

Build AWS eCommerce Application from Scratch

Hands-on course for developers to deploy a real-world store on AWS using modern tools and best practices.

DevOps Instructor: Michael Brooks • 5 sections • 55 lessons • 20.00h total

[View this course online](#) [Browse all courses](#)

About this course

Building a scalable eCommerce app involves juggling multiple cloud services, from data storage to payments and deployment. This course addresses the common challenges by guiding you through AWS services like S3, EC2, Lambda, and DynamoDB, so you can create a secure, high-performing application without getting lost in complexity. You'll work through real-world scenarios, such as designing microservices and handling traffic spikes, to build practical skills.

In this hands-on series, you'll learn to set up the backend with API Gateway and Cognito, build a responsive frontend with React, integrate Stripe for payments, and implement CI/CD pipelines using GitHub Actions. The course includes video lessons, case studies from successful eCommerce projects, and step-by-step deployment exercises to help you master AWS architecture for online stores.

Course curriculum

AWS Foundations & Project Setup

- **Introduction to AWS Services for eCommerce (18m)**
Explore core AWS services like IAM, S3, and EC2, and see how they fit into an eCommerce architecture.
- **Setting Up Your AWS Account and CLI (12m)**
Step-by-step guide to creating a Free Tier account and configuring the AWS CLI for local development.
- **Architectural Patterns for Scalable Stores (25m)**
Compare microservices, serverless, and hybrid approaches to choose the right architecture for your project.
- **Selecting the Tech Stack: Frontend and Backend (18m)**
Evaluate options like React/Next.js and Node.js/Python to build a flexible, maintainable application.
- **Version Control with Git and Environment Setup (15m)**
Initialize Git repos and define dev, staging, and production environments to streamline collaboration.
- **Designing the Project Structure and Workflow (20m)**
Organize code and resources for clarity, with a focus on modularity and future scalability.
- **Security Foundations: IAM Roles and Policies (22m)**
Learn to configure IAM to control access across your AWS resources, preventing common security issues.

Data Layer & Authentication

- **Designing the Product Catalog Schema (20m)**
Plan tables for products, categories, and attributes using DynamoDB or Aurora/RDS for efficient queries.
- **Creating and Seeding Database Tables (25m)**
Hands-on session to set up tables and populate them with sample data for testing.
- **User Authentication with Amazon Cognito (18m)**
Implement secure sign-up and login flows using Cognito user pools for your eCommerce app.
- **Authorization and Access Control (22m)**
Configure Cognito identity pools and fine-grained access to protect API endpoints and resources.
- **Building REST APIs with API Gateway (30m)**
Create and configure API Gateway endpoints to handle HTTP requests for your backend services.
- **Lambda Functions for CRUD Operations (25m)**
Write and deploy Lambda functions to perform create, read, update, and delete operations on data.
- **Securing APIs with Cognito Authorizers (20m)**
Integrate Cognito with API Gateway to validate tokens and secure your product listing APIs.
- **Testing APIs with Postman and Tools (15m)**
Use Postman to send requests, debug responses, and verify your API implementations work correctly.
- **Deploying the Product Listing API (30m)**
Hands-on deployment of the complete product API, including testing end-to-end functionality.

- **Optimizing Data Access Patterns (18m)**

Review techniques to reduce latency and costs, such as caching and indexing strategies.

Frontend & Shopping Experience

- **Setting Up the React/Next.js Frontend (20m)**

Initialize a Next.js project and configure it to connect with your AWS backend services.

- **Creating Product Listing and Grid Pages (25m)**

Build responsive pages that display products from your API, with filtering and sorting options.

- **Building Product Detail Views (20m)**

Design detailed product pages with images, descriptions, and add-to-cart functionality.

- **Integrating API Gateway Endpoints (22m)**

Connect your frontend to backend APIs using Axios or Fetch, handling errors and loading states.

- **Implementing Search and Filtering (18m)**

Add client-side or server-side search to help users find products quickly and easily.

- **Shopping Cart Logic with Client-Side State (25m)**

Use React state or context to manage cart items, quantities, and totals for a smooth user experience.

- **Persisting Cart Data with DynamoDB (20m)**

Store cart information in DynamoDB so users can continue shopping across sessions.

- **Image Upload and Management with S3 (30m)**

Set up S3 buckets for product images, with upload workflows and access control.

- **CDN Setup with CloudFront for Fast Delivery (22m)**

Configure CloudFront to distribute images and static assets globally, reducing load times.

- **Responsive Design and Performance Optimization (18m)**

Apply 2026 web standards to ensure your store works well on all devices and loads quickly.

Payments, Orders & Notifications

- **Introduction to Payment Gateways for eCommerce (15m)**

Overview of options like Stripe and Amazon Pay, focusing on security and integration ease.

- **Setting Up Stripe for Secure Checkout (30m)**

Step-by-step guide to integrating Stripe, including API keys and webhook configuration.

- **Building the Checkout Flow and UI (25m)**

Create a user-friendly checkout process with form validation and payment confirmation.

- **Order Processing with Lambda Functions (20m)**

Write Lambda functions to handle order creation, validation, and initial processing steps.

- **Writing Orders to DynamoDB Tables (18m)**

Design tables for orders and link them to products and users for data consistency.

- **Sending Order Confirmations with Amazon SES (22m)**

Set up SES to trigger automated emails for order confirmations and updates.

- **Event-Driven Architecture with EventBridge (20m)**

Use EventBridge to decouple services and handle events like payment success or failure.

- **Implementing SNS/SQS for Notifications (22m)**

Configure messaging services to send real-time alerts and process background tasks.

- **Inventory Management and Updates (20m)**
Automate stock level adjustments based on orders to prevent overselling.
- **Order Status Tracking and History (18m)**
Build features for users to view order status and history, with backend logging.
- **Error Handling and Retry Mechanisms (22m)**
Implement strategies to handle payment failures, network issues, and data inconsistencies.
- **Testing the Complete Order Pipeline (30m)**
End-to-end testing session to simulate orders, payments, and notifications in a staging environment.
- **Security Considerations for Payments (15m)**
Review best practices for securing sensitive data, including PCI compliance basics.

Deployment, CI/CD, Monitoring & Optimization

- **Introduction to Infrastructure as Code (15m)**
Learn the benefits of IaC and how it helps manage AWS resources consistently and repeatably.
- **Defining AWS Resources with CDK (30m)**
Hands-on guide to using AWS CDK to script your infrastructure for the eCommerce app.
- **Terraform for AWS Deployment (25m)**
Alternative approach using Terraform to provision and manage your cloud resources.
- **Version Control for Infrastructure Code (18m)**
Integrate IaC with Git to track changes and collaborate on infrastructure updates.
- **Setting Up CI/CD with GitHub Actions (30m)**
Create automated pipelines to build, test, and deploy your application on every code push.
- **AWS CodePipeline Configuration (25m)**
Use AWS-native tools to set up a continuous deployment workflow for production.
- **Blue/Green Deployments with CodeDeploy (22m)**
Implement zero-downtime deployments to minimize risk during updates.
- **Canary Releases and Gradual Rollouts (20m)**
Deploy changes to a small subset of users first, monitoring for issues before full release.
- **Monitoring with CloudWatch Dashboards (25m)**
Create dashboards to visualize metrics like CPU usage, request latency, and error rates.
- **Setting Up Alarms and Log Analysis (18m)**
Configure alarms for critical events and use CloudWatch Logs to debug problems.
- **Distributed Tracing with X-Ray (22m)**
Trace requests across services to identify bottlenecks and improve performance.
- **Cost Optimization Techniques for AWS (20m)**
Review strategies like right-sizing instances and using reserved capacity to reduce expenses.
- **Auto-Scaling and Load Balancing Setup (25m)**
Configure auto-scaling groups and load balancers to handle traffic spikes automatically.
- **Security Hardening and Best Practices (22m)**
Apply security patches, network controls, and compliance checks to protect your app.
- **Capstone: Live Demo and Project Review (30m)**
Walk through the deployed eCommerce app, review architecture, and discuss next steps.

Discover our blog

Learn more with free articles written by our professors and guest experts.

Latest article: **Flight Attendant Preparation: What to Study Before You Apply**

[Visit the blog](#) [All courses](#) [This course](#)