Mastering Carbon Programming Language via GitHub

Certainly, including the detail that the course will be hosted and run on GitHub adds a practical and contemporary aspect to the course structure. Here's the revised course outline with this integration:

Course Title:

Mastering Carbon Programming Language via GitHub

Course Abstract:

This 2-3 day intensive course is tailored for developers who wish to gain a comprehensive understanding of the Carbon Programming Language through a practical, GitHub-centric approach. The course will leverage GitHub's collaborative and code management features to enhance the learning experience, offering participants hands-on experience in a real-world software development environment.

Course Objectives:

1. Gain a robust understanding of Carbon's fundamentals and advanced features.
2. Develop and share Carbon code using GitHub's collaborative platform.
3. Implement best practices in version control and code review using GitHub.
4. Build a portfolio of Carbon projects on GitHub for professional development.

Target Audience:

- Developers with basic programming knowledge seeking an efficient, cost-effective Carbon learning experience.
- Professionals aiming to enhance their portfolio and collaborate using GitHub.

Course Topics and Agenda:

Day 1: Introduction to Carbon and GitHub

- **Session 1:** Introduction to Carbon and GitHub - Synergies and Benefits
- **Session 2:** GitHub Setup for Carbon Development
- **Lab 1:** Creating and Cloning Repositories, Basic GitHub Operations
- **Session 3:** Carbon Basics - Syntax and Data Structures
- **Lab 2:** Committing First Carbon Code on GitHub
- **Session 4:** Control Structures, Functions, and Pull Requests
- **Assessment 1:** Online Quiz (via GitHub)

Day 2: Advanced Carbon and Collaborative Development

- **Session 5:** Object-Oriented Programming in Carbon and Branch Management
- **Lab 3:** Developing and Merging Feature Branches
- **Session 6:** Error Handling, Debugging, and Issue Tracking
- **Lab 4:** Using GitHub Issues for Debugging
- **Session 7:** Functional Programming in Carbon and Code Reviews
- **Assessment 2:** Peer-reviewed Mini Project on GitHub

Day 3: Project Development and Community Engagement

- **Session 8:** Leveraging GitHub Communities and Libraries
- **Lab 5:** Collaborating on Open Source Libraries
- **Session 9:** Best Practices in Carbon and GitHub Workflow
- **Session 10:** Future Trends and Continuous Learning via GitHub
- **Final Assessment:** Comprehensive GitHub Project

Assessment Methods:

- Quizzes and assessments conducted via GitHub.
- Collaborative lab exercises and code reviews.
- GitHub Projects for practical application and portfolio building.
- A final project that involves comprehensive use of GitHub features.

Lab Overview:

Each lab will be conducted using GitHub, focusing on real-world programming tasks. Participants will commit code, open pull requests, engage in code reviews, and manage issues, mirroring a professional development environment.

Course Materials:

- GitHub repositories for course materials and exercises.
- Access to a dedicated GitHub organization for collaboration and discussion.
- Comprehensive digital course handbook available on GitHub.

Additional Notes:

- The course will facilitate continuous interaction through GitHub Discussions.
- Post-course support and networking opportunities within the GitHub community.
- Emphasis on building a visible, professional portfolio through GitHub.

This course is designed to not only teach Carbon programming but also to familiarize participants with the collaborative and version control aspects of software development using GitHub, thereby providing a dual advantage in learning and professional development.