

## Fruto Academy Backend Developer Course Syllabus

### Course Overview:

Welcome to the Fruto Academy Backend Developer Course! This comprehensive program will provide you with the skills and knowledge needed to become a proficient backend developer. You'll learn the core technologies, tools, and practices required to build robust and scalable server-side applications.

Course Duration: 14 weeks

### Week 1-2: Introduction to Backend Development

- Understanding the role of a backend developer
- Exploring the client-server architecture
- Introduction to server-side programming languages (e.g., Python, Node.js, Ruby)

### Week 3-4: Relational Databases and SQL

- Fundamentals of relational databases
- Designing database schemas
- Writing SQL queries for data retrieval and manipulation
- Implementing database normalization

### Week 5-6: NoSQL Databases and Data Modeling

- Introduction to NoSQL databases (e.g., MongoDB, Cassandra)
- Comparing NoSQL databases to relational databases
- Data modeling for NoSQL databases
- CRUD operations in NoSQL databases

### Week 7-8: Building RESTful APIs

- Understanding Representational State Transfer (REST)
- Designing RESTful APIs
- Implementing CRUD operations using API endpoints
- Handling authentication and authorization

### Week 9-10: Server-Side Frameworks (e.g., Express, Django)

- Exploring backend frameworks
- Building web applications using a chosen framework
- Routing and middleware
- Working with templates and views

### Week 11-12: Authentication and Security

- Implementing user authentication and registration
- Handling password hashing and encryption
- Preventing common security vulnerabilities (e.g., SQL injection, cross-site scripting)

#### Week 13: Caching and Performance Optimization

- Introduction to caching mechanisms
- Implementing caching for improved performance
- Techniques for optimizing database queries
- Load balancing and scaling strategies

#### Week 14: Deployment and Final Project

- Deploying backend applications to production servers
- Setting up environments and configuration management
- Final project: Build and deploy a complete backend application with RESTful API

#### Assessment and Certification:

- Weekly coding assignments: 40%
- Midterm projects (Database design and API development): 20%
- Final project: 30%
- Participation and quizzes: 10%

#### Recommended Resources:

- "Flask Web Development" by Miguel Grinberg
- "Node.js Design Patterns" by Mario Casciaro
- Online tutorials and documentation for chosen backend technologies

Note: This syllabus is subject to adjustment based on instructor discretion and the evolving landscape of backend development.

For inquiries, contact us at [info@frutoacademy.com](mailto:info@frutoacademy.com) or visit [www.frutoacademy.com](http://www.frutoacademy.com).