

NGC Info Session

Mike Ash, Caltech CTME

29 August 2023

ctme.caltech.edu/ngc

Three things to know

What is Caltech CTME?

What makes us distinctive for our learners?

What are our NGC programs?

What is Caltech CTME

Caltech's Center for Technology and Management Education (CTME) is the ideal destination for systems leaders seeking professional development and transformational opportunities.



What makes us distinctive

Our people—and the way we shape programs and outcomes—is what makes a Caltech CTME program truly exceptional learning experiences for our individuals and their organizations.



**Instructors with
industry insight**




**Customizable
learning experiences**



**Ability to achieve
real impact**

NGC Programs: SE (1 of 5)

	Schedule	Program topics	Format
	<ul style="list-style-type: none">• TBD 2024	<ul style="list-style-type: none">• Introduction to Airworthiness• Airworthiness Policies, Systems Engineering, and Air Vehicle Criteria• Flight Technologies, Propulsion, and Air Vehicle Subsystems Criteria• Crew Systems, Passenger Safety, and Electrical and Electronic Systems• System Safety, Computer Systems, and Mission Equipment Criteria• Sustainment and Continuing Airworthiness Processes	<ul style="list-style-type: none">• Live-Remote

NGC Programs: SE (2 of 5)

Systems Engineering Foundations (SE56 - AS)

Schedule

- TBD 2024
- **Requires 84 hours of project time to be completed in addition to the 56-hour course**

Program topics

- Introduction to Systems Engineering
- Defining System Requirements
- Functional Analysis
- System Specifications
- System Architecture
- Decision Analysis
- Design and Integration
- Verification and Validation
- Engineering Specialties
- System Engineering Management
- Technical Reviews and Audits
- Risk Management
- Quality Management
- Creating a High-Performance Team
- Minimizing and Resolving Team Conflicts

Format

- Live-Remote
- Interactive team project work

NGC Programs: SE (3 of 5)

Systems Engineering Foundations (SE48 - SS/MS/DS)

Schedule

- Oct 13, 14, 27, 28
Nov 10, 11, 2023
8:00 AM - 5:00 PM MDT
- **Requires 16 hours of project time to be completed in addition to the 48-hour course**

Program topics

- Introduction to Systems Engineering
- Defining System Requirements
- Functional Analysis
- System Specifications
- System Architecture
- Decision Analysis
- Design and Integration
- Verification and Validation
- Engineering Specialties
- System Engineering Management


Format

- Live-Remote
- Interactive team project work

NGC Programs: SE (4 of 5)

	Schedule	Program topics	Format
MBSE Fundamentals	<ul style="list-style-type: none">• Oct 14, 15, 27, 28 Nov 10, 11, 2023 8:00 AM - 5:00 PM MDT	<ul style="list-style-type: none">• MBSE - Why we do it• Introduction to the NoMagic/Cameo interface• How do we keep our workspace organized? - Package Diagrams• How do our users interact with our system? - Use Case Diagrams• What tasks does our system perform? - Activity Diagrams• What does our system need to do and how well does it need to do it? - Requirements Diagrams• What are the fundamental items in our system? - Block Definition Diagrams• What is our system doing? - State Machine Diagrams• How do our system's pieces interact? - Sequence Diagrams• How are all the pieces connected? - Internal Block Diagrams• What happens inside the blocks? - Parametric Diagrams	<ul style="list-style-type: none">• Live-Remote or On-Demand• Interactive team project work
MBSE Fundamentals (On-Demand)	<ul style="list-style-type: none">• Oct 16–Dec12, 2023 (Self-Paced) 8:00 AM - 5:00 PM MDT		
MBSE Fundamentals	<ul style="list-style-type: none">• Oct 27, 28 Nov 10, 11 Dec 8, 9, 2023 8:00 AM - 5:00 PM MDT		

NGC Programs: SE (5 of 5)

	Schedule	Program topics	Format
	<ul style="list-style-type: none">• Oct 13, 14, 27, 28 Dec 8, 9, 2023 8:00 AM - 5:00 PM MDT	<ul style="list-style-type: none">• Identify model stakeholders (modeling our modeling effort)• Generate custom documents and reports• Evaluate considerations in developing model guidelines• understand when and why to customize the language using stereotypes• Identify opportunities for reuse and organize our models to support reuse• Create and use libraries• Perform trade studies in SysML• Evaluate model behavior• Design and simulate user interfaces• Configure simulations• Create a capstone model that combines all elements of the six-day certificate program and topics covered in Modules 1 and 2• Apply core SysML concepts, simulations, and customizations to build an accurate representation of your system	<ul style="list-style-type: none">• Live-Remote

NGC Programs: PM (1 of 2)

Aerospace Project Management

Schedule

- Sep 15, 16, 29, 30
Oct 13, 14, 27, 28
Nov 10, 11
Dec 8, 9, 2023
8:00 AM - 5:00 PM PDT

Program topics

- Project Organization and Leadership
- Project Costing and Proposal Development
- Detailed Project Planning
- Project Monitoring and Control
- Project Risk Management
- Supplier Performance Management

Format

- Live-Remote

NGC Programs: PM (2 of 2)

Agile Project Management

Schedule

- Oct 13, 27
Nov 10
Dec 8, 9, 2023
8:00 AM - 5:00 PM MDT

Program topics

- Agile Methodologies and Practices
- Agile Estimating and Requirements Gathering Procedures
- Agile Design and Testing Procedures
- Agile Release and Iteration Planning Strategies
- Agile and Scrum Methodologies and Practices
- Agile Leadership Styles for Agile Projects
- Scaling Agile for Large Agile Projects
- Agile Implementation Strategies

Format

- Live-Remote

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LEARNING OBJECTIVES AND TOPICS

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Programs for Organizations

Programs for Individuals


The Caltech Experience

Teaching Team

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Northrop Grumman



Caltech Training for Northrop Grumman Corporation

Since 2009, Northrop Grumman has partnered with Caltech's Center for Technology and Management Education for practical learning and leadership development for engineers and professionals alike.

Our programs are unique—we work closely with Northrop Grumman senior management to understand your current challenges and customize our course content to address them. Our instructors are practicing engineers and managers from industry, bringing their experience to bear in practical tools and methods you can apply directly to your job.

Discover What Caltech Has To Offer for Northrop Grumman

First Name:

Last Name:

Email Address:

SIGN ME UP!

Empowering Northrop Grumman

Caltech offers you the best programs and courses through our long-term partnership with the Northrop Grumman Corporation.

Customized Learning Programs

Join your peers in exclusive courses tailored for NGC engineers and professionals.

Real World Instruction

Learn from industry leaders with first-hand experience—many of who are NGC alumni.

NGC-Paid Tuition

Receive maximum educational value—Use NGC EdAssist for tuition reimbursement.

Special Sector Programming

Earn a certificate through a specialized program for your Sector.

Upcoming programs for all NGC organizations

Refer to the course pages for details on objectives, topics, participant mix, and registration notes for tuition reimbursement. In addition, NGC Sectors may have specific instructions.

July - September				
Course Name: Aerospace Project Management Certificate Program 64 Course Code: 19407224 Credits: 9.6 CEU Location: Remote Live	July 7, 8, 21, 22 August 4, 5, 18, 19 September 15, 16, 29, 30 2023 8:00 AM - 5:00 PM Central Time	Register SS, MS, DS	Register AS	
Course Name: NGSP, NGMS, NGDS Systems Engineering Foundations Certificate Program 101 Course Code: 18407224 Credits: 4.8 CEU Location: Remote Live For NGC Space Systems, Mission Systems, and Defense Systems. This 6-day program requires 16 hours of out-of-class time working on a team project.	July 21, 22 August 4, 5, 18, 19, 2023 8:00 AM - 5:00 PM Mountain Time	Register SS, MS, DS		
Course Name: Agile Project Management Certificate Program 18 Course Code: 18407224 Credits: 4.0 CEU Location: Remote Live	July 21, August 4, 18, September 15, 29, 2023 8:00 AM - 5:00 PM Mountain Time	Register SS, MS, DS	Register AS	
Course Name: Adaptive Model-Based Systems Engineering Certificate Program 3 Course Code: 21030224 Credits: 4.8 CEU Location: Remote Live	August 4, 5, 18, 19 September 29, 30, 2023 8:00 AM - 5:00 PM Mountain Time	Register SS, MS, DS	Register AS	
Course Name: Airworthiness Fundamentals Certificate Program 22 Course Code: 20030224 Credits: 6.4 CEU Location: Remote Live	August 18, 19 September 15, 16, 29, 30, October 13, 14 2023 8:00 AM - 5:00 PM Central Time	Register SS, MS, DS	Register AS	
Course Name: Model-Based Systems Engineering Certificate Program 29 Course Code: 18030224 Credits: 4.8 CEU Location: Remote Live	August 18, 19 September 15, 16, 29, 30, 2023 8:00 AM - 5:00 PM Mountain Time	Register SS, MS, DS	Register AS	
Course Name: NGAS Systems Engineering Fundamentals Certificate Program (SEFM) 94 Course Code: 19030224 Credits: 5.6 CEU Location: Remote Live For NGC Aerospace Systems sector employees only. This 9-day program requires 16 hours of out-of-class time working on a team project.	August 19, September 16, 30, October 14, 28, November 11, December 9, 2023 8:00 AM - 5:00 PM Central Time		Register AS	
Course Name: Model-Based Systems Engineering Certificate Program 205 Course Code: 19030224 Credits: 4.8 CEU Location: On-Demand	Releases August 21, 2023 Work to be completed by October 15, 2023 On-Demand	Register SS, MS, DS	Register AS	
Course Name: Aerospace Project Management Certificate Program 65 Course Code: 19407224 Credits: 9.6 CEU Location: Remote Live	September 15, 16, 29, 30 October 13, 14, 27, 28, November 10, 11, December 8, 9, 2023 8:00 AM - 5:00 PM Pacific Time	Register SS, MS, DS	Register AS	

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29 August 2023

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Northrop Grumman Programs at Caltech

Since 2009, NGC has partnered with Caltech CTME for practical learning and leadership development for engineers and professionals across all sectors.

Learn with Caltech

Join exclusive certificate programs designed for NGC sectors, including Systems Engineering, Advanced MBSE, Airworthiness, Aerospace Project Management, and more.

LEARN MORE

Accelerate Your Career

Elevate your learning through live or on-demand programs. Follow these steps to enroll with EdAssist today for NGC program and public courses from Caltech.

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GET STARTED

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Topic

☐ Advanced Engineering (7)

☐ Project Management (2)

Format

☐ Live-Online (7)

☐ Self-Paced Online (2)

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Sort By:

Position

↑

Systems Engineering Fundamentals (SE56) 94.0

The Northrop Grumman Systems Engineering Fundamentals Certificate Program is the premier 56...

LIVE-ONLINE

CERTIFICATE

7 DAYS

LEARN MORE

AUG
19

Systems Engineering Foundations (SE48) 102.0

The Northrop Grumman Systems Engineering Foundations Certificate Program provides the key...

LIVE-ONLINE

CERTIFICATE

6 DAYS

LEARN MORE

OCT
13

Aerospace Project Management 65.0

The Northrop Grumman Aerospace Project Management Certificate Program provides you with the...

LIVE-ONLINE

CERTIFICATE

12 DAYS

LEARN MORE

SEP
15

Agile Project Management 19.0

NGC's Agile Project Management Certificate Program provides tools and techniques for effectively...

LIVE-ONLINE

CERTIFICATE

5 DAYS

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OCT
13

Model-Based Systems Engineering Fundamentals (MBSE) 40.0

The Northrop Grumman Model-Based Systems Engineering Certificate Program provides the key...

LIVE-ONLINE

CERTIFICATE

6 DAYS

LEARN MORE

OCT
13

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Systems Engineering Fundamentals (SE56) 94.0

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The Northrop Grumman Systems Engineering Fundamentals Certificate Program is the premier 56-hour program that provides you critical skills and understanding essential for effective systems engineering—with an additional 84-hour capstone project experience.

Date	August 19
Time	Sat 6:00am - 3:00pm (PST)
Duration	7 Days
Program Type	Open-Enrollment/Public
Certificate Type	Certificate
Format	Live-Online
Credit	5.6 CEUs
Professional Development	56
Fees	\$4,970

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Program Experience

Caltech developed this curriculum to address the current challenges Northrop Grumman engineering leadership identified. You will focus on practical methods and tools for eliciting user needs and requirements, defining robust system architectures and designs, and effectively verifying and validating the operation of complex products. In addition, you will learn best practices in aerospace and defense and systems engineering disciplines to ensure robust, cost-effective designs that meet stringent functional, performance, and cost requirements.

Learn from program instructors who have extensive, practical systems engineering experience in industry and government agencies. Our educators are guides with real-world examples and lessons learned to create an exceptional learning environment.

This program is designed to provide six opportunities for presentations from teams and students for the core modules and capstone work.

Benefits	—
<p>You will learn how to:</p> <ul style="list-style-type: none"> Analyze customer needs and develop clearly stated requirements Apply systems thinking to optimize product design and development Develop innovative approaches for systems design and integration Define cost-effective verification and validation programs Effectively manage cost, schedule, and risk in engineering tasks 	
Topics	+
Who Should Attend	+
Schedule	+

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Caltech

California Institute of Technology

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Q&A



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