Admissions & Support: support@mockattempt.com
Phone / WhatsApp: +91 98765 43210
Course Code: NFSC • **Updated:** 01 Nov 2026
https://mockattempt.com/training/nodejs-full-stack-engineering-program

NFSC • FULL STACK DEVELOPMENT **JOB-GUARANTEED CAREER MASTER PROGRAM**

100% PLACEMENT GUARANTEED* CAREER PROGRAM (6-MO REFUND*)

Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)

100% Placement Guaranteed Career Program | Node.js Runtime, NestJS, TypeScript 5, React 19, Next.js 15, Dual Database (MongoDB + PostgreSQL), Redis, WebSockets, AWS & Docker | 100% Placement Guaranteed* (6 Months Fees Refund*)

Duration: 28w (420h) • 15h/wk (448 Hrs) • **Modules:** 16 • **Live Topics:** 42 • **Labs & Tasks:** 84 • **Mocks / AI Vivas:** 84 / 84 • **Projects:** 16 Module + 1 Live Client Prod

Fixed Non-Negotiable Tuition Fee: Base Fee **₹44,999** + 18% GST (₹8,100) = **Total Incl. GST: ₹53,099**

Live Batch Tracks: Weekday Career Intensive Batch (Mon – Fri • 15h/wk) (Monday to Friday (5 Live Sessions / Week • 15h/wk Total) • 3.0 Hours / Day (90 Mins Live Architecture + 90 Mins Supervised Real-Repo Coding) • 30 Weeks (448 Hours • 15h/wk)) | Weekend Working-Pro Career Batch (Sat – Sun + Guided Sprint • 15h/wk) (Saturday & Sunday Live + Mid-Week Mentor PR Review (15h/wk Total) • 5.0 Hours Sat & Sun Live + 5.0 Hours Guided Real-Repository Sprint • 30 Weeks (448 Hours • 15h/wk))

✓ 6-Month Placement Guarantee*: Complete 100% assigned repositories & score ≥90% across all Topic Mock Tests & Voice AI Interviews → 100+ verified IT job openings within 6 months or 100% net tuition refund*.

Core Technologies & Engineering Stack: Node.js Runtime • TypeScript 5 • React 19 • Next.js 15 App Router • Express.js & NestJS • MongoDB 7 Aggregations • PostgreSQL 16 & Prisma/Drizzle • Redis 7 Streams & Caching • WebSockets & Socket.IO • Docker & Containers • AWS Cloud Deployment • GitHub Actions CI/CD & Vitest

1. PROGRAM MASTERY OUTCOMES & ELIGIBILITY

End-to-End Engineering Outcomes:

1. Build and ship 14 real-world production GitHub repositories + 1 Live Client Production Cloud Deployment (zero dummy to-do apps)
2. Achieve ≥90% mastery across every Topic Mock Test and Spoken Gemini AI Technical Interview (unlimited free re-attempts allowed below 90%)
3. Earn Dual Barcode-Verifiable Credentials: Course Excellence Certificate + Official Project Internship Confirmation Letter
4. Unlock 6-Month Placement Support guaranteeing 100 curated relevant IT job openings — backed by our 100% Tuition Fee Refund* policy
5. End-to-end strict TypeScript 5 across React 19, Next.js 15 App Router (SSR/RSC), Express, and enterprise NestJS modules.
6. Dual-database mastery: PostgreSQL 16 (Prisma/Drizzle ACID ledgers) + MongoDB 7 (high-speed catalogs) + Redis 7 queues/caching.
7. Real-time WebSockets, BullMQ background jobs, OAuth2/JWT multi-tenant RBAC, and S3 presigned media pipelines.
8. Cloud-native DevOps with Docker, GitHub Actions CI/CD, AWS (VPC, ALB, ECS/EC2, RDS, CloudFront), and structured telemetry.

Eligibility & Prerequisites: Basic computer literacy and commitment to 15 hours/week of live coding, daily tasks & real-repository sprints • Dedication to complete 100% of assigned tasks and re-attempt assessments until crossing ≥90% mastery • No prior Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) industry experience required — Module 1 starts from environment setup, core mental models, and plain-English fundamentals. • Basic computer & internet familiarity on a Windows, macOS, or Linux laptop (8 GB+ RAM recommended for smooth live coding labs). • Ideal for B.Tech / BCA / MCA / B.Sc IT students, non-CS beginners, career switchers, and working developers upgrading to 2026 production standards. • Commitment to attend live Weekday or Weekend classes, complete daily hands-on lab checklists, and practice topic-wise Mock Tests & AI Interviews.

2. DETAILED MODULE & TOPIC-WISE SYLLABUS (16 MODULES • 42 LIVE TOPICS)

MODULE 1 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Node.js Runtime Internals, Event Loop & Modern ES2024

Real-repository engineering module covering Node.js Runtime Internals, Event Loop & Modern ES2024 with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ V8 Heap, Call Stack, Libuv Threadpool, Microtasks & Backpressure Streams — Purpose: Process multi-gigabyte uploads and 20k concurrent sockets without blocking the event loop. • ✓ Async Concurrency Pools, AbortController, Worker Threads & Cluster Mode — Purpose: Utilize all CPU cores safely and cancel timed-out downstream I/O cleanly. • ✓ ESM Modules, Node Test Runner, Diagnostics Channel & Memory Leak Profiling — Purpose: Diagnose heap snapshots and flamegraphs before memory leaks hit production.

1.1 V8 Heap, Call Stack, Libuv Threadpool, Microtasks & Backpressure Streams [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply V8 Heap, Call Stack, Libuv Threadpool, Microtasks & Backpressure Streams in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

1.2 Async Concurrency Pools, AbortController, Worker Threads & Cluster Mode [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Async Concurrency Pools, AbortController, Worker Threads & Cluster Mode in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

1.3 ESM Modules, Node Test Runner, Diagnostics Channel & Memory Leak Profiling [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply ESM Modules, Node Test Runner, Diagnostics Channel & Memory Leak Profiling in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PER...

Module 1 Hands-On Capstone Project (100 Marks): High-Concurrency Node.js Stream & Worker Pool Engine Repo — Architect, implement, test, and push the production GitHub repository 'High-Concurrency Node.js Stream & Worker Pool Engine Repo' (strictly zero dummy scaffolding) demonstrating end-to-end m...

MODULE 2 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Strict TypeScript 5 & Production Data Structures

Real-repository engineering module covering Strict TypeScript 5 & Production Data Structures with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Strict Compiler Flags, Discriminated Unions, Generics & Utility Types — Purpose: Eliminate undefined runtime crashes across shared frontend and backend packages. • ✓ Runtime Boundary Validation with Zod, Branded Types & Monorepo Workspaces — Purpose: Guarantee single-source-of-truth contracts across API routes and UI forms. • ✓ TypeScript DSA Patterns (Sliding Window, Trees, Graphs, LRU & Heaps) — Purpose: Ace live JavaScript/TypeScript algorithmic coding rounds at top product companies.

2.1 Strict Compiler Flags, Discriminated Unions, Generics & Utility Types [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Strict Compiler Flags, Discriminated Unions, Generics & Utility Types in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sy...

2.2 Runtime Boundary Validation with Zod, Branded Types & Monorepo Workspaces [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Runtime Boundary Validation with Zod, Branded Types & Monorepo Workspaces in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN...

2.3 TypeScript DSA Patterns (Sliding Window, Trees, Graphs, LRU & Heaps) [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply TypeScript DSA Patterns (Sliding Window, Trees, Graphs, LRU & Heaps) in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sys...

Module 2 Hands-On Capstone Project (100 Marks): Zero-Any TypeScript 5 SDK, Schema Validator & DSA Repo — Architect, implement, test, and push the production GitHub repository 'Zero-Any TypeScript 5 SDK, Schema Validator & DSA Repo' (strictly zero dummy scaffolding) demonstrating end-to-end mast...

MODULE 3 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

React 19 Architecture, State Machines & High-FPS UI Engineering

Real-repository engineering module covering React 19 Architecture, State Machines & High-FPS UI Engineering with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ React 19 Rendering Fiber, Custom Hooks, Actions & Error Boundaries — Purpose: Compose modular, resilient UI trees with zero unnecessary re-renders. • ✓ TanStack Query Server State, Zustand Stores & Accessible Hook Forms — Purpose: Build instant optimistic mutations, offline retries, and keyboard-accessible workflows. • ✓ Virtualized Grids, Code Splitting, Core Web Vitals & Vitest + Testing Library — Purpose: Achieve 98+ Lighthouse scores and automated component regression coverage.

3.1 React 19 Rendering Fiber, Custom Hooks, Actions & Error Boundaries [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply React 19 Rendering Fiber, Custom Hooks, Actions & Error Boundaries in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) syste...

3.2 TanStack Query Server State, Zustand Stores & Accessible Hook Forms [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply TanStack Query Server State, Zustand Stores & Accessible Hook Forms in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) syst...

3.3 Virtualized Grids, Code Splitting, Core Web Vitals & Vitest + Testing Library [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Virtualized Grids, Code Splitting, Core Web Vitals & Vitest + Testing Library in real Node.js, TypeScript & Modern Full Stack Engineering (MERN /...

Module 3 Hands-On Capstone Project (100 Marks): Enterprise React 19 Component Library & SaaS Workspace Repo — Architect, implement, test, and push the production GitHub repository 'Enterprise React 19 Component Library & SaaS Workspace Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 4 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Next.js 15 App Router, Server Components & Full-Stack SSR/ISR

Real-repository engineering module covering Next.js 15 App Router, Server Components & Full-Stack SSR/ISR with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ React Server Components (RSC), Streaming Suspense & Dynamic Caching — Purpose: Deliver instant first-byte SEO pages while keeping sensitive tokens server-only. • ✓ Server Actions, Route Handlers, Edge Middleware & Metadata SEO — Purpose: Handle authenticated mutations, tenant subdomain routing, and dynamic OG tags. • ✓ Playwright End-to-End Browser Automation & Production Bundle Optimization — Purpose: Verify critical checkout and onboarding user flows across Chromium and mobile viewports.

4.1 React Server Components (RSC), Streaming Suspense & Dynamic Caching [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply React Server Components (RSC), Streaming Suspense & Dynamic Caching in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) syst...

4.2 Server Actions, Route Handlers, Edge Middleware & Metadata SEO [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Server Actions, Route Handlers, Edge Middleware & Metadata SEO in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) systems —...

4.3 Playwright End-to-End Browser Automation & Production Bundle Optimization [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Playwright End-to-End Browser Automation & Production Bundle Optimization in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN...

Module 4 Hands-On Capstone Project (100 Marks): Next.js 15 Multi-Tenant Storefront & Analytics Portal Repo — Architect, implement, test, and push the production GitHub repository 'Next.js 15 Multi-Tenant Storefront & Analytics Portal Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 5 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Express.js & NestJS Enterprise Backend Architecture

Real-repository engineering module covering Express.js & NestJS Enterprise Backend Architecture with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Express Middleware Pipelines vs NestJS Modules, Controllers & DI Providers — Purpose: Master both lightweight Express microservices and structured enterprise NestJS backends. • ✓ NestJS Guards, Interceptors, Pipes, Custom Decorators & OpenAPI Swagger — Purpose: Standardize validation, audit logging, response envelopes, and interactive API docs. • ✓ Clean Hexagonal Service Layers, Versioning & Graceful Shutdown Hooks — Purpose: Decouple business logic from transport layers for effortless testing and scaling.

5.1 Express Middleware Pipelines vs NestJS Modules, Controllers & DI Providers [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Express Middleware Pipelines vs NestJS Modules, Controllers & DI Providers in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PER...

5.2 NestJS Guards, Interceptors, Pipes, Custom Decorators & OpenAPI Swagger [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply NestJS Guards, Interceptors, Pipes, Custom Decorators & OpenAPI Swagger in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

5.3 Clean Hexagonal Service Layers, Versioning & Graceful Shutdown Hooks [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Clean Hexagonal Service Layers, Versioning & Graceful Shutdown Hooks in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sys...

Module 5 Hands-On Capstone Project (100 Marks): Modular NestJS + Express Clean-Architecture API Gateway Repo — Architect, implement, test, and push the production GitHub repository 'Modular NestJS + Express Clean-Architecture API Gateway Repo' (strictly zero dummy scaffolding) demonstrating end-to-en...

MODULE 6 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Dual-Database Mastery — PostgreSQL 16 (PERN) & MongoDB 7 (MERN)

Real-repository engineering module covering Dual-Database Mastery — PostgreSQL 16 (PERN) & MongoDB 7 (MERN) with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ PostgreSQL ACID Schemas, Prisma/Drizzle Type-Safe ORM & SQL Query Plans — Purpose: Store financial orders, subscriptions, and relational joins with strict ACID guarantees. • ✓ MongoDB 7 Document Modeling, Aggregation Pipelines & Compound Indexes — Purpose: Power flexible product catalogs, activity feeds, and sub-30ms faceted search. • ✓ Transactions, Cursor Pagination, Seed Migrations & Read/Write Benchmarking — Purpose: Choose and operate the exact right database engine for each microservice workload.

6.1 PostgreSQL ACID Schemas, Prisma/Drizzle Type-Safe ORM & SQL Query Plans [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply PostgreSQL ACID Schemas, Prisma/Drizzle Type-Safe ORM & SQL Query Plans in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

6.2 MongoDB 7 Document Modeling, Aggregation Pipelines & Compound Indexes [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply MongoDB 7 Document Modeling, Aggregation Pipelines & Compound Indexes in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sy...

6.3 Transactions, Cursor Pagination, Seed Migrations & Read/Write Benchmarking [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Transactions, Cursor Pagination, Seed Migrations & Read/Write Benchmarking in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PER...

Module 6 Hands-On Capstone Project (100 Marks): Hybrid PostgreSQL Ledger + MongoDB Catalog Persistence Repo — Architect, implement, test, and push the production GitHub repository 'Hybrid PostgreSQL Ledger + MongoDB Catalog Persistence Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 7 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Authentication, Zero-Trust RBAC & OWASP API Security

Real-repository engineering module covering Authentication, Zero-Trust RBAC & OWASP API Security with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Argon2 Password Hashing, Rotating HttpOnly Refresh Cookies & Passkeys/OAuth2 — Purpose: Eliminate XSS token exfiltration and support enterprise SSO sign-in flows. • ✓ Multi-Tenant Organization RBAC, Policy Guards & Audit Event Trails — Purpose: Isolate B2B customer workspaces with cryptographic and database-level checks. • ✓ CSRF/XSS/CSP Headers, HMAC Webhook Verification & Input Sanitization — Purpose: Harden Node.js & Next.js apps against OWASP Top-10 web and API attacks.

7.1 Argon2 Password Hashing, Rotating HttpOnly Refresh Cookies & Passkeys/OAuth2 [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Argon2 Password Hashing, Rotating HttpOnly Refresh Cookies & Passkeys/OAuth2 in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / P...

7.2 Multi-Tenant Organization RBAC, Policy Guards & Audit Event Trails [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Multi-Tenant Organization RBAC, Policy Guards & Audit Event Trails in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) syste...

7.3 CSRF/XSS/CSP Headers, HMAC Webhook Verification & Input Sanitization [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply CSRF/XSS/CSP Headers, HMAC Webhook Verification & Input Sanitization in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sys...

Module 7 Hands-On Capstone Project (100 Marks): Rotating HttpOnly JWT, OAuth2 & Multi-Tenant RBAC Auth Repo — Architect, implement, test, and push the production GitHub repository 'Rotating HttpOnly JWT, OAuth2 & Multi-Tenant RBAC Auth Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 8 OF 16 • 30 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Redis 7 Caching, BullMQ Job Queues & Real-Time WebSockets

Real-repository engineering module covering Redis 7 Caching, BullMQ Job Queues & Real-Time WebSockets with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Redis 7 Cache-Aside, Stampede Protection & Atomic Lua Rate Limiters — Purpose: Protect primary databases from flash-sale spikes and abusive API bursts. • ✓ BullMQ Distributed Worker Queues, Retries, Delayed Jobs & Dead-Lettering — Purpose: Process invoice PDFs, email sequences, and media transcodes asynchronously. • ✓ WebSockets & Socket.IO Rooms, Presence Sync & Redis Pub/Sub Horizontal Scale — Purpose: Broadcast live cursors, chat messages, and order updates across multiple Node instances.

8.1 Redis 7 Cache-Aside, Stampede Protection & Atomic Lua Rate Limiters [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Redis 7 Cache-Aside, Stampede Protection & Atomic Lua Rate Limiters in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) syst...

8.2 BullMQ Distributed Worker Queues, Retries, Delayed Jobs & Dead-Lettering [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply BullMQ Distributed Worker Queues, Retries, Delayed Jobs & Dead-Lettering in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

8.3 WebSockets & Socket.IO Rooms, Presence Sync & Redis Pub/Sub Horizontal Scale [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply WebSockets & Socket.IO Rooms, Presence Sync & Redis Pub/Sub Horizontal Scale in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / P...

Module 8 Hands-On Capstone Project (100 Marks): Socket.IO Live Collaboration + Redis BullMQ Event Engine Repo — Architect, implement, test, and push the production GitHub repository 'Socket.IO Live Collaboration + Redis BullMQ Event Engine Repo' (strictly zero dummy scaffolding) demonstrating end-to-e...

MODULE 9 OF 16 • 30 LIVE + LAB HOURS • 2 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Automated Testing — Unit, Supertest Integration & Testcontainers

Real-repository engineering module covering Automated Testing — Unit, Supertest Integration & Testcontainers with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Unit & Contract Testing Services, Mocks & Boundary Edge Cases — Purpose: Refactor complex TypeScript business rules fearlessly with sub-second test feedback. • ✓ Supertest API Suites Against Real Dockerized Postgres, Mongo & Redis — Purpose: Catch SQL/Mongo constraint and auth bugs automatically on every pull request.

9.1 Unit & Contract Testing Services, Mocks & Boundary Edge Cases [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Unit & Contract Testing Services, Mocks & Boundary Edge Cases in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) systems —...

9.2 Supertest API Suites Against Real Dockerized Postgres, Mongo & Redis [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Supertest API Suites Against Real Dockerized Postgres, Mongo & Redis in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sys...

Module 9 Hands-On Capstone Project (100 Marks): 95%-Coverage Vitest + Supertest + Testcontainers Quality Repo — Architect, implement, test, and push the production GitHub repository '95%-Coverage Vitest + Supertest + Testcontainers Quality Repo' (strictly zero dummy scaffolding) demonstrating end-to-e...

MODULE 10 OF 16 • 30 LIVE + LAB HOURS • 2 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Docker Containerization & Multi-Service Compose Topologies

Real-repository engineering module covering Docker Containerization & Multi-Service Compose Topologies with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Multi-Stage Alpine/Distroless Dockerfiles, pnpm Layer Caching & Non-Root — Purpose: Cut Node.js & Next.js production image sizes from 1.1GB down to ~95MB. • ✓ Docker Compose Networks, Healthchecks, Secrets & Nginx Reverse Proxy TLS — Purpose: Boot the complete PERN/MERN + Redis stack locally or on staging in one command.

10.1 Multi-Stage Alpine/Distroless Dockerfiles, pnpm Layer Caching & Non-Root [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Multi-Stage Alpine/Distroless Dockerfiles, pnpm Layer Caching & Non-Root in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

10.2 Docker Compose Networks, Healthchecks, Secrets & Nginx Reverse Proxy TLS [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Docker Compose Networks, Healthchecks, Secrets & Nginx Reverse Proxy TLS in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

Module 10 Hands-On Capstone Project (100 Marks): Multi-Stage Node 22 + Next.js Standalone Docker Stack Repo — Architect, implement, test, and push the production GitHub repository 'Multi-Stage Node 22 + Next.js Standalone Docker Stack Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 11 OF 16 • 30 LIVE + LAB HOURS • 2 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

AWS Cloud Deployment, CDN Edge & Infrastructure Automation

Real-repository engineering module covering AWS Cloud Deployment, CDN Edge & Infrastructure Automation with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ AWS VPC Subnets, IAM OIDC Roles, EC2/ECS Fargate & Application Load Balancers — Purpose: Deploy auto-healing Node.js and Next.js containers behind managed AWS load balancers. • ✓ Amazon S3 Multipart Uploads, CloudFront HTTPS CDN, Route 53 & RDS/Atlas — Purpose: Serve global assets from edge locations with encrypted managed cloud databases.

11.1 AWS VPC Subnets, IAM OIDC Roles, EC2/ECS Fargate & Application Load Balancers [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply AWS VPC Subnets, IAM OIDC Roles, EC2/ECS Fargate & Application Load Balancers in real Node.js, TypeScript & Modern Full Stack Engineering (MERN /...

11.2 Amazon S3 Multipart Uploads, CloudFront HTTPS CDN, Route 53 & RDS/Atlas [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Amazon S3 Multipart Uploads, CloudFront HTTPS CDN, Route 53 & RDS/Atlas in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN)...

Module 11 Hands-On Capstone Project (100 Marks): AWS VPC, ALB, ECS/EC2, RDS, S3 & CloudFront Production Repo — Architect, implement, test, and push the production GitHub repository 'AWS VPC, ALB, ECS/EC2, RDS, S3 & CloudFront Production Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 12 OF 16 • 30 LIVE + LAB HOURS • 2 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

CI/CD Pipelines, Security Scanning & Zero-Downtime Releases

Real-repository engineering module covering CI/CD Pipelines, Security Scanning & Zero-Downtime Releases with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ GitHub Actions Typecheck/Lint/Test Matrix, Container Registry & OIDC Deploy — Purpose: Ship verified commits from Git push to live HTTPS cloud automatically. • ✓ NPM Supply-Chain Audits, Trivy Image Scans & Rollback Automation — Purpose: Block vulnerable dependencies and recover from bad releases in under 30 seconds.

12.1 GitHub Actions Typecheck/Lint/Test Matrix, Container Registry & OIDC Deploy [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply GitHub Actions Typecheck/Lint/Test Matrix, Container Registry & OIDC Deploy in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PE...

12.2 NPM Supply-Chain Audits, Trivy Image Scans & Rollback Automation [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply NPM Supply-Chain Audits, Trivy Image Scans & Rollback Automation in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) systems...

Module 12 Hands-On Capstone Project (100 Marks): GitHub Actions Matrix CI/CD, Trivy & Blue-Green Release Repo — Architect, implement, test, and push the production GitHub repository 'GitHub Actions Matrix CI/CD, Trivy & Blue-Green Release Repo' (strictly zero dummy scaffolding) demonstrating end-to-en...

MODULE 13 OF 16 • 30 LIVE + LAB HOURS • 2 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Observability, Performance Profiling & System Design Interviews

Real-repository engineering module covering Observability, Performance Profiling & System Design Interviews with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Pino Structured JSON Logs, OpenTelemetry Traces, Prometheus & Sentry — Purpose: Correlate frontend user clicks through NestJS APIs and SQL/Mongo queries. • ✓ MERN / PERN Full-Stack System Design (HLD + LLD) & Live Coding Prep — Purpose: Architect scalable chat, notification, e-commerce, and SaaS systems in interviews.

13.1 Pino Structured JSON Logs, OpenTelemetry Traces, Prometheus & Sentry [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Pino Structured JSON Logs, OpenTelemetry Traces, Prometheus & Sentry in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) sys...

13.2 MERN / PERN Full-Stack System Design (HLD + LLD) & Live Coding Prep [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply MERN / PERN Full-Stack System Design (HLD + LLD) & Live Coding Prep in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN) syst...

Module 13 Hands-On Capstone Project (100 Marks): OpenTelemetry + Pino Structured Logs + Grafana Metrics Repo — Architect, implement, test, and push the production GitHub repository 'OpenTelemetry + Pino Structured Logs + Grafana Metrics Repo' (strictly zero dummy scaffolding) demonstrating end-to-end...

MODULE 14 OF 16 • 30 LIVE + LAB HOURS • 2 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Live Client Production Capstone & ≥90% Placement Guarantee Gate

Real-repository engineering module covering Live Client Production Capstone & ≥90% Placement Guarantee Gate with supervised live coding, ≥90% AI Mock Gates, and production GitHub PR verification.

Objectives: ✓ Live Client Production Cutover, Load Testing & Mentor Code-Review Sign-Off — Purpose: Deploy ScaleFlow live on HTTPS cloud infrastructure and earn your Internship Letter. • ✓ ≥90% Mock + Voice AI Gate Completion & 6-Month 100-Opening Placement Launch — Purpose: Verify ≥90% across all assessments to activate 100+ curated job openings over 6 months.

14.1 Live Client Production Cutover, Load Testing & Mentor Code-Review Sign-Off [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Live Client Production Cutover, Load Testing & Mentor Code-Review Sign-Off in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PER...

14.2 ≥90% Mock + Voice AI Gate Completion & 6-Month 100-Opening Placement Launch [90 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply ≥90% Mock + Voice AI Gate Completion & 6-Month 100-Opening Placement Launch in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PE...

Module 14 Hands-On Capstone Project (100 Marks): ScaleFlow Dual-DB Live Client Production & Placement Audit Repo — Architect, implement, test, and push the production GitHub repository 'ScaleFlow Dual-DB Live Client Production & Placement Audit Repo' (strictly zero dummy scaffolding) demonstrating end-to...

MODULE 15 OF 16 • 14 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Enterprise NestJS Modular Monolith / Microservices, Dual-DB & BullMQ Queues

Self-explanatory list-and-bullet production mastery module covering Enterprise NestJS Modular Monolith / Microservices, Dual-DB & BullMQ Queues in Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN), paired with hands-on labs, capstone repository, Topic Mock Tests, and Spoken Gemini AI Viva.

Objectives: ✓ NestJS Domain Modules, Guards, Interceptors, Zod/Class-Validator DTOs & OpenAPI — Purpose: Enforce clean architectural boundaries and 100% typed contracts across large TypeScript teams. • ✓ Dual-Database Mastery: Transactional PostgreSQL Ledgers + High-Write MongoDB Streams — Purpose: Use ACID relational tables and flexible document collections together where each excels. • ✓ BullMQ Redis Job Pipelines, WebSockets Gateways & Sliding-Window Rate Limiting — Purpose: Process retries, scheduled jobs, and live collaborative events reliably at scale. • ✓ Build, verify, and document 'Type-Safe NestJS + PostgreSQL + MongoDB + Redis BullMQ Event Engine Repository' with clean Git commits and edge-case protection. • ✓ Clear 100% of Topic Timed Mock Tests and Spoken Voice + Google Gemini AI Technical Interviews.

15.1 NestJS Domain Modules, Guards, Interceptors, Zod/Class-Validator DTOs & OpenAPI [65 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply NestJS Domain Modules, Guards, Interceptors, Zod/Class-Validator DTOs & OpenAPI in real Node.js, TypeScript & Modern Full Stack Engineering (MERN...

15.2 Dual-Database Mastery: Transactional PostgreSQL Ledgers + High-Write MongoDB Streams [65 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Dual-Database Mastery: Transactional PostgreSQL Ledgers + High-Write MongoDB Streams in real Node.js, TypeScript & Modern Full Stack Engineering (...

15.3 BullMQ Redis Job Pipelines, WebSockets Gateways & Sliding-Window Rate Limiting [65 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply BullMQ Redis Job Pipelines, WebSockets Gateways & Sliding-Window Rate Limiting in real Node.js, TypeScript & Modern Full Stack Engineering (MERN /...

Module 15 Hands-On Capstone Project (100 Marks): Type-Safe NestJS + PostgreSQL + MongoDB + Redis BullMQ Event Engine Repository — Architect, implement, test, and document 'Type-Safe NestJS + PostgreSQL + MongoDB + Redis BullMQ Event Engine Repository' applying every bullet-wise engineering concept from Module 15 (Enter...

MODULE 16 OF 16 • 14 LIVE + LAB HOURS • 3 TOPICS • 1 CAPSTONE PROJECT (100 MARKS)

Next.js 15 App Router, Cloud CI/CD & ≥90% Placement Gate System Design

Self-explanatory list-and-bullet production mastery module covering Next.js 15 App Router, Cloud CI/CD & ≥90% Placement Gate System Design in Node.js, TypeScript & Modern Full Stack Engineering (MERN / PERN), paired with hands-on labs, capstone repository, Topic Mock Tests, and Spoken Gemini AI Viva.

Objectives: ✓ Next.js 15 Server Components, Streaming Suspense, Caching & Core Web Vitals Tuning — Purpose: Ship SEO-dominant, fast-hydrating full-stack TypeScript web platforms. • ✓ Playwright/Vitest Automated Suites, Multi-Stage Dockerfiles & AWS HTTPS CI/CD — Purpose: Gate every pull request with automated E2E/API tests and zero-downtime cloud deploys. • ✓ MERN/PERN Full Stack System Design, Live Machine Coding & Placement Defense — Purpose: Ace live React/Next.js machine coding, Node event-loop deep dives, and system design rounds. • ✓ Build, verify, and document 'Next.js 15 RSC + Server Actions + NestJS Docker AWS Production Repository' with clean Git commits and edge-case protection. • ✓ Clear 100% of Topic Timed Mock Tests and Spoken Voice + Google Gemini AI Technical Interviews.

16.1 Next.js 15 Server Components, Streaming Suspense, Caching & Core Web Vitals Tuning [65 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Next.js 15 Server Components, Streaming Suspense, Caching & Core Web Vitals Tuning in real Node.js, TypeScript & Modern Full Stack Engineering (ME...

16.2 Playwright/Vitest Automated Suites, Multi-Stage Dockerfiles & AWS HTTPS CI/CD [65 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply Playwright/Vitest Automated Suites, Multi-Stage Dockerfiles & AWS HTTPS CI/CD in real Node.js, TypeScript & Modern Full Stack Engineering (MERN /...

16.3 MERN/PERN Full Stack System Design, Live Machine Coding & Placement Defense [65 mins • Assignment (100M) • Hands-On Lab (50M) • 2 Mock Sets • 2 AI Vivas]

Purpose: To understand and apply MERN/PERN Full Stack System Design, Live Machine Coding & Placement Defense in real Node.js, TypeScript & Modern Full Stack Engineering (MERN / PE...

Module 16 Hands-On Capstone Project (100 Marks): Next.js 15 RSC + Server Actions + NestJS Docker AWS Production Repository — Architect, implement, test, and document 'Next.js 15 RSC + Server Actions + NestJS Docker AWS Production Repository' applying every bullet-wise engineering concept from Module 16 (Next.js 15...

3. LIVE CLIENT PRODUCTION PROJECT, GLOBAL CERTIFICATIONS & CAREER SCOPE

End-of-Course Live Client Production Project + Official Internship Confirmation Letter

Project: ScaleFlow Dual-Database (PERN + MERN) Real-Time Commerce, Billing & Collaboration Cloud • **Confirmed Role:** Full Stack Node.js, NestJS, Next.js 15 & Cloud Engineering Resident

Domain & Production Infra: High-Growth B2B SaaS & Real-Time Commerce Client (Node.js 22 + NestJS + TypeScript 5 + Next.js 15 + PostgreSQL + MongoDB + Redis + AWS)

- Built modular NestJS & Express TypeScript APIs backed by PostgreSQL ACID ledgers and MongoDB catalog aggregations.
- Engineered Next.js 15 & React 19 Server/Client interfaces with WebSockets live sync and optimistic mutations.
- Implemented rotating HttpOnly JWT security, Redis Lua sliding-window rate limiters, and BullMQ background queues.
- Shipped containerized multi-service builds via GitHub Actions CI/CD onto AWS ALB + ECS/EC2 HTTPS infrastructure.

Aligned Global Vendor Certifications: **JSNAD** (OpenJS Node.js Application Developer (JSNAD)) • **JSNSD** (OpenJS Node.js Services Developer (JSNSD)) • **META-FE** (Meta Certified Front-End & React Developer Credential) • **C100DEV** (MongoDB Certified Associate Developer) • **DVA-C02** (AWS Certified Developer – Associate)

Target Job Roles: Full Stack Engineer — MERN / PERN (TypeScript), Next.js 15 & Node.js / NestJS Product Engineer, Software Development Engineer — Full Stack, Backend & Real-Time Systems Developer

Realistic Annual CTC Scope: **Placement-Guaranteed Graduate / SDE-1 (0–1 Yr):** ₹6.0 LPA – ₹13.5 LPA **Senior Full Stack TypeScript SDE-2 (1–3 Yrs):** ₹14.0 LPA – ₹27.0 LPA **Staff Full Stack & Cloud Architect (3–6+ Yrs):** ₹28.0 LPA – ₹54.0+ LPA

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