UNIVERSITY OF MICHIGAN

The History of Rocket Science

This course is part of **Rocket Science 101 Specialization**

Instructor: Aaron Ridley

Included with coursera PLUS • Learn more

4 modules
Gain insight into a topic and learn the fundamentals.

4.9 ★
(24 reviews)

Beginner level
Recommended experience

1 week to complete
at 10 hours a week

Flexible schedule
Learn at your own pace

What you'll learn

- ✓ Describe the progression and the reasoning behind the US's Mercury, Gemini, and Apollo programs
- ✓ Describe how Germany developed rockets for warfare in WWII and how the US and USSR used this technology to develop their rocket programs
- ✓ Describe the costs and benefits of the space shuttle program, and why the US lost two shuttles

Skills you'll gain

Emerging Technologies | Engineering Design Process | World History | Manufacturing and Production | Innovation | Timelines | International Relations | Political Sciences

Details to know

Shareable certificate
Add to your LinkedIn profile

Taught in English

Assessments
16 assignments

See how employees at top companies are mastering in-demand skills

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Build your subject-matter expertise

This course is part of the Rocket Science 101 Specialization
When you enroll in this course, you'll also be enrolled in this Specialization.

- Learn new concepts from industry experts
- Gain a foundational understanding of a subject or tool
- Develop job-relevant skills with hands-on projects
- Earn a shareable career certificate

There are 4 modules in this course

Modern rocket design started amidst World War II, pushing the boundaries of what rocketry was capable of. In The History of Rocket Science, you'll gain a deeper understanding of this complicated history and discuss key advancements, like the creation of the V2 rocket. Examine the ramifications of the advancements of rocket science from a historical and societal perspective, going beyond the technological advancements during the war. This course also explores the Cold War, culminating in the United States' creation of the Apollo 11 — the pivotal creation that landed the U.S. on the moon. Round out the course by getting a first-hand look at space shuttles, space stations, space tourism, and how companies are opening up space exploration.

Read less

Week 1: The Advent of Modern Rockets

Module 1 • 2 hours to complete

Module details

Welcome to the History of Rocket Science course and to Week 1: The Advent of Modern Rockets. This module will take you on a journey through the fascinating history of rocketry, beginning with the time before modern rockets existed and leading up to the post-WWII era. By the end of this module, you will be able to recognize what came before modern rockets, comprehend the cost of rocketry in WWII, and comprehend the development of rocket inventions in WWII in Germany. You will also be able to recognize how the US and USSR responded to post-WWII, setting a strong foundation for the rest of the course. Let's dive into the fascinating world of rocket science!

What's included

4 videos · 7 readings · 3 assignments · 2 discussion prompts

Hide info about module content

4 videos • Total 29 minutes

Welcome to the History of Rocket Science Course • 2 minutes

The History of Pre-Modern Rockets • 8 minutes

The Invention of the V2 Rocket • 9 minutes

Rockets Post-WWII • 9 minutes

7 readings • Total 60 minutes

Syllabus • 7 minutes

Help Us Learn More About You! • 5 minutes

Content Notice • 3 minutes

Rockets Before WWII: Innovations & Scientists • 15 minutes

Rockets During WWII: Cost & Notable Engineers • 15 minutes

Rockets Post WWII: US & USSR Activities • 15 minutes

Extra Resources: The Advent of Modern Rockets • 0 minutes

3 assignments • Total 35 minutes

Week 1 Quiz: The Advent of Modern Rockets • 15 minutes

Knowledge Check: Rockets Before WWII • 10 minutes

Knowledge Check: Rockets During WWII • 10 minutes

2 discussion prompts • Total 15 minutes

Meet your Fellow Learners • 5 minutes

How the World Should Have Reacted? • 10 minutes

Week 2: The Space Race

Module details

Module 2 • 2 hours to complete

Welcome to the second module of the History of Rocket Science course—Week 2: The Space Race. This module will take you on a thrilling journey through one of the most exciting periods in the history of rocketry—the space race. By the end of this module, you will be able to comprehend the political paradigm of the space race: communism vs. capitalism, recognize the USSR's early victories in the space race, identify the components of the US plan to get to the moon, and explain why the USSR plan failed to get to the moon. Join us as we relive the excitement and intrigue of the space race and gain a deeper understanding of the history of rocket science.

What's included

8 videos 6 readings 5 assignments

Hide info about module content

8 videos • Total 59 minutes

Early Space Exploration to 1961—Part 1 • 8 minutes

Early Space Exploration to 1961—Part 2 • 10 minutes

Ramping Up the Space Race: The Mercury Era • 12 minutes

The Gemini Era: US and USSR Achievements • 6 minutes

The Apollo Era: Successes & Failures—Part 1 • 7 minutes

The Apollo Era: Successes & Failures—Part 2 • 6 minutes

US Moon Missions: A Tribute to Katherine Johnson • 5 minutes

One More Thing for This Week: If Kennedy Had Lived • 3 minutes

6 readings • Total 63 minutes

Reminder: Content Notice • 3 minutes

The Sputnik and Yuri Gagarin Era: US & USSR Activities • 15 minutes

The Mercury Era: US & USSR Activities • 15 minutes

US & USSR Achievements During The Gemini Era • 15 minutes

The Apollo Era: US & USSR Success and Failures • 15 minutes

Extra Resources: The Space Race • 0 minutes

5 assignments • Total 55 minutes

Week 2 Quiz: The Space Race • 15 minutes

Knowledge Check: The Sputnik and Yuri Gagarin Era • 10 minutes

Knowledge Check: The Mercury Era • 10 minutes

Knowledge Check: The Gemini Era • 10 minutes

Knowledge Check: The Apollo Era • 10 minutes

Week 3: The Space Shuttle Era

Module 3 • 2 hours to complete

Module details

Welcome to the third module of the History of Rocket Science course—Week 3: The Space Shuttle Era. This module will explore the era of the Space Shuttle program, which marked a new phase in the history of space exploration. We will examine the evolution of the shuttle program and its impact on the exploration and utilization of space. The module will be divided into three parts, each focusing on a distinct aspect of the Space Shuttle era. The first part will cover Fast Airplanes, where we will explore the technological advancements that made high-speed aircraft and commercial space travel possible. The second part will focus on Space Stations, where we will examine the construction and operation of the International Space Station (ISS), which continues to be a vital platform for scientific research and technological development in space. Lastly, the third part will cover The Space Shuttle, where we will take a closer look at the cost and benefits of the shuttle program, including its role in deploying and repairing satellites, and its use in servicing the Hubble Space Telescope. Join us as we explore the exciting and innovative era of the Space Shuttle program and gain a deeper understanding of the history of rocket science.

What's included

4 videos 4 readings 4 assignments 1 discussion prompt

Hide info about module content

4 videos • Total 29 minutes

The Development of Fast Airplanes in the US • 6 minutes

The Development of Space Stations • 6 minutes

The Truck to Space: The Development of the Space Shuttle • 11 minutes

One More Thing for This Week: The USSR's Space Shuttle • 5 minutes

4 readings • Total 45 minutes

Fast Airplanes in the US: A Timeline • 15 minutes

Space Stations' Development: A Timeline • 15 minutes

The US Space Shuttle Program: Genesis & Ending • 15 minutes

Extra Resources: The Space Shuttle Era • 0 minutes

4 assignments • Total 45 minutes

Week 3 Quiz: The Space Shuttle Era • 15 minutes

Knowledge Check: Fast Airplanes • 10 minutes

Knowledge Check: Space Stations • 10 minutes

Knowledge Check: The Space Shuttle • 10 minutes

1 discussion prompt • Total 15 minutes

Point of Discussion: Are We Spending Too Much Taxpayer Money on Space? • 15 minutes

Week 4: The Industrial Revolution

Module 4 • 2 hours to complete

Module details

Welcome to the fourth and the last module of the History of Rocket Science course—Week 4: The Industrial Revolution. In this module, we will explore how the rocket industry has been transformed by the rise of commercial space companies and the emergence of new space technologies. By the end of this module, you will be able to identify the reasons for the development of small satellites, recognize the cost model of launch vehicles, identify what launch vehicle providers are doing to drive costs down, and comprehend the motivation to go to Mars and how we can get there. Join us as we explore the cutting-edge technologies and revolutionary ideas that are driving the Industrial Revolution in rocket science, and gain a deeper understanding of the future of space exploration.

What's included

5 videos 5 readings 4 assignments 1 discussion prompt

Hide info about module content

5 videos • Total 44 minutes

Small Satellites: Start and Exploring Missions • 10 minutes

Reducing Launch Cost: Electron + Other Launch Vehicles • 14 minutes

Bigger and Bolder: The Push Outwards • 10 minutes

One More Thing for This Week: Hotels in Space? • 7 minutes

Course Wrap-Up • 1 minute

5 readings • Total 50 minutes

Small Satellites Development: A Timeline • 15 minutes

Reducing Launch Cost: A Timeline • 15 minutes

Mission to Mars: Extensive Summary • 15 minutes

Extra Resources: The Industrial Revolution • 0 minutes

Post-Course Survey • 5 minutes

4 assignments • Total 45 minutes

Week 4 Quiz: The Industrial Revolution • 15 minutes

Knowledge Check: The Growth of Small Satellites • 10 minutes

Knowledge Check: Reducing Launch Costs • 10 minutes

Knowledge Check: Beyond Earth • 10 minutes

1 discussion prompt • Total 10 minutes

Will Space be Accessible for People With Disabilities? • 10 minutes

Earn a career certificate

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Instructor

Aaron Ridley
University of Michigan
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EC
★ 5 · Reviewed on Jun 25, 2024

Thank you, Dr. Aaron Ridley, for the incredibly well presented history of rocket science and space exploration. I enjoyed every single second of the course!

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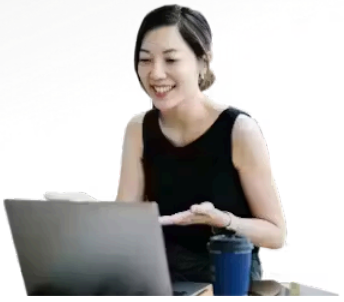

Frequently asked questions

When will I have access to the lectures and assignments?

To access the course materials, assignments and to earn a Certificate, you will need to purchase the Certificate experience when you enroll in a course. You can try a Free Trial instead, or apply for Financial Aid. The course may offer 'Full Course, No Certificate' instead. This option lets you see all course materials, submit required assessments, and get a final grade. This also means that you will not be able to purchase a Certificate experience.

What will I get if I subscribe to this Specialization?

When you enroll in the course, you get access to all of the courses in the Specialization, and you earn a certificate when you complete the work. Your electronic Certificate will be added to your Accomplishments page - from there, you can print your Certificate or add it to your LinkedIn profile.

Is financial aid available?

Yes. In select learning programs, you can apply for financial aid or a scholarship if you can't afford the enrollment fee. If fin aid or scholarship is available for your learning program selection, you'll find a link to apply on the description page.

More questions

Visit the learner help center

Financial aid available, learn more

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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

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