



GenZscholars

4-Week Back-End Development Training Program

Goal:

Teach students server-side programming, databases, APIs, authentication, and deployment — enabling them to build real-world back-end systems.

Week 1: Introduction to Back-End & Node.js Basics

Day	Topic	Activity
1	What is Back-End Development?	Career Talk + Setup
2	Introduction to Node.js and npm	Build a Simple Server
3	Express.js Basics: Routing, Middleware	Create RESTful APIs
4	HTTP Methods & Postman Testing	API Hands-on Testing
5	Error Handling and Logging	Practical Debugging
Saturday	Mini-project: Build a Basic API (CRUD operations)	Practical
Sunday	Quiz 1 + API Debugging Challenge	Test + Fun

Week 2: Database Management with MongoDB

Day	Topic	Activity
1	Introduction to Databases	SQL vs NoSQL Overview
2	MongoDB Basics: Collections and Documents	Hands-on with MongoDB Atlas

Day	Topic	Activity
3	Mongoose ORM: Schemas and Models	Create Models
4	CRUD Operations with MongoDB	Build Data APIs
5	Relationships & Data Validation	Practice with Joins/Populate
Saturday	Mini-project: Create a Blog API (posts, users) Practical	
Sunday	Quiz 2 + MongoDB Challenge	Test + Fun

Week 3: Authentication, Security, and APIs

Day	Topic	Activity
1	Authentication: JWT and Sessions	Build Login/Signup APIs
2	Password Encryption: bcrypt.js	Secure User Passwords
3	Role-based Authorization	Create Protected Routes
4	Environment Variables and Config	Best Practices
5	API Rate Limiting & Security Essentials	Security Middleware
Saturday	Mini-project: Authentication System Practical	
Sunday	Quiz 3 + Capture the Bug	Test + Debugging Activity

Week 4: Advanced Concepts + Final Project

Day	Topic	Activity
1	File Uploads (Multer)	Upload Profile Pictures
2	Advanced Error Handling & Logging	Custom Error Middleware
3	Deployment: Railway, Render, or Heroku	Deploy API to Cloud
4	Final Project Planning	Teams Division
5	Final Project Development	Mentor Support
Saturday	Final Project Presentation Showcase	
Sunday	Certificate Ceremony + Feedback	Closing

Additional Details:

- **Daily Hours:** 2-3 hours per day.
- **Tools Covered:** Node.js, Express.js, MongoDB, Mongoose, JWT, bcrypt, Postman, Railway/Render/Heroku.
- **Certifications:** Participation + Final Project Certificate

Email: info@genzscholars.in

Website: <https://genz-vert.vercel.app/>

- **Outcome:** Students will be able to design, build, and deploy complete back-end systems with user authentication and API management.