# Cypress Course Content with TypeScript and AI-Driven Framework

**Module 1: Introduction to Cypress and TypeScript**

* What is Cypress?
* Benefits of Cypress for end-to-end testing
* Introduction to TypeScript
  + Why use TypeScript with Cypress?
  + TypeScript basics (types, interfaces, classes)
* Setting up a Cypress project with TypeScript
  + Project structure
  + tsconfig.json configuration
  + AI-assisted project setup (tools or techniques that can help automate initial configuration)
* Installation and project setup (with AI-driven optimization of configurations)

**Module 2: Cypress Fundamentals with TypeScript**

* Writing your first test in Cypress with TypeScript
  + Basic test structure (describe, it, expect)
  + Cypress commands
* Selectors in Cypress
  + Best practices for writing robust selectors
  + AI-powered selector generation/suggestion tools
* Assertions in Cypress
  + Common assertions
  + Creating custom assertions (with AI assistance for complex logic)
* Working with asynchronous behavior
  + Cypress's implicit waits
  + Explicit waits (when necessary)
  + AI-driven wait strategies (tools that can dynamically adjust waits)
* Debugging Cypress tests
  + Cypress's time travel feature
  + Using browser developer tools
  + AI-assisted debugging (tools that can analyze test failures and suggest root causes)

**Module 3: Advanced Cypress and TypeScript**

* Organizing tests with Page Object Model (POM)
  + Implementing POM in TypeScript
  + AI-driven POM generation/maintenance
* Working with data and fixtures
  + Using fixtures for test data
  + Generating dynamic test data (with AI assistance)
* API testing with Cypress
  + Sending API requests from Cypress tests
  + Validating API responses
  + AI-driven API testing strategies within Cypress
* Handling different types of elements
  + Forms, tables, etc.
  + AI-assisted handling of dynamic elements
* Cross-browser testing
  + Cypress's browser support
  + Strategies for cross-browser compatibility
  + AI-driven cross-browser testing tools/services

**Module 4: AI-Driven Framework Creation**

* **Framework Design Principles**
  + Understanding key principles (modularity, reusability, maintainability)
  + AI-driven framework design suggestions
* **AI Tools for Framework Generation**
  + Exploring tools that can help generate boilerplate code, directory structures, etc.
  + Low-code/no-code tools with AI assistance
* **Core Components of the Framework**
  + Base classes, utility functions, custom commands
  + AI-assisted code generation for these components
* **Reporting and Logging**
  + Setting up отчеты
  + AI-powered отчеты and analytics
* **CI/CD Integration**
  + Integrating Cypress tests into CI/CD pipelines
  + AI for optimizing test execution in CI/CD

**Module 5: Advanced AI Integration**

* **Self-Healing Tests**
  + Implementing mechanisms to automatically adjust tests when the UI changes
  + AI algorithms for self-healing
* **Visual Testing with AI**
  + Using AI to compare screenshots and detect visual regressions
* **Test Prioritization**
  + AI-driven selection of most important tests to run
* **Predictive Testing**
  + Using AI to predict which tests are likely to fail
* **AI-Powered Test Data Management**
  + Generating and managing test data with AI