SIEMENS

Expedite – Skills for Industry: Design and Manufacturing

This course is part of **Expedite – Skills for Industry Microcredential Specialization**

Instructor: <u>Siemens Digital Industries Software</u>

Enroll for free
Starts Dec 2

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

Beginner level
Recommended experience ⓘ

1 week to complete
at 10 hours a week

Flexible schedule
Learn at your own pace

What you'll learn

✓ Evaluate the impact of advanced PLM strategies and emerging trends on modern manufacturing practices.

✓ Explore product development solutions related to managing BOM, design validation, iterative optimization, and change management in a PLM framework.

✓ Assess the impact of PLM tools in addressing challenges at various product lifecycle stages and in enhancing collaboration and data integration.

Skills you'll gain

Design Software | Engineering | Communication | Conceptual Design | Product Management | Manufacturing and Production | Product Development | Sustainable Engineering | Time Management | Sustainable Design | Product Lifecycle Management | Internet Of Things | Product Design | Cross-Functional Collaboration | Project Planning | Design and Product | Artificial Intelligence | Risk Management | Artificial Intelligence and Machine Learning (AI/ML) | Product Engineering | View less skills

Details to know

in **Shareable certificate**
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July 2025

Assessments
13 assignments

Taught in English
Video subtitles available

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

Build your subject-matter expertise

This course is part of the **Expedite – Skills for Industry Microcredential 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 7 modules in this course

Design and Manufacturing is the third course in the Siemens Expedite - Skills for Industry microcredential. In this course, the newly hired engineer will explore design and manufacturing through Product Lifecycle Management (PLM). Learn how companies manage data, integrate systems, and leverage Industry 4.0 technologies like digital twins, AI, and IoT. The course covers key aspects of product development—design validation, iterative optimization, and change management—while also focusing on project planning, risk management, and sustainability. Gain a broad understanding of how PLM shapes modern engineering and manufacturing.

Read less

Foundations of Product Lifecycle Management (PLM)

Module 1 • 1 hour to complete

Module details ⌃

Welcome to Design and Manufacturing, the third course in the Siemens Expedite - Skills for Industry microcredential, exploring the strategies, tools, and technologies shaping modern product development. You will start with the principles of Product Lifecycle Management (PLM), understanding the role of Industry 4.0 technologies in driving digital transformation. The course highlights structured workflows, collaboration, and data-driven decision-making through PLM. You'll learn how early-stage ideation and conceptual design ensure products meet functional, economic, and sustainability goals. Key topics include system integration, product optimization, and the impact of connected technologies in modern manufacturing. You will examine the product lifecycle stages and leverage PLM tools, digital threads, and smart manufacturing to address challenges such as design coordination, documentation management, and quality control. The course also covers risk management strategies and project planning methodologies for successful execution across the development cycle. Additionally, you'll explore advanced technologies, including digital twins, AI in design, and green manufacturing. By the end, you'll have the skills to drive innovation, efficiency, and sustainability in the evolving engineering landscape.

What's included

▶ 2 videos   📖 3 readings   📄 2 assignments   🧩 3 plugins

Hide info about module content ⌃

▶ **2 videos • Total 2 minutes**

Greetings from the Team
•
1 minute

Message from HR: Resources

•

0 minutes

📖 **3 readings** • **Total 30 minutes**

Course Overview

•

10 minutes

Digital Badging

•

10 minutes

Skill Builder: Explore a Smart Factory

•

10 minutes

📋 **2 assignments** • **Total 40 minutes**

Foundations of PLM Deliverable

•

30 minutes

Foundations of PLM Practice Assessment

•

10 minutes

🧩 **3 plugins** • **Total 45 minutes**

Introduction to PLM Workflow

•

15 minutes

PLM in Industry 4.0 and Digital Transformation Workflow

•

15 minutes

Product Lifecycle Stages, Challenges, and Solutions Workflow

•

15 minutes

Data Management and Collaboration

Module 2 • 1 hour to complete

Module details ⌃

Data management is the backbone of PLM, influencing every aspect of the system. You will explore methods for capturing, storing, and managing data to support informed decision-making throughout the product lifecycle. Additionally, you will discover how PLM fosters collaboration among cross-functional teams and integrates digital twins to enhance performance and coordination during development.

What's included

📖 1 reading   📋 2 assignments   🧩 3 plugins

Hide info about module content ⌃

📖 **1 reading** • **Total 10 minutes**

Explore a Digital Twin

•

10 minutes

📋 **2 assignments** • **Total 40 minutes**

Data Management and Collaboration Deliverable

•

30 minutes

Data Management and Collaboration Practice Assessment

•

10 minutes

🧩 **3 plugins** • **Total 45 minutes**

The Role of Data Workflow

•

15 minutes

Collaborative Product Development Workflow

•

15 minutes

Siemens Teamcenter Scenarios: Collaboration

•

15 minutes

Project Planning and Risk Management

Module 3 • 2 hours to complete

Module details ⌃

To effectively plan a project, you need to account for various resources, time, and potential issues that may arise. You will discover how PLM tools help to optimize resource allocation and scheduling, enabling proactive risk management throughout the product lifecycle. You will learn how to identify project requirements and scopes, develop efficient schedules, and tackle risk management challenges through real-life scenarios, crafting strategies that anticipate future needs.

What's included

▶ 1 video   📖 1 reading   📋 2 assignments   🧩 5 plugins

Hide info about module content ⌃

▶ **1 video**

Welcome to Planning and Scoping

•

0 minutes

📖 **1 reading • Total 10 minutes**

Industry Insight: Optimizing Resources and Schedules

•

10 minutes

📋 **2 assignments • Total 40 minutes**

Project Planning and Risk Management Deliverable

•

30 minutes

Project Planning and Risk Management Practice Assessment

•

10 minutes

🧩 **5 plugins • Total 75 minutes**

Planning and Scoping Projects Workflow

•

15 minutes

Resource and Schedule Optimization Workflow

•

15 minutes

Siemens Teamcenter Scenario: Tasks

•

15 minutes

Siemens Teamcenter Scenarios: Scheduling

•

15 minutes

Risk Management Workflow

•

15 minutes

Conceptual Design and Ideation

Module 4 • 1 hour to complete

Module details ⌃

This is your opportunity to think creatively and contribute fresh ideas to the design process as you learn about digital prototyping and incorporating market trends and user feedback. You'll collaborate with the team to refine product concepts using real-time feedback and insights. You will also discover how cutting-edge technologies like AI enhance design workflows, ensuring innovative and user-centered outcomes.

What's included

▶ 1 video   📖 1 reading   🗐 2 assignments   🧩 2 plugins

Hide info about module content ∧

▶ **1 video**

Welcome to Ideation and Design
-
0 minutes

📖 **1 reading • Total 3 minutes**

Email from NGenius
-
3 minutes

🗐 **2 assignments • Total 40 minutes**

Conceptual Design and Ideation Deliverable
-
30 minutes

Conceptual Design and Ideation Practice Assessment
-
10 minutes

🧩 **2 plugins • Total 30 minutes**

The Design Process within PLM Workflow
-
15 minutes

Incorporating Market Trends and Feedback Workflow
-
15 minutes

Product Development and Optimization

Module 5 • 1 hour to complete

Module details ∧

Dive deeper into the core aspects of product development by refining processes for efficiency and innovation within PLM systems. You will concentrate on managing Bills of Materials (BOM) and harnessing the transformative power of the Internet of Things (IoT). Examine different types of BOMs and learn how to use IoT data to gain "real-time" insights, which are important for optimizing product development.

What's included

▶ 1 video   🗐 2 assignments   🧩 4 plugins

Hide info about module content ∧

▶ **1 video • Total 5 minutes**

Skill Builder: Nemo's Garden
-
5 minutes

🗐 **2 assignments • Total 40 minutes**

Product Development and Optimization Deliverable
-
30 minutes

Product Development and Optimization Practice Assessment
-
10 minutes

🧩 **4 plugins • Total 60 minutes**

Managing the Bill of Materials (BOM) Workflow
-

15 minutes

Siemens Teamcenter Scenarios: BOM

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15 minutes

Design Validation, Testing, and Iterative Optimization Workflow

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15 minutes

The Role of IoT in Product Development and Optimization Workflow

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15 minutes

Sustainability in the Product Lifecycle

Module 6 • 1 hour to complete

Module details ⌃

With a focus on the future, you will apply eco-friendly principles throughout the product lifecycle. You will collaborate with the team to develop sustainable designs, select eco-friendly materials, implement green manufacturing practices, and devise effective end-of-life strategies. You'll also engage in a discussion aimed at producing an environmentally responsible product from conception to disposal, paving the way for a sustainable future in manufacturing.

What's included

▶ 1 video   📋 2 assignments   🧩 3 plugins

Hide info about module content ⌃

▶ **1 video**

Welcome to Sustainable Design

•

0 minutes

📋 **2 assignments** • **Total 40 minutes**

Sustainability in the Product Lifecycle Deliverable

•

30 minutes

Sustainability in the Product Lifecycle Practice Assessment

•

10 minutes

🧩 **3 plugins** • **Total 45 minutes**

Sustainable Design and Material Selection Workflow

•

15 minutes

Green Manufacturing Workflow

•

15 minutes

End-of-Life Strategies for Sustainability Workflow

•

15 minutes

Design and Manufacturing Assessment

Module 7 • 1 hour to complete

Module details ⌃

Can you believe you've been at NGenius Engineering for this long? Six months! It is time for you to participate in your second performance review. This review assesses your understanding of key concepts from the course, including Product Lifecycle Management (PLM), data management, and Industry 4.0 technologies. It is an opportunity to reflect on your progress, demonstrate your understanding of design and manufacturing principles, and identify areas for continued growth.

What's included

▶ 1 video   📋 1 assignment

Hide info about module content ⌃

▶ **1 video**

Message from HR: Performance Review

•

0 minutes

📋 **1 assignment** • Total 60 minutes

Design and Manufacturing Final Deliverable
•
60 minutes

→

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Instructor

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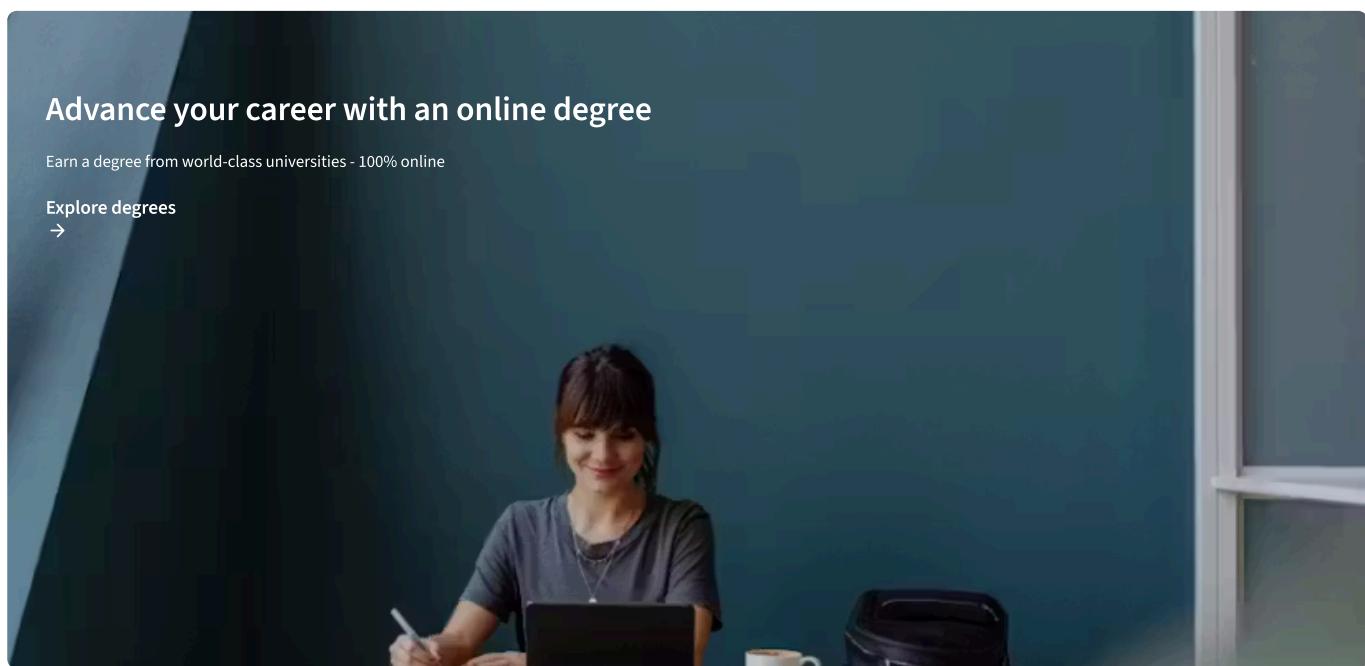
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Frequently asked questions

˄   **What does ABET-accredited mean?**

[ABET](#) ⧉ is the global accreditor for engineering and technology programs. When a course is part of an ABET-recognized curriculum, it means the content aligns with rigorous industry and educational standards used by top universities and employers worldwide. As a learner, this signals that the course covers skills, concepts, and competencies that meet global expectations for quality, relevance, and technical accuracy.

∧ **How does ABET recognition benefit me as a learner?**

[ABET](link) ⧉ recognition provides tangible value as you learn and advance your career. It ensures the course material is trusted by employers, aligned to real-world engineering and technology practices, and designed to support outcomes such as problem-solving, technical proficiency, and applied learning. Learners who complete ABET-recognized content can gain a '[ABET Program Graduate Badge](link) ⧉' showcasing:

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- Learning pathways aligned to global engineering standards

- Better preparation for technical roles, advanced study, or certification routes

- Confidence that the training meets internationally vetted quality benchmarks

∧ **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?**   **Show all 5 frequently asked questions** ∨

∨ **Is financial aid available?**

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