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Computational Fluid Mechanics - Airflow Around a Spoiler

Instructor: Jousef Murad

20,702 already enrolled

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Guided Project
Learn, practice, and apply job-ready skills with expert guidance

4.5 ★ (374 reviews)

Beginner level
Recommended experience

1 hour
Learn at your own pace

Hands-on learning
Learn more

What you'll learn

- ✓ Understand cloud-simulation technology and why it is so powerful
- ✓ How to set up an incompressible fluid flow simulation around a spoiler and post-process the results

Skills you'll practice

Engineering Analysis | Cloud Computing | Computer-Aided Design | Prototyping | Engineering | Simulation and Simulation Software

Details to know

Shareable certificate
Add to your LinkedIn profile

Taught in English

No downloads or installation required
Only available on desktop

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Learn, practice, and apply job-ready skills in less than 2 hours

- Receive training from industry experts
- Gain hands-on experience solving real-world job tasks
- Build confidence using the latest tools and technologies

About this Guided Project

In this hands-on project, you will learn about Computational Fluid Dynamics (CFD) and perform an incompressible fluid flow simulation around a spoiler using the cloud-based simulation tool SimScale. We will set up simulation cases with provided geometries to learn the fundamentals of CFD and how a spoieler simulation is approached and set up in the first place. We will walk through the classical three step process of every simulation which includes the pre-processing, processing and post-processing step.

SimScale is an engineering simulation platform that is revolutionizing the way engineers, designers, scientists, and students design products. The SimScale platform is accessible completely via a standard web browser, with an easy-to-use interface which supports numerous simulation types including solid mechanics (FEM), fluid dynamics (CFD) & thermodynamics.

This course runs on Coursera's hands-on project platform called Rhyme. On Rhyme, you do projects in a hands-on manner in your browser. You will get instant access to pre-configured cloud desktops containing all of the software and data you need for the project, for this project you need no special setup or any data. Everything is already set up directly in your internet browser so you can just focus on learning!

Notes:
- This course works best for learners who are based in the North America region. We're currently working on providing the same experience in other regions.

Read less

Learn step-by-step

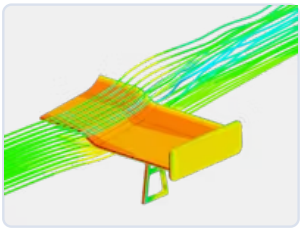
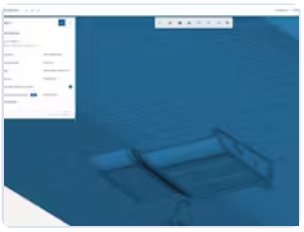
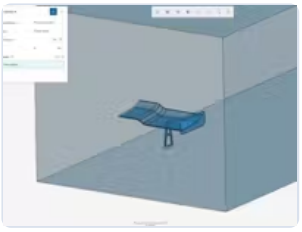
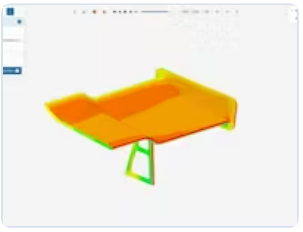
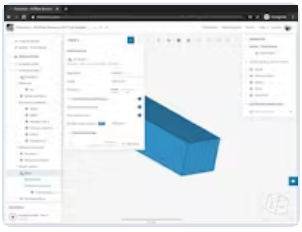
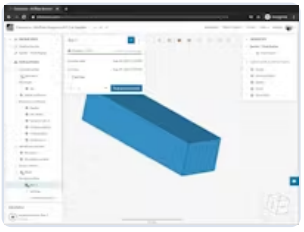
In a video that plays in a split-screen with your work area, your instructor will walk you through these steps:

1. Introduction to SimScale & Meet the Instructor
2. Prepare the CAD Model and Select the Analysis Type
3. Assigning the Material and Boundary Conditions)
4. Meshing your geometry
5. Start the Simulation
6. Post-Processing

Recommended experience

Basic knowledge in fluid mechanics

6 project images

Instructor

Instructor ratings 4.3 ★ (20 ratings)

Jousef Murad

9 Courses • 56,076 learners

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How you'll learn

Skill-based, hands-on learning
Practice new skills by completing job-related tasks.

Expert guidance
Follow along with pre-recorded videos from experts using a unique side-by-side interface.

No downloads or installation required
Access the tools and resources you need in a pre-configured cloud workspace.

Available only on desktop
This Guided Project is designed for laptops or desktop computers with a reliable Internet connection, not mobile devices.

Why people choose Coursera for their career

Felipe M.
Learner since 2018

"To be able to take courses at my own pace and rhythm has been an amazing experience. I can learn whenever it fits my schedule and mood."

★ 4.5 374 reviews

5 stars 65.95%

4 stars 26.59%

3 stars 4.52%

2 stars 1.32%

1 star 1.59%

M

★ 4 · Reviewed on Jun 8, 2025

i wish i could find this type of free courses MOREEEE

L

★ 5 · Reviewed on Jul 19, 2023

as a instructor you were very good i liked the way you directed in the videos posted and even made something easier that i was not even known about thank you so much

LC

★ 5 · Reviewed on Aug 26, 2025

the teacher was very motivated and passionate - easy to understand

View more reviews

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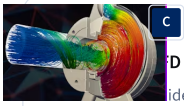

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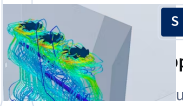
Preview



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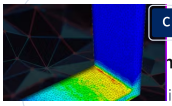

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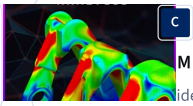

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M - Linear, Nonlinear Analysis & Post-Processing

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Frequently asked questions

Are Guided Projects available on desktop and mobile?

Because your workspace contains a cloud desktop that is sized for a laptop or desktop computer, Guided Projects are not available on your mobile device.

Who are the instructors for Guided Projects?

Guided Project instructors are subject matter experts who have experience in the skill, tool or domain of their project and are passionate about sharing their knowledge to impact millions of learners around the world.

Can I download the work from my Guided Project after I complete it?

You can download and keep any of your created files from the Guided Project. To do so, you can use the “File Browser” feature while you are accessing your cloud desktop.

Show all 6 frequently asked questions

More questions

Visit the learner help center

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- Cybersecurity
- Data Analytics
- Digital Marketing
- English Speaking
- Generative AI (GenAI)
- Microsoft Excel
- Microsoft Power BI
- Project Management
- Python

Certificates & Programs

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- Google Data Analytics Certificate
- Google IT Support Certificate
- Google Project Management Certificate
- Google UX Design Certificate
- IBM Data Analyst Certificate
- IBM Data Science Certificate
- Machine Learning Certificate
- Microsoft Power BI Data Analyst Certificate
- UI / UX Design Certificate

Industries & Careers

- Business
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- Data Science
- Education & Teaching
- Engineering
- Finance
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- Information Technology (IT)
- Marketing

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- Examples of Strengths and Weaknesses for Job Interviews
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