# **Code School of Guam - General Syllabus**

## **Program Overview**

**Duration:** 16 Weeks (Live Classes) + 2 Weeks Pre-Work  
**Class Schedule:**

* **Live Classes:** Monday – Thursday, 6:00 PM – 9:00 PM
* **Saturday Sessions:** 8:00 AM – 4:00 PM (Includes Career Services)  
  **Total Weekly Hours:** Approximately 20–25 hours per week

**Program Structure:**

* **Pre-Work Phase (2 Weeks):** Introduction to programming concepts and basic Ruby syntax.
* **Core Curriculum (Weeks 1–16):** Comprehensive training in full-stack software development using Ruby on Rails and React.js.
* **Capstone Project:** Develop a full-stack application to showcase your skills.
* **Career Services Integration:** Ongoing support throughout the program for job readiness and professional development.

## **Pre-Work Phase**

**Objectives:**

* Gain a foundational understanding of programming concepts.
* Familiarize yourself with Ruby syntax and basic coding skills.

**Topics Covered:**

* Introduction to Programming and Computational Thinking
* Variables, Data Types, and Basic Operations
* Control Structures: Conditionals and Loops
* Basic Input/Output Operations in Ruby

## **Core Curriculum**

### **Programming Fundamentals**

* **Ruby Programming:**
  + Variables, Data Types, and Operators
  + Control Structures: If Statements, Loops
  + Methods: Definition, Parameters, Return Values
  + Data Structures: Arrays and Hashes
  + Enumerables and Iterators
  + Error Handling and Debugging
  + File Input/Output Operations
* **Object-Oriented Programming (OOP):**
  + Classes and Objects
  + Instance Variables and Methods
  + Constructors (Initialize Method)
  + Inheritance and Polymorphism
  + Modules and Mixins
* **Version Control with Git and GitHub:**
  + Basic Git Commands: Init, Add, Commit
  + Branching and Merging
  + Resolving Merge Conflicts
  + Collaborative Workflows

### **Web Development with Ruby on Rails**

* **Rails Framework Basics:**
  + Setting Up a Rails Application
  + Understanding MVC Architecture
  + Rails Directory Structure
* **Building APIs with Rails:**
  + Rails in API Mode
  + Creating Controllers and Actions
  + Routing in Rails API
  + Rendering JSON Responses
  + Error Handling in APIs
  + Testing APIs with Tools like Postman or HTTPie
* **Database Management with ActiveRecord:**
  + Models and Migrations
  + Database Schema Changes and Migrations
  + ActiveRecord Associations: One-to-Many, Many-to-Many
  + Validations and Callbacks
  + Performing CRUD Operations
* **RESTful API Development:**
  + RESTful Conventions in Rails
  + JSON Serialization with ActiveModel Serializer
  + API Versioning and Best Practices
* **Transition to Full-Stack Rails:**
  + Views and Templates with ERB
  + Form Helpers and Form Handling
  + Differences Between API Mode and Full-Stack Rails

### **Front-End Development with JavaScript and React**

* **JavaScript Fundamentals:**
  + Variables, Data Types, and Operators
  + Control Structures and Functions
  + DOM Manipulation
  + Event Handling
* **Advanced JavaScript Concepts:**
  + Asynchronous JavaScript: Callbacks, Promises, Async/Await
  + Fetch API for Making HTTP Requests
  + Consuming APIs and Handling JSON Data
* **Introduction to React:**
  + Setting Up a React Project
  + JSX Syntax and Rendering Elements
  + Functional Components and Props
  + State Management with useState
  + Handling User Input and Events
* **Advanced React Development:**
  + React Router for Multi-Page Applications
  + Forms and Validation in React
  + Global State Management with Context API
* **Integrating React with Rails APIs:**
  + Consuming APIs with Axios or Fetch
  + Handling CORS and Security Considerations
  + Authentication Flows and Managing User Sessions

### **Capstone Project**

* **Project Development:**
  + Define Project Scope and Requirements
  + Implement Features Using Rails and React
  + Apply Full-Stack Development Skills
  + Integrate Additional Tools and Technologies
* **Project Presentation:**
  + Prepare Demonstrations and Slide Decks
  + Showcase Application Functionality
  + Discuss Challenges and Solutions

## **Career Services Integration**

* **Personalized Career Action Plans**
* **Resume and Cover Letter Workshops**
* **LinkedIn Profile Optimization**
* **Portfolio Development and Project Showcasing**
* **Interview Preparation and Mock Interviews**
* **Networking Strategies and Job Search Assistance**
* **Post-Graduation Support for Up to 6 Months**

## **Additional Information**

### **Attendance Policy**

* **Expectation:** Attend all scheduled classes punctually.
* **Absences:** More than three unexcused absences may result in dismissal without a refund.
* **Excused Absences:** Allowed for valid reasons with documentation.

### **Code of Conduct**

* **Respectful Environment:** Maintain professionalism and courtesy.
* **Zero Tolerance:** Harassment or discrimination will not be tolerated.
* **Consequences:** Violations may result in disciplinary action, including dismissal.

### **Assessment and Grading**

* **Assignments and Projects:** Regular assignments to reinforce learning.
* **Capstone Project Evaluation:** Based on functionality, code quality, and presentation.
* **Participation:** Active engagement in classes and group activities.

### **Resources Provided**

* **Access to Course Materials:** Available for one year post-graduation.
* **Supplementary Resources:** Articles, tutorials, and practice exercises.
* **Support Channels:** Online forums and communication platforms for peer and instructor support.

### **Equipment and Software Requirements**

* **Hardware:** A laptop capable of running development tools.
* **Software:** Ruby, Rails, Node.js, React, Git, and a code editor (e.g., VSCode).
* **Internet Access:** Reliable connection for classes and online resources.

## **Contact Information**

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**We look forward to welcoming you to the Code School of Guam and supporting you on your journey to becoming a full-stack software engineer!**