Back-end Development (BCA 5th Sem)

| **Week** | **Dates (Mon–Tue–Sat)** | **Topics Covered** |
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| 1 | Jul 22, 23, 26 | Introduction to Backend Development: Overview of backend, Client-server architecture, Introduction to web servers and database |
| 2 | Jul 28, 29, Aug 2 | Introduction to databases and DBMS (SQL and NoSQL), Relational vs Non-relational models, Basic DBMS concepts |
| 3 | Aug 4, 5, 9 | Designing a database schema, CRUD operations (Create, Read, Update, Delete) |
| 4 | Aug 11, 12, 16 | Connecting applications to a database, Practice CRUD operations with sample app |
| 5 | Aug 18, 19, 23 | Programming Languages & Tools: Introduction to Node.js, Syntax and semantics of Node.js |
| 6 | Aug 25, 26, 30 | Writing and executing basic server-side scripts, Introduction to IDEs |
| 7 | Sep 1, 2, 6 | Version control with Git, Git workflow and commands |
| 8 | Sep 8, 9, 13 | GitHub integration, Collaborative coding practices |
| 9 | Sep 15, 16, 20 | Performance Optimization: Caching strategies |
| 10 | Sep 27,29 | Query optimization, Secure coding principles |
| 11 | Sep 30, Oct 4 | Web Security: SQL injection prevention, XSS and CSRF overview |
| 12 | Oct 6, 7, 11 | Web security best practices, Hands-on vulnerability testing |
| 13 | Oct 13, 14, 18 | Server-Side Frameworks: Introduction to Express.js, Setting up a project |
| 14 | Oct 20, 21, 25 | Routing and middleware in Express.js, Building a simple app |
| 15 | Oct 27, 28, Nov 1 | API Development: RESTful API concepts, Designing endpoints |
| 16 | Nov 3, 4, 8 | Documenting APIs, Authentication basics |
| 17 | Nov 10, 11, 15 | Authorization strategies |
| 18 | Nov 17, 18, 22,24 | Revision |