upGrad | ::: Microsoft

Generative AI Mastery Certificate for Software Development

Become a 10x Developer with Generative AI & Microsoft Technologies

</> Code | [AI] Automate | 🔧 Build | More

Lead the Generative AI Revolution

70%
of Developers
believe that GenAI will improve productivity and code quality

(Source: GitHub)

4X
Faster
AI-powered professionals complete tasks up to 4 times faster than their peers

(Source: CXOtoday.com)

In collaboration with

upGrad | **Microsoft**

To solve these problems for the industry, **upGrad** and **Microsoft** join hands to launch a transformative program!

Transform your career with the exclusive **Generative AI Mastery Certificate for Software Development.**

This program equips you with in-demand skills, industry-relevant tools, and expert guidance to master Generative AI and software development innovation.

Get certified by the best in AI and upskilling

CERTIFICATE OF COMPLETION

MODULES COMPLETED
1. AI-Powered Code Generation
2. Code Optimization and Refactoring with AI
3. AI-Powered Development Environments
4. Automated Testing and Debugging
5. Building AI-Infused Applications

upGrad | In collaboration with **Microsoft**

certifies that

_____

has successfully completed all modules of the Generative AI Mastery Certificate for Software Development on < Date >

UID: 12345

CERTIFICATE OF COMPETENCY

MODULES COMPLETED
1. AI-Powered Code Generation
2. Code Optimization and Refactoring with AI
3. AI-Powered Development Environments
4. Automated Testing and Debugging
5. Building AI-Infused Applications

upGrad | In collaboration with **Microsoft**

certifies that

_____

has attained competency in Generative AI Mastery Certificate for Software Development on < Date >

in accordance with
Microsoft Certified: Azure AI Engineer Associate

UID : 12345

Upon meeting the completion criteria below, you can earn up to three certificates*

*Certification Completion Details

Completion Certificate – Achieve a minimum 50% score in assessments on the upGrad platform and clear the relevant Microsoft Applied Skills assessment.

Competency Certificate – Achieve a minimum 50% score in assessments on the upGrad platform, clear the relevant Microsoft Applied Skills assessment, and pass the Microsoft Global Certification Exam.

Microsoft Global Certification – Pass the relevant Microsoft Global Certification Exam.

These certificates are representative, and subject to change at the discretion of upGrad and Microsoft.

About the Program

The Generative AI Mastery Certificate for Software Development, is a transformative program designed to supercharge your coding efficiency. Master AI-powered code generation, automated debugging, intelligent refactoring, and cutting-edge development environments to streamline your projects. Learn how to integrate AI into your coding practices, optimise performance, and build AI-infused applications—all while leveraging top AI-driven tools and platforms.

Get sponsorship for the Microsoft Azure AI Engineer Associate Global certification

5 Modules
(Comprehensive coverage of essential AI-integrated Microsoft technologies for developers)

8 Weeks Total
(In-depth mastery of AI-driven developer tools and industry-relevant Microsoft technologies)

Master Developer Specific AI-Tools
(GitHub Copilot, Microsoft OpenAI, Bolt, Claude AI and More)

3 Top Industry Leaders
(Apply your learning in real-time with a customised AI tools)

4 Hours/Week
(Flexible learning designed for busy professionals)

Program Curriculum

Module 1: AI-Powered Code Generation

- **Leveraging AI in Software Development**
  - Learn how AI-powered tools like GitHub Copilot and ChatGPT enhance the software development lifecycle.

- **Crafting Effective AI Prompts**
  - Master prompt engineering techniques for better AI-assisted development.

- **Building AI-Powered Applications**
  - Build a full-stack AI-powered application from scratch

- **Ensuring AI Code Quality and Reliability**
  - Understand the limitations of AI-generated code and best practices for validation.

Activities for Practice

- Implement AI-generated solutions for common coding challenges.

- Scaffold a full-stack web application using AI-assisted code generation.

- Optimise and refine AI-generated code to improve performance and security.

- Develop and deploy Streamiyo, an AI-powered streaming app.

Ask anything

+   🌐 Search

- **Tools**

  ChatGPT   **GitHub Copilot**

MODULE 1

Module 2: Code Optimisation and Refactoring with AI

- ❯ **Writing High-Performance and Maintainable Code**
  - Write optimised, maintainable code for better performance.

- ❯ **AI-Assisted Code Refactoring and Debugging**
  - Use AI tools like Sourcery and GitHub Copilot for refactoring and debugging.

- ❯ **Scaling Applications with Modular Design**
  - Improve scalability with modular design and asynchronous processing.

- ❯ **Enhancing Efficiency in Large-Scale Systems**
  - Optimise database queries and enhance efficiency in large-scale applications.

- ❯ **Strengthening Security in AI-Driven Development**
  - Prevent vulnerabilities like SQL injection and XSS to ensure robust security.

Projects for Practice

- ❯ Refactor inefficient Python code using AI-powered suggestions.

- ❯ Convert a monolithic app into a modular, scalable design.

- ❯ Implement asynchronous programming for improved concurrency.

- ❯ Optimise database queries for performance and indexing.

- ❯ Secure an authentication function against SQL injection attacks.

Ask anything

➕ 🌐 Search

- ❯ **Tools**

  Sourcery   **GitHub Copilot**

Module 3: AI-Powered Development Environments

❱ **Accelerating Development with AI Code Completion**
  • Enhance coding speed with AI-powered code completion tools like GitHub Copilot, Claude AI, and Bolt.

❱ **AI-Driven Frontend Development**
  • Automate frontend development with AI-generated UI components.

❱ **Boosting Efficiency with AI-Enhanced IDEs**
  • Leverage AI-driven IDE tools to improve efficiency in real-time coding.

❱ **Optimising Collaboration with AI-Assisted Workflows**
  • Optimise collaboration with AI-assisted pull request reviews and merge conflict resolution.

❱ **Ensuring Security and Compliance in AI-Powered Development**
  • Understand AI coding security, ethics, and compliance risks.

Projects for Practice

❱ Use Claude AI for intelligent code suggestions and automated problem-solving.

❱ Build and refine a Music Playlist Manager app using Bolt AI for frontend development.

❱ Implement Copilot-powered real-time coding assistance within an IDE.

❱ Resolve merge conflicts and analyze PRs using AI.

❱ Evaluate AI-generated code for potential security and compliance risks.

Ask anything

＋ 🌐 Search

❱ **Tools**

Claude AI	Tabnine	Bolt AI
GitHub Copilot	VS Code	

Module 4: Automated Testing and Debugging

⫸ **AI-Powered Test Automation**
  • Automate unit, integration, and end-to-end testing using AI-powered tools.

⫸ **AI-Driven Test Case Generation**
  • Use AI to generate comprehensive test cases and identify edge cases efficiently.

⫸ **Accelerating Debugging with AI**
  • Debug applications faster with AI-driven root cause analysis and bug detection.

⫸ **Enhancing API and UI Testing with AI**
  • Ensure seamless API and UI interactions with AI-enhanced testing workflows.

Projects for Practice

⫸ Generate unit test cases using Qodo Gen for a REST API.

⫸ Perform AI-assisted integration testing for a FastAPI-based microservice.

⫸ Automate API and UI testing with Postbot and Playwright.

⫸ Build an AI-powered testing framework for a real-world application.

Ask anything

+ 🌐 Search

⫸ **Tools**

Qodo Gen   **Playwright**   **Postbot**

GitHub Copilot   **FastAPI TestClient** **Pytest**

Module 5: Building AI-Infused Applications

- **Building AI-Powered Applications**
  - Develop AI-powered applications using OpenAI's API for intelligent data processing.

- **Integrating AI into Full-Stack Development**
  - Build and integrate AI functionalities within a full-stack MERN application.

- **AI-Enhanced Frontend Development**
  - Optimise frontend development using AI-generated components and design structures.

- **Deploying AI-Powered Applications**
  - Deploy AI-powered applications on cloud platforms for real-world usability.

Projects for Practice

- Build a health and diet recommendation app using OpenAI's API.

- Implement AI-driven meal planning based on user preferences and health conditions.

- Refine backend processing for structured AI responses.

- Deploy the application using Render for public access.

Ask anything

+   🌐 Search

- **Tools**

Open AI API	Node.js	Render
GitHub Copilot	Vite	React

Your Path to AI Mastery

Become a Better Software Developer with AI

Accelerate your software development career with tools such as ChatGPT, GitHub Copilot, Bolt, Claude, Sourcery, Tabnine, Qodo Gen, and More.
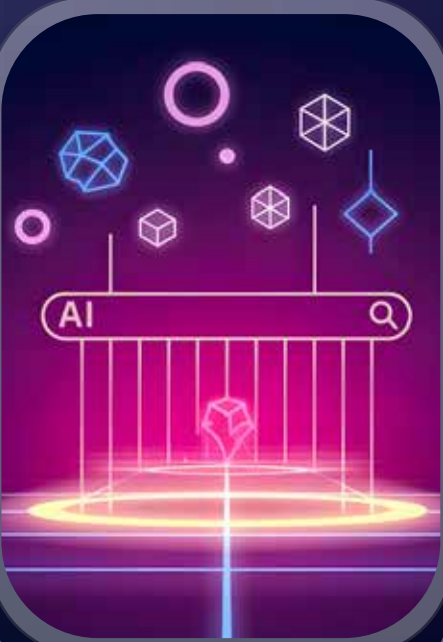
How Generative AI Can Help?

Prompt Practice: Master the Art

Learn to craft better prompts and drive AI models such as GPT to generate code and improve productivity.

Optimise Code: Learn to Refactor

Use AI and AI-integrated tools to do the heavy lifting for you by refactoring volumes of code in the way you require.

Build an Application: Prompt Based Building

Build a complete AI-infused application using GPT by learning how to design detailed prompts.

Master the Tools

Gain proficiency in industry-leading Generative AI tools and platforms for software development

Sourcery	**GitHub Copilot**	**Claude AI**
Bolt AI	**Qodo Gen**	**Playwright**
ChatGPT	**Azure OpenAI**	

Learn from Leading AI Experts

This program is led by renowned AI influencers and industry practitioners, bringing real-world experience and cutting-edge knowledge directly to you.

Manish Shukla

Manish Shukla is a visionary AI leader and Head of Generative AI Platform at NatWest Group, with deep expertise in OpenAI products, AWS MLOps, and Responsible AI. With over 15 years of experience driving AI innovation across financial services and telecom, he has led the development of scalable, multi-cloud AI platforms and transformative machine learning solutions. His strategic approach to MLOps and ethical AI ensures cutting-edge technology meets real-world demands, making him a powerhouse in AI education and industry advancement.

Dhanasekar Subramaniam

Dhanasekar Subramaniam is a distinguished software testing leader and author of The Pragmatic Tester, with deep expertise in Context-Driven Testing, mind-mapping techniques, and growth-driven testing strategies. With nearly two decades of experience driving innovation in software quality, he has led impactful projects at Moolya, coached teams to maximise test value, and co-authored Growth Driven Testing, a pivotal resource for testers and tech leaders. His strategic approach to critical thinking, test culture, and mentoring ensures modern testing methodologies meet real-world demands, making him a powerhouse in software testing education and industry advancement.

Deepak Singhal

Deepak Singhal is a technology leader and AI-driven architect with expertise in Cloud, Big Data, AI/ML, and Cybersecurity. Currently Vice President of Technology & Engineering at Valtech, he specializes in building scalable, business-centric solutions that go beyond just technology. With 18 years in product-based startups and 5 years at Capgemini, he has a proven track record of driving innovation, automation, and secure digital transformation. An avid speaker and mentor, he actively contributes to the tech community through Stack Overflow and industry forums, shaping the future of modern software architecture.

In collaboration with

upGrad | **Microsoft**

🔍 **www.upgrad.com**

Europe, Middle-East and Africa:

✉ info.emea@upgrad.com

📞 +44-20-4602-3556

North and South America:

✉ globaladmissions@upgrad.com

📞 +1 240-719-6120

Asia Pacific except India:

✉ query@upgrad.com

📞 +65 6232 6730

Vietnam:

✉ connect@upgrad.com

📞 1900-23-23-06