MIT | xPRO

PROFESSIONAL CERTIFICATE IN CODING: FULL TIME

Become a web developer in 16 weeks with hands-on training and in-demand skills.

Delivered in collaboration with **E EMERITUS**

Overview

For over two decades, technology has been changing what organizations look like and how they do business. Across countries, industries, and organizational functions, the impact of digitalization has been immense. However, after 2020 and the global pandemic, there is no doubt now that the future will be driven in a big way by software and coding.

Earlier, organizations were waking up to the need to hire web developers, software engineers, and other technology workers to eventually digitalize their organizations. Today, firms are looking to hire many skilled coders to leverage the power of technology for continued business relevance and profitability.

One of the most sought-after roles is that of a full stack developer. These coders handle entire product buildouts, including development on software that the client interacts with (front end) and the coding and structuring related to servers (back end). Full stack developers deliver value, agility, and flexibility to an organization's infrastructure.

Previously, developers worried about industry trends and graduating on time to meet them. After 2020, given the surge of positions, the only obstacle to getting hired is the time taken to qualify. With the accelerated MIT xPRO online learning program, this is no longer an issue.

The MIT xPRO Professional Certificate in Coding is an immersive full stack coding program offering personalized feedback, live daily office hours with course leaders, and the opportunity to develop a GitHub portfolio for potential employers.

MIT xPRO's online learning programs showcase industry-aligned content from world-renowned experts to make learning accessible anytime, anywhere and solve this challenge for developing technical professionals. The programs combine exclusive content from MIT's world-renowned faculty with tailored support and hands-on learning activities.
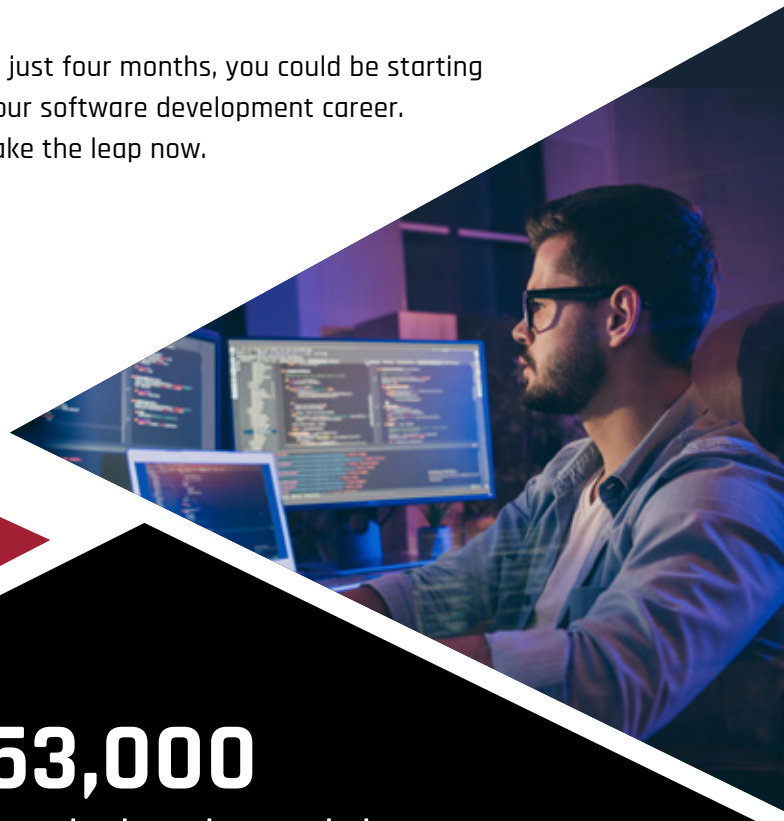
In just four months, you could be starting your software development career.
Take the leap now.

PRICE
$9,500

DURATION
4 months, online
35–45 hours per week

853,000
new full stack developer job
openings by 2024

(Source: United States Bureau of
Labor Statistics)

Program Highlights

Earn a certificate from MIT xPRO and 48 Continuing Education Units (CEUs) from MIT

Insights and coding demos from renowned MIT faculty

Market-ready coding skills in a high-growth market

GitHub portfolio to share with potential employers

Support from industry practitioners and mentors
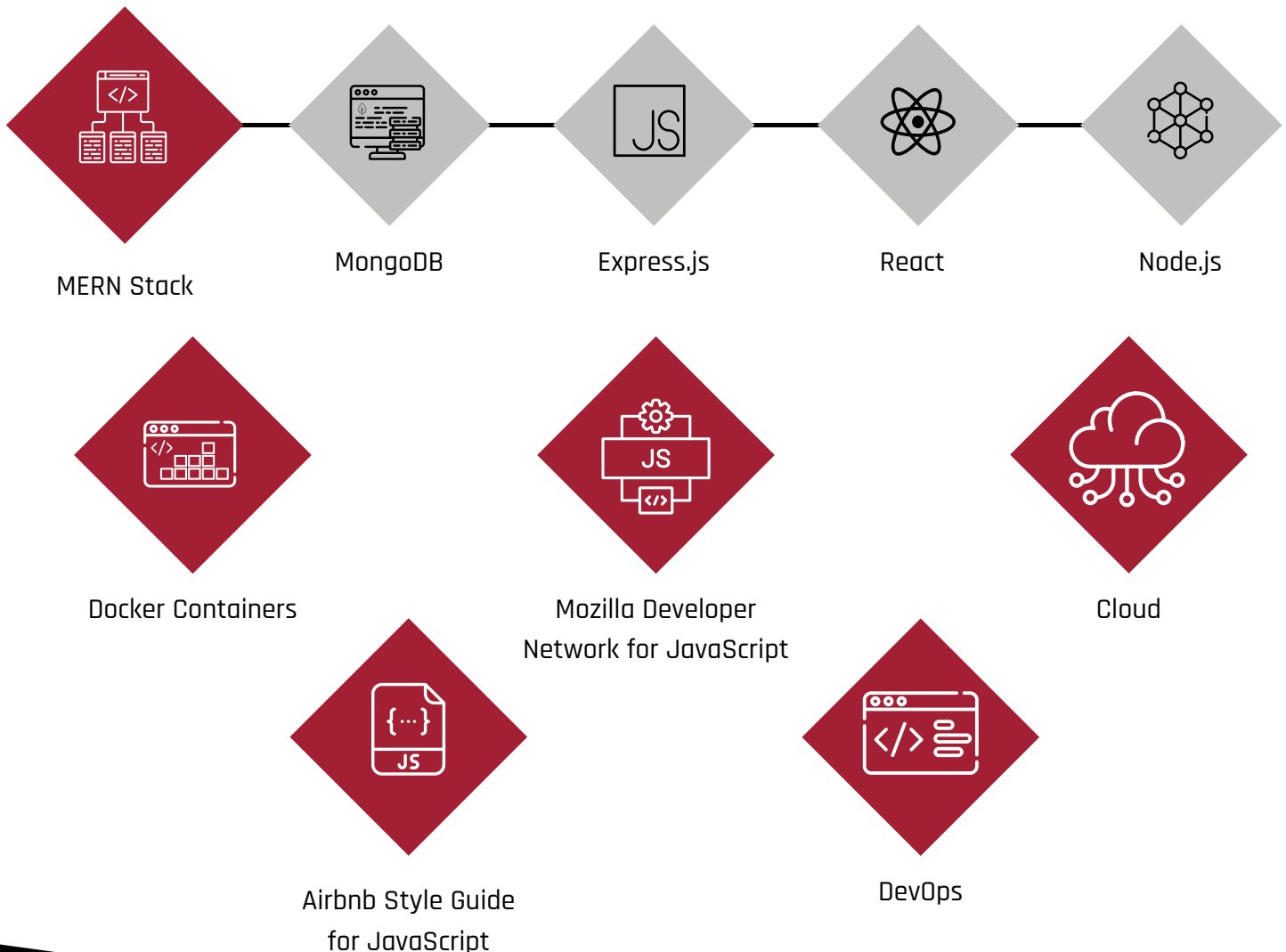
Services offered by Emeritus

Live daily office hours with course leaders, followed by a Q&A and live support via chat

Personalized feedback, support, career guidance, and network development

Tools and Resources in the Program

The MERN stack is a popular JavaScript stack used for a smooth, ultra-efficient development process. MERN consists of four different open-source components: MongoDB, Express, React, and Node.js. These components provide end-to-end framework support for developers. The MIT faculty believe that using MERN (with React) is the best stack for this program, as React is easier to use, given that it has a prebuilt UI library. The program uses these tools and resources:

MERN Stack

MongoDB

Express.js

React

Node.js

Docker Containers

Mozilla Developer
Network for JavaScript

Cloud

Airbnb Style Guide
for JavaScript

DevOps

35%

year-on-year growth for full stack engineer roles since 2015

(Source: LinkedIn 2020 emerging jobs report)

Who Is This Program For?

Career launchers: If you are an early-stage professional and want to start in a high-growth field, this program is for you. Regardless of your earlier function or experience, you will gain exposure to the full development lifecycle as a launch point.

Career switchers: If you are a mid- or late-career professional looking to switch to software development, this program is ideal for you. You may be from marketing, sales, operations, or any other field but will still be able to comprehend and grasp coding concepts easily.

There are no prerequisites for the program, though a capacity for technical concepts is recommended.

Prepare for these potential job titles:

- Web Developer

- Front-End Developer

- Full Stack Developer

- Software Developer

Program Schedule

This 4-month program is designed to prepare you with the skills you will need to start your career in web and application development. High-level learning outcomes for this program include:

- Build, test, and deploy a web application using the MERN stack

- Build, test, and deploy APIs

- Build, test, and deploy a front-end web application using React

- Set up continuous integration (CI) and continuous delivery (CD) pipelines to deploy a React application

- Present a GitHub portfolio of your work to potential employers

Module 0
Orientation

In this orientation module, you will have access to the learning platform from the program start date. There is no teaching – all the content is prerecorded.

Section 1
Web Development

Key Takeaways

- Explain key web programming concepts
- Build web applications using JavaScript, HTML, and CSS
- Design and code user interactions on web pages
- Design and implement UI components for web applications
- Define and break down modern software development lifecycle processes
- Set up code management tools such as GitHub

Module 1: Setting Up Your System

Module 2: Foundations 1 – Computational Thinking

Module 3: Foundations 2 – Mental Model of Computing Operations

Module 4: Introduction to JavaScript

Module 5: Functions – Array Manipulation and Scope

Module 6: Callback Functions

Module 7: Introduction to Testing, GitHub, and the DOM

Module 8: Styles and Bootstrap

Module 9: Asynchronous Code

Module 10: Introduction to Cybersecurity and Recursion

Section 2
Front-End Development and React

Key Takeaways

- Build, test, and deploy a React application
- Explain key React concepts such as JSX and Hooks
- Design and build UI components using the React framework

Module 11: Introduction to JavaScript ES6

Module 12: Introduction to React

Module 13: Introduction to JSX

Module 14: Working With Lists in React

Module 15: Working With Simple Components

Module 16: Tic-Tac-Toe Exercise With React

Module 17: Working With React Components

Module 18: Bad Bank Exercise

Module 19: Shopping Cart Exercise

Module 20: Testing

Section 3
Back-End Development

Key Takeaways

- Build a secure full stack web application using the MERN stack
- Create a back-end API with Express
- Integrate React with a back-end Express API
- Explain the interactions between the different components of the MERN stack
- Explain key cloud concepts related to modern web application development
- Deploy a full stack solution using DevOps pipelines
- Explain key DevOps concepts for continuous integration (CI) and continuous delivery (CD)

Module 21: Application Servers and Storage

Module 22: Application Servers and Storage

Module 23: Containers and Cloud Basics

Module 24: Containers and Cloud Basics

Module 25: APIs

Module 26: Security

Module 27: Architectural Patterns

Module 28: Architectural Patterns

Module 29: DevOps and Testing

Module 30: DevOps and Testing

Module 31: Capstone Week

Module 32: Capstone Week

Note: Break weeks are included to cover project assignment work and prepare for the upcoming module.

CODING DEMOS

Hundreds of coding demos, giving you hands-on experience and guidance on coding in your own environment.

CODING ASSIGNMENTS

Coding assignments are integrated into the learning platform to allow you to practice building composite skills (such as how to write a callback function or a loop) to prepare you for the portfolio and capstone assignments.

Portfolio Projects

Each section culminates with a GitHub portfolio project for which you will create a website using the technologies of that portion of the course. You will receive personalized feedback from Learning Facilitators and share it on your GitHub repositories, securing a market-ready portfolio to share with potential employers.
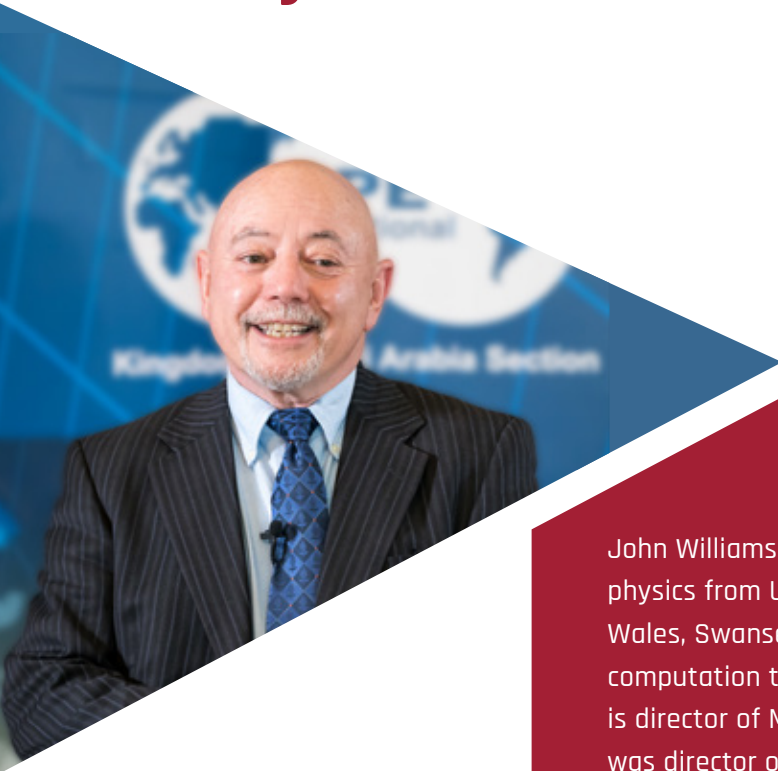
Section 1
Create a GitHub portfolio website

Section 2
Create a website using React components

Section 3
Create a capstone project that is a fully functional website with MERN stack

JOHN R. WILLIAMS

Professor of information engineering in MIT's Department of Civil and Environmental Engineering

John Williams holds a BA in physics from Oxford University, an MS in physics from UCLA, and a PhD in numerical methods from the University of Wales, Swansea. His research focuses on the application of large-scale computation to problems in cyber-physical security and energy studies. He is director of MIT xPRO's Geospatial Data Center and, from 2006 to 2012, was director of the MIT xPRO Auto-ID Laboratory, which invented the Internet of Things.

He is the author or co-author of over 250 journal and conference papers, as well as the book, RFID Technology and Applications. He contributed to the 2013 report for the UK's Office for Science Foresight Project – The Future of Manufacturing.

Alongside Bill Gates and Larry Ellison, he was named as one of the 50 most powerful people in computer networks. He offers consultation to organizations, including Accenture, Schlumberger, SAP Research, Microsoft Research, Kajima Corp. US Lincoln Laboratory, Sandia National Laboratories, US Intelligence Advanced Research Projects Activity (IARPA), Motorola, Philip Morris Inc., Ford Motor Company, Exxon Mobil, Shell, Total, and ARAMCO.

His international collaborations include HKUST and PolyU, Hong Kong, Cambridge University, UK, Imperial College of Science and Technology, UK, Malaysia University of Science and Technology (MUST), KACST, Saudi Arabia, and Masdar Institute of Science and Technology, Abu Dhabi.

He organized the first cyber-physical security conference in the UK (2011), and along with Dr. Sanchez, he runs the MIT xPRO Applied Cybersecurity Professional Education summer program. At MIT xPRO, he teaches Architecting Software Systems (MIT xPRO 1.125) and Engineering Computation and Data Science (MIT xPRO 1.00/1.001).

ABEL SANCHEZ

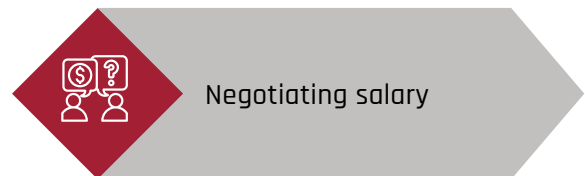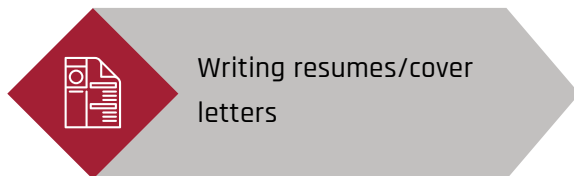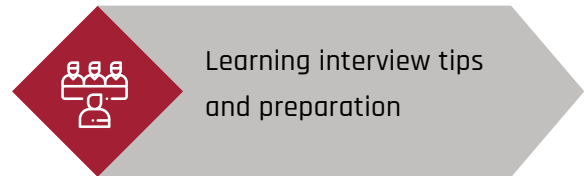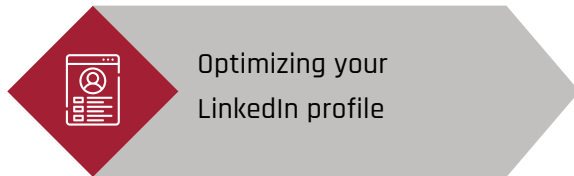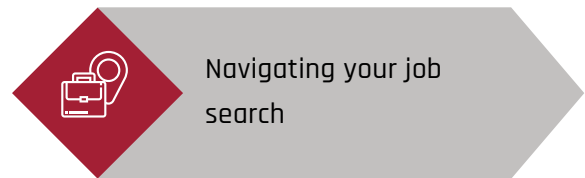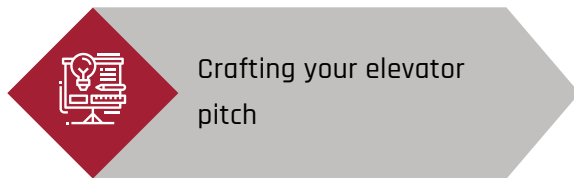Research scientist and executive director of MIT's Geospatial Data Center

Dr. Abel Sanchez holds a PhD from the Massachusetts Institute of Technology (MIT). He is the executive director of MIT xPRO Geospatial Data Center, architect of "The Internet of Things" global network, and architect of data analytics platforms for SAP, Ford, Johnson & Johnson, Accenture, Shell, Exxon Mobil, and Altria. In cybersecurity, Dr. Sanchez architected impact analysis of large-scale cyber attacks, designing cyber ranges for the Department of Defense (DOD).

In password security, Dr. Sanchez led the design of a password firewall (negative authentication) for the IARPA agency. In machine learning, addressing fraud detection, Dr. Sanchez designed a situational awareness framework that exploits different perspectives of the same data and assigns risk scores to entities for Accenture.
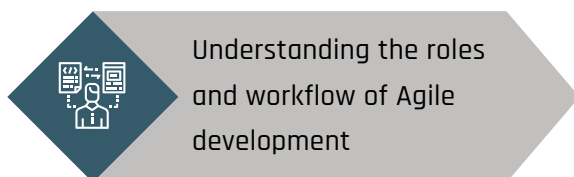
He led the design of a global data infrastructure simulator, modeling follow-the-sun engineering, to evaluate the impact of competing architectures on the performance, availability, and reliability of the system for Ford Motor Company. He has been involved in developing e-learning software for Microsoft via their iCampus program and in establishing the Accenture Technology Academy, an online resource for over 200,000 employees. He has 10 years of experience with learning-management systems and has made deployments in America, Asia, and Europe. He teaches MIT courses on cybersecurity, engineering computation, and data science and has produced over 150 educational videos.

Career Preparation and Guidance

Stepping into a career in software and web development requires a variety of skills, both hard and soft. This program offers you guidance for navigating a career path into tech, including crafting your elevator pitch and communication tips. These services are provided by Emeritus, MIT xPRO's learning collaborator for this program. The program support team includes course leaders to help you reach your learning goals. Eligible participants may receive introductions to our hiring partners; however, job placement is not guaranteed.

There is a career preparation aspect to this program – elements include:

Crafting your elevator pitch

Navigating your job search

Optimizing your LinkedIn profile

Learning interview tips and preparation

Writing resumes/cover letters

Negotiating salary

Career exercises focused on launching a career as a developer:

Building your personal brand and promoting your skills

Reflecting on your skills to learn how to troubleshoot and learn more quickly

Communicating technical concepts to nontechnical colleagues

Job searching and interviewing for developer positions

Understanding the roles and workflow of Agile development

Learning Facilitators
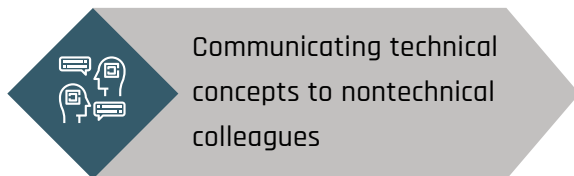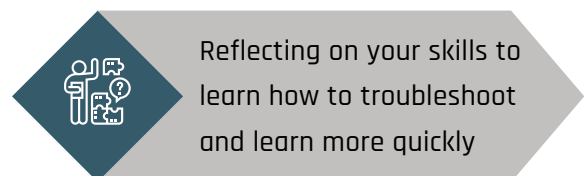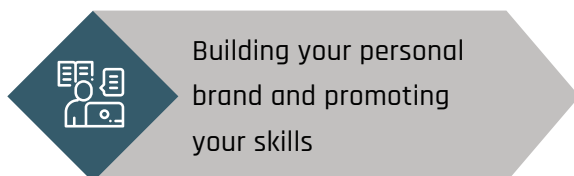
LETICIA ESCANCIANO

Full Stack Developer at Factorial HR

Leticia brings a passion for all things tech. She currently works as a full stack developer and previously held the position of CTO at Madrid-based start-up Sportmadness for two years, where she was in charge of building their digital product.

PATRICK ANDRE

Director of Engineering at Forbes

Patrick is a technology leader with over 15 years of experience managing site/application development, product management, architecture, product development, process improvement, resource allocation, and digital strategy. He has a proven track record, delivering web products/solutions on time and on budget.

PUNEET SARASWAT

Senior Infrastructure Engineer at Unfinished

Puneet has over nine years of experience, ranging from core algorithmic research to full stack development, leading projects from inception to delivery. He previously worked with Schlumberger for over eight years, starting from research and development in the area of seismic wave modeling, inversion, and earth-model building.

MAHA MAHMOOD

Associate Success Engineer at Acquia

Maha brings a trifecta of skills – analytical, creative, and technical – developed over more than a decade of holding positions in consumer products and EdTech markets. Her varied experiences in marketing and web development give her the ability to be adaptable and innovative.

Note: These are some of our learning facilitators who are also prominent industry experts.

Participant Testimonials

"I like everything – the videos, the quizzes, the projects. Also, the Learning Facilitators seem very enthusiastic and engaged."

— Dennis Sponer, Founder, ScripNet

"I liked that we covered so many topics in detail. I also really enjoyed the portfolio project at the end! I had never built a website before, but I felt well equipped to do so and was surprised how much fun it was trying out different layouts and putting things together."

— Andrew Thomas, Teacher, MI

"I liked the constant availability of instructor support via office hours, and quick responses to Q&A."

— Erica Moslander, Operational Excellence Coordinator, Betterview Marketplace, Inc.

"I feel like I've learned so much. The coursework was challenging and the final project was a great experience in tying together the module."

— Viren Desai, VP Strategy & Finance, Triple Crown Resources, LLC

"Overall, I enjoyed taking a deep dive into all areas of code. I really enjoyed creating the Portfolio ... especially when I reflect on the first month when we were instructed to push a photo and name to our GitHub page ... I cannot believe how far we have all come."

— Meghan Nieves, MDM Engineer, Forward Thinking Technology Solutions

"My peers were very collaborative and helpful. The portfolio project really forced a lot of learning."

— Matthew Elliott, Product Owner, Infobelt

Financing Options

We want to make sure that the Professional Certificate in Coding: Full Time is an affordable option for all. This is why we offer you many different ways to pay for the program.

Loan Partners (For US Residents)

Sallie Mae Monthly payments starting at USD 25

- Visit the Sallie Mae application portal

- Fill in your basic details and proceed to the loan application page.

- At the time of loan application, please select '**Student and Career Training School**' when prompted

- Choose from fixed repayment, interest-only repayment, and deferred payment options and submit your application

- Our program advisors will contact you for a confirmation on your loan application*

- After confirmation, we will certify your loan. You will receive a welcome email with login instructions from notifications@instructure.com within 3 business days

Ascent Funding Monthly payments starting at USD 40

- Visit the Ascent Funding application portal

- Enter your email address and select the 'Professional Certificate in Coding: Full Time' option from the dropdown list

- Choose from immediate repayment, interest-only repayment, and deferred payment options and submit your application

- Our program advisors will contact you with a confirmation on your loan application*

- After confirmation, we will certify your loan and you will sign the final disclosures.

- You will then receive a welcome email with login instructions from notifications@instructure.com within 3 business days

Flexible Payment Options (For All Countries)

- Choose to make your payment in two, three, or six installments for higher flexibility. Monthly payments start as low as US$1,166

- Complete your application for the Professional Certificate in Coding: Full Time and enroll for the program

You can opt for any one of the financing options to cover up to the full cost of the program tuition. If you are considering financing your program through one of our partners, the enrollment process can only be completed with the assistance of your program advisor or by calling +315-538-6867.

*Due to processing time, the loan application should be submitted no later than four business days prior to the enrollment deadline.

Get recognized! Upon successful completion of this program, MIT xPRO grants a certificate of completion to participants and 48 Continuing Education Units (CEUs) from MIT. This program is graded as a pass or fail; participants must receive 75% to pass and obtain the certificate of completion.

After successful completion of the program, your verified digital certificate will be emailed to you, at no additional cost, with the name you used when registering for the program. All certificate images are for illustrative purposes only and may be subject to change at the discretion of MIT.

About MIT xPRO

MIT xPRO's online learning programs leverage vetted content from world-renowned experts to make learning accessible anytime, anywhere. Designed using cutting-edge research in the neuroscience of learning, MIT xPRO programs are application focused, helping professionals build their skills on the job.
To explore the full catalog of MIT xPRO courses and programs, visit xpro.mit.edu.

About Emeritus

MIT xPRO is collaborating with online education provider Emeritus to deliver this online course through a dynamic, interactive, digital learning platform. This course leverages MIT xPRO's thought leadership in engineering and management practice developed over years of research, teaching, and practice.

Easily schedule a call with a program advisor from Emeritus to learn more about this MIT xPRO program.

SCHEDULE A CALL

You can apply for the program here

APPLY

MIT | xPRO

Delivered in collaboration with

E EMERITUS