**<https://www.notion.so/BanoQabil-4-0-Web3-Backend-Development-with-Node-JS-23ad2ad3414a803cbecff9209893b0de?source=copy_link>**

**✅ 1. Basics of Backend & Node.js**

* What is Backend? Role in MERN
* Node.js fundamentals
  + Modules (CommonJS, ES6)
  + fs, http, path modules
  + npm/yarn, scripts

**✅ 2. Express.js Framework**

* Routing (GET, POST, PUT, DELETE)
* Middleware (custom, built-in, third-party)
* Error handling
* Serving static files
* MVC folder structure

**✅ 3. MongoDB + Mongoose**

* MongoDB basics (CRUD, indexes, documents)
* Compass or MongoDB Atlas usage
* Mongoose:
  + Schemas & Models
  + Data validation
  + Relationships (populate, refs)

**✅ 4. API Development (RESTful)**

* Route setup
* CRUD operations
* Request/response lifecycle
* Status codes & error responses
* Route grouping with Routers

**✅ 5. Authentication & Authorization**

* Password hashing (bcryptjs)
* Login/Signup API
* JWT tokens & middleware
* Protecting routes
* Role-based access (admin/user)

**✅ 6. Advanced MongoDB & Express**

* Query filtering, pagination, sorting
* Aggregation pipelines
* File upload with Multer or Cloudinary
* Nested routes & param middleware

**✅ 7. Deployment**

* Environment variables with dotenv
* Deployment to:
  + **Render / Railway** for backend
  + **MongoDB Atlas** for database
  + **Netlify / Vercel** for React frontend
* CORS handling
* GitHub for version control

**✅ 8. Bonus (Optional but Valuable)**

* Email sending (Nodemailer)
* Payment integration (Stripe)
* Real-time with WebSocket / Socket.IO
* Rate limiting, Helmet for security
* Docker (basic understanding)