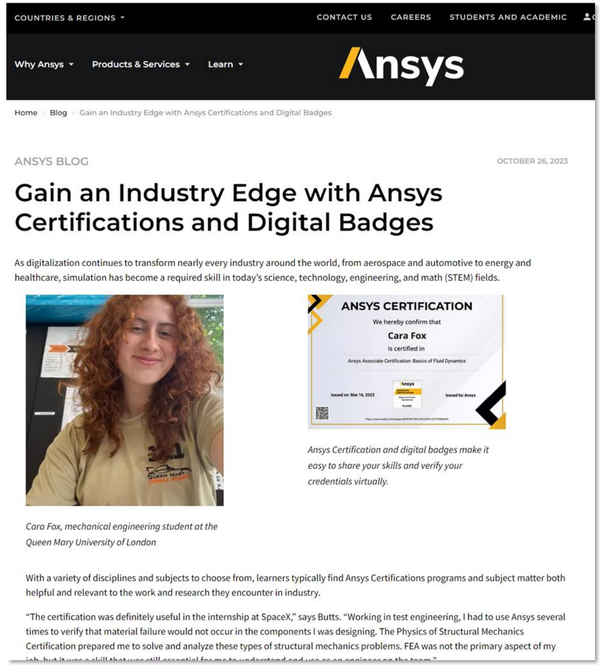
LEARNING PATH
Stress Analysis Using Ansys Mechanical
6+ HOURS | 6 COURSES
FREE

COMPLETION BADGE
Click to Check Availability

LEARNING PATH
Foundations in Stress Analysis of Structures
6+ HOURS | 6 COURSES
FREE

COMPLETION BADGE
Click to Check Availability

We take students seriously



COUNTRIES & REGIONS · CONTACT US · CAREERS · STUDENTS AND ACADEMIC

Why Ansys · Products & Services · Learn · Ansys

Home › Blog › Gain an Industry Edge with Ansys Certifications and Digital Badges

ANSYS BLOG — OCTOBER 26, 2023

Gain an Industry Edge with Ansys Certifications and Digital Badges

As digitalization continues to transform nearly every industry around the world, from aerospace and automotive to energy and healthcare, simulation has become a required skill in today's science, technology, engineering, and math (STEM) fields.

Ansys Certification and digital badges make it easy to share your skills and verify your credentials virtually.

Cara Fox, mechanical engineering student at the Queen Mary University of London

With a variety of disciplines and subjects to choose from, learners typically find Ansys Certifications programs and subject matter both helpful and relevant to the work and research they encounter in industry.

"The certification was definitely useful in the internship at SpaceX," says Butts. "Working in test engineering, I had to use Ansys several times to verify that material failure would not occur in the components I was designing. The Physics of Structural Mechanics Certification prepared me to solve and analyze these types of structural mechanics problems. FEA was not the primary aspect of my

COUNTRIES & REGIONS · CONTACT US · CAREERS · STUDENTS AND ACADEMIC

Why Ansys · Products & Services · Learn · Ansys

Home › Blog › Belgium Students Repeat Bridgestone World Solar Challenge Win

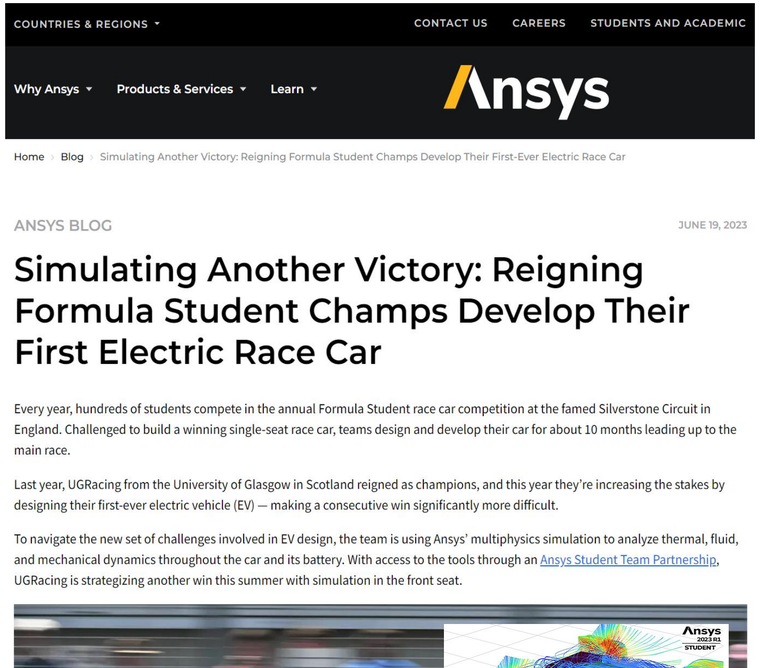
ANSYS BLOG — FEBRUARY 21, 2024

Belgium Students Repeat Bridgestone World Solar Challenge Win

For the second time in a row, students from the Katholieke Universiteit Leuven (KU Leuven) in Belgium earned first place at the 2023 Bridgestone World Solar Challenge (BWSC). The competition challenges students from around the world to design, engineer, and race solar-powered vehicles in a 3,021-kilometer route spanning Australia, from Darwin to Adelaide. The competition is normally held every two years, but it experienced a four-year gap between 2019 and 2023 due to the cancellation of the 2021 BWSC during the COVID-19 pandemic.

Consisting of 33 members, KU Leuven's Innoptus solar team took home the recent win after designing and developing their solar-powered vehicle, Infinite, for about a year. Innoptus members, ranging in age from 21 to 24, include engineering students from industrial, civil, and business disciplines.

The Innoptus solar racing team from Katholieke Universiteit Leuven (KU Leuven) in Belgium celebrate first place at the 2023 World Solar Challenge.



COUNTRIES & REGIONS · CONTACT US · CAREERS · STUDENTS AND ACADEMIC

Why Ansys · Products & Services · Learn · Ansys

Home › Blog › Simulating Another Victory: Reigning Formula Student Champs Develop Their First-Ever Electric Race Car

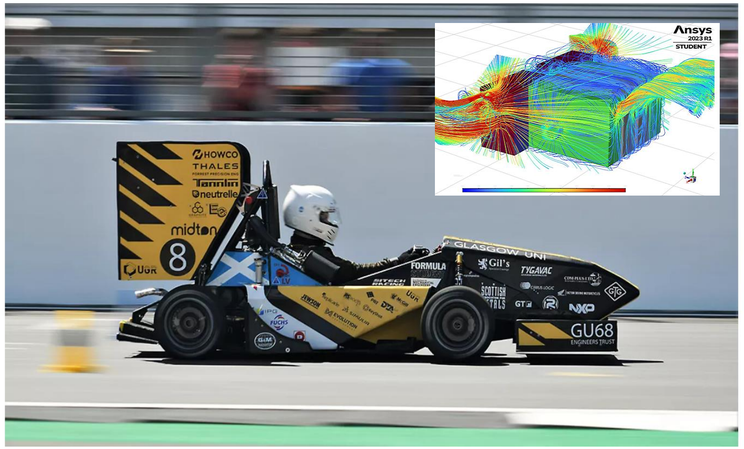
ANSYS BLOG — JUNE 19, 2023

Simulating Another Victory: Reigning Formula Student Champs Develop Their First Electric Race Car

Every year, hundreds of students compete in the annual Formula Student race car competition at the famed Silverstone Circuit in England. Challenged to build a winning single-seat race car, teams design and develop their car for about 10 months leading up to the main race.

Last year, UGRacing from the University of Glasgow in Scotland reigned as champions, and this year they're increasing the stakes by designing their first-ever electric vehicle (EV) — making a consecutive win significantly more difficult.

To navigate the new set of challenges involved in EV design, the team is using Ansys' multiphysics simulation to analyze thermal, fluid, and mechanical dynamics throughout the car and its battery. With access to the tools through an Ansys Student Team Partnership, UGRacing is strategizing another win this summer with simulation in the front seat.



1.4K+

Ansys Student Team Partners

Could this be your university and students? We want to work with you

Thank you! Questions?

THE GLOBAL ENGINEERING CONFERENCE ON SUSTAINABLE DEVELOPMENT AND WORLD FEDERATION OF ENGINEERING ORGANISATIONS EXECUTIVE COMMITTEE MEETINGS.

15th - 18th October 2024, Kigali, Rwanda

THANK YOU / MURAKOZE

@RwandaEngineers • (+250) 789 904 228

gecokigali2024@engineersrwanda.rw • www.engineersrwanda.rw

Platinum Sponsor dar

@RwandaEngineers | www.engineersrwanda.rw | geco.ier.rw

Ministry of Infrastructure

Under the patronage of unesco

World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

FAEO