COURSE OUTLINE

MS-GH300T00: GITHUB COPILOT

DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	TRAINING CREDITS
1 Day	Intermediate	Microsoft GitHub	Instructor-led	NA

INTRODUCTION

This course explores the use of AI in the context of GitHub Copilot, a generative AI tool for developers. It equips users with the knowledge and skills to use Copilot effectively while mitigating potential ethical and operational risks associated with AI usage.

AUDIENCE PROFILE

The target audience for this course is:

- AI Developers and Engineers: Professionals involved in creating and deploying AI systems who need to understand the ethical implications and governance frameworks.
- Data Scientists and Analysts: Individuals who work with data and AI models, focusing on ensuring transparency, fairness, and accountability in their work.
- Business Leaders and Managers: Decision-makers who oversee AI projects and need to implement responsible AI practices within their organizations.
- Policy Makers and Regulators: Those responsible for creating policies and regulations around AI usage, ensuring that AI systems are developed and used ethically and safely.

PREREQUISITES

Before attending this course, delegates must have:

- An active GitHub account with a Copilot license (either a free trial or paid subscription).
- A compatible IDE, such as Visual Studio Code, Visual Studio 2022+, or JetBrains IDEs like PyCharm or IntelliJ.
- The GitHub Copilot extension installed in your IDE.
- Basic programming knowledge, including familiarity with languages like Python, JavaScript, TypeScript, Ruby, Go, or PHP.
- Experience using an IDE and a basic understanding of Git and GitHub to follow along with Copilot's integration into development workflows.

COURSE OBJECTIVES

After attending this course, delegates will be able to:

- Understand and configure GitHub Copilot in supported IDEs like Visual Studio Code.
- Use Copilot effectively to generate code suggestions and streamline development workflows.
- Apply prompt engineering techniques to craft better inputs and get more accurate code completions.
- Explore advanced features, including Copilot Chat and command-line integration.
- Recognize limitations and best practices for using AI in coding, with a strong emphasis on responsible AI principles.
- Manage and customize Copilot settings, including content exclusions and troubleshooting common issues.

COURSE CONTENT

Module 1: Responsible AI with GitHub Copilot

This module explores the responsible use of AI in the context of GitHub Copilot, a generative AI tool for developers. It will equip you with the knowledge and skills to leverage Copilot effectively while mitigating potential ethical and operational risks associated with AI usage.

Lessons

- Introduction
- Mitigate AI risks
- Microsoft and GitHub's six principles of responsible AI
- Module assessment
- Summary

After completing this module, students will be able to:

- Understand and apply the principles of Responsible AI usage.
- Identify limitations and mitigate risks associated with AI.
- Learn best practices for ensuring AI-generated code aligns with ethical standards and project-specific requirements.
- Recognize the importance of transparency and accountability in AI systems to build trust and maintain user confidence.

Module 2: Introduction to GitHub Copilot

GitHub Copilot uses OpenAI Codex to suggest code and entire functions in real time, right from your editor.

Lessons

- Introduction
- GitHub Copilot, your AI pair programmer
- Interact with Copilot
- Set up, configure, and troubleshoot GitHub Copilot
- Exercise - Develop with AI-powered code suggestions by using GitHub Copilot and VS Code
- Module assessment
- Summary

After completing this module, students will be able to:

- Learn how GitHub Copilot can help you code by offering autocomplete-style suggestions.
- Learn about the various ways to trigger GitHub Copilot.
- Learn about the differences among GitHub Copilot Individual, Business, and Enterprise.

- Learn how to configure GitHub Copilot.
- Troubleshoot GitHub Copilot.

Module 3: Introduction to prompt engineering with GitHub Copilot

Discover the essentials of creating effective prompts with GitHub Copilot. Uncover techniques to transform your coding comments into precise, actionable code, enhancing your development workflow.

Lessons

- Introduction
- Prompt engineering foundations and best practices
- GitHub Copilot user prompt process flow
- GitHub Copilot data
- GitHub Copilot Large Language Models (LLMs)
- Module assessment
- Summary

After completing this module, students will be able to:

- Craft effective prompts that optimize GitHub Copilot's performance, ensuring precision and relevance in every code suggestion.
- Understand the intricate relationship between prompts and Copilot's responses and utilize best practices in prompt engineering.
- Gain insights into the underlying mechanism of how GitHub Copilot handles user prompts, from secure transmission to content filtering and context analysis.

Module 4: Using advanced GitHub Copilot features

Use advanced GitHub Copilot features with a Python application.

Lessons

- Introduction
- Advanced GitHub Copilot features
- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Applied GitHub Copilot techniques
- Exercise - Update a web API with GitHub Copilot
- Module assessment
- Summary

After completing this module, students will be able to:

- Apply slash commands to make code changes
- Interact with GitHub Copilot using the Chat feature.
- Ask questions about your project using an agent.

Module 5: GitHub Copilot Across Environments: IDE, Chat, and Command Line Techniques

Explore the multifaceted capabilities of GitHub Copilot across various development environments. Learn to harness AI-assisted coding in your IDE, engage in natural language conversations for complex tasks, and enhance your command-line productivity.

Lessons

- Introduction
- Code completion with GitHub Copilot
- GitHub Copilot Chat
- GitHub Copilot for the Command Line
- Module assessment
- Summary

After completing this module, students will be able to:

- Understand how to utilize GitHub Copilot's autosuggestions, multiple suggestions pane, and its ability to adapt to different coding styles.
- Understand how to provide context to GitHub Copilot through inline comments, block comments, doc strings, and other types of comments to enhance code generation accuracy.
- Understand how to interact with GitHub Copilot through natural language conversations to generate complex code, debug issues, and obtain code explanations in real-time.
- Understand how to improve the relevance of GitHub Copilot Chat's suggestions by using scope referencing, slash commands, and agents
- Understand how to interact with GitHub Copilot in CLI to get command explanations, suggestions, and even execute commands based on specific needs.

Module 6: Management and customization considerations with GitHub Copilot

In this module, we explore management and customization considerations with GitHub Copilot.

Lessons

- Introduction
- Explore GitHub Copilot plans and their associated management and customization features
- Explore contractual protections in GitHub Copilot and disabling matching public code
- Manage content exclusions
- Troubleshoot common problems with GitHub Copilot
- Module assessment
- Summary

By the end of this module, you will:

- Understand the GitHub Copilot plans and their associated management and customization features.
- Gain insight into the contractual protections in GitHub Copilot and disabling matching public code.
- Know how to manage content exclusions.
- Recognize common problems with GitHub Copilot and their solutions.

Module 7: Developer use cases for AI with GitHub Copilot

This module explores how GitHub Copilot streamlines developer productivity through AI-powered features. It enhances the Software Development Life Cycle (SDLC), aligns with developer preferences, and identifies key limitations. Additionally, it measures productivity gains effectively.

Lessons

- Introduction
- Boost developer productivity with AI
- Align with developer preferences
- AI in the Software Development Lifecycle (SDLC)
- Understand limitations and measure impact
- Module assessment
- Summary

By the end of this module, you're able to:

- Identify specific ways GitHub Copilot integrates seamlessly into developer workflows, enhancing the overall development experience and supporting individual coding preferences.
- Explore GitHub Copilot's potential impact on different stages of the Software Development Lifecycle.
- Evaluate the limitations of AI-assisted coding and measure its impact on development efficiency.

Module 8: Develop unit tests using GitHub Copilot tools

This module explores using GitHub Copilot and GitHub Copilot Chat to create unit tests. Exercises provide practical experience creating unit test projects and running unit tests in Visual Studio Code.

Lessons

- Introduction
- Examine the unit testing tools and environment
- Create unit tests using the Generate Tests smart action
- Create unit tests using Inline Chat

- Create unit tests using Chat view modes
- Exercise - Develop unit tests using GitHub Copilot
- Module assessment
- Summary

In this module, you'll learn how to:

- Create unit tests using the GitHub Copilot and GitHub Copilot Chat extensions for Visual Studio Code.
- Create unit tests that target edge cases and specific conditions using the GitHub Copilot and GitHub Copilot Chat extensions for Visual Studio Code.
- Use Visual Studio Code, the .NET SDK, and the C# Dev Kit extension to create a test project and verify that your unit tests build and run successfully.

Module 9: Introduction to GitHub Copilot Business

Learn about the difference between GitHub Copilot Business versus GitHub Copilot Individuals. Also learn about specific use cases and customer stories for GitHub Copilot Business as well as how to enable it.

Lessons

- Introduction
- About GitHub Copilot for Business
- GitHub Copilot for Business use cases and customer stories
- How to get started with GitHub Copilot for Business
- Module assessment
- Summary

By the end of this module, you'll be able to:

- Understand the difference between GitHub Copilot Business versus GitHub Copilot Individuals.
- Learn about specific use cases for GitHub Copilot Business and hear how customers are enhancing their productivity.
- Review how to enable GitHub Copilot Business.

Module 10: Introduction to GitHub Copilot Enterprise

Learn about the differences between GitHub Copilot for Enterprise, for Business, and for Individuals. Examine specific use cases, including how to enable and use GitHub Copilot Enterprise.

Lessons

- Introduction
- About GitHub Copilot Enterprise
- How to get started
- Module assessment
- Summary

By the end of this module, you'll be able to:

- Understand what the GitHub Copilot Enterprise plan is.
- Understand the differences between GitHub Copilot Enterprise versus Business versus Individual.
- Learn about specific use cases for GitHub Copilot Enterprise and hear how customers are enhancing their productivity.
- Review how to enable GitHub Copilot Enterprise.

Module 11: Using GitHub Copilot with JavaScript

To work with JavaScript, take advantage of GitHub Copilot, an AI pair programmer that boosts productivity with autocomplete-style suggestions.

Lessons

- Introduction
- What is GitHub Copilot
- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Use GitHub Copilot with JavaScript
- Exercise - Update a JavaScript portfolio with GitHub Copilot
- Module assessment
- Summary

By the end of this module, you're able to:

- Enable the GitHub Copilot extension in Visual Studio Code.
- Craft prompts that can generate useful suggestions from GitHub Copilot.
- Use GitHub Copilot to improve a JavaScript project.

Module 12: Using GitHub Copilot with Python

GitHub Copilot is an AI pair programmer that offers autocomplete-style suggestions as you code in Python.

Lessons

- Introduction
- What is GitHub Copilot?
- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Use GitHub Copilot with Python
- Exercise - Update a Python web API with GitHub Copilot
- Module assessment
- Summary

By the end of this module, you're able to:

- Enable the GitHub Copilot extension in Visual Studio Code.
- Craft prompts that can generate useful suggestions from GitHub Copilot.
- Use GitHub Copilot to improve a Python project.

ASSOCIATED CERTIFICATIONS & EXAM

This course will prepare delegates to write the GitHub Copilot exam.