# Course Specification
## (Bachelor)

| | |
|---|---|
| **Course Title:** | Internet application development |
| **Course Code:** | 266CIS-3 |
| **Program:** | Programming and Database |
| **Department:** | Computer Department |
| **College:** | Applied College |
| **Institution:** | Najran University |
| **Version:** | TP-153 20274 |
| **Last Revision Date:** | 12 Dec. 2025 |

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## A. General information about the course:

### 1. Course Identification

| | | | | | |
|---|---|---|---|---|---|
| **1. Credit hours: ( ..... )** | | | | | |
| 3H (2+1) | | | | | |
| **2. Course type** | | | | | |
| **A.** | ☐University | ☐College | ☒ Department | ☐Track | ☐Others |
| **B.** | ☒ Required | | ☐Elective | | |
| **3. Level/year at which this course is offered: ( .....)** | | | | | |
| Second Year, Level 4 | | | | | |
| **4. Course General Description:** | | | | | |
| The Internet Application Development course aims to provide students with the theoretical knowledge and practical skills necessary to design, develop, and build dynamic and modern web applications using contemporary web technologies. The course focuses on the fundamental aspects of web development from both the Front-End and Back-End perspectives, with an emphasis on connecting applications to databases and building integrated Full-Stack Web Applications. | | | | | |
| **5. Pre-requirements for this course** (if any)**:** | | | | | |
| 286CSI-3 Web sites programming and designing | | | | | |
| **6. Co-requisites for this course** (if any)**:** | | | | | |
| None | | | | | |
| **7. Course Main Objective(s):** | | | | | |

- Understand the fundamental and advanced concepts of internet application development and modern web application architecture.
- Use Front-End languages and web technologies to build effective interactive interfaces.
- Develop Back-End applications and handle various software modules and services.
- Design and connect NoSQL databases and efficiently execute CRUD operations.
- Handle the development of a complete Full-Stack web application that meets practical requirements similar to those applied in the labor market.

## 2. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom | 4 Hours per Week | 100% |
| 2 | E-learning | | |
| 3 | Hybrid<br>• Traditional classroom<br>• E-learning | | |
| 4 | Distance learning | | |

## 3. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | **Lectures** | 30 |
| 2. | **Laboratory/Studio** | 30 |
| 3. | **Field** | |
| 4. | **Tutorial** | |
| 5. | **Others (specify)** | |
| **Total** | | 60 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| **1.0** | **Knowledge and understanding** | | | |
| 1.1 | **Explain the fundamental concepts of internet application development and the functions of Front-End languages.** | **K1** | Lecture<br>Discussion | Directed<br>Methods:<br>- Exams<br>- Assignments<br>- Quizzes |
| 1.2 | **Identify the essential features and main functions** | **K2** | | |

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| | **of Back-End languages and NoSQL databases.** | | | |
| **2.0** | **Skills** | | | |
| 2.1 | **Apply programming skills to develop dynamic web applications using Front-End and Back-End languages** | **S4** | •Lecture<br>•Discussion<br>•Lab work<br>•Brainstorming | Directed Methods:<br>- Exams<br>- Assignments<br>- Quizzes |
| 2.2 | **Design and implement a Back-End interface connected to a NoSQL database and execute CRUD operations** | **S4** | | |
| **3.0** | **Values, autonomy, and responsibility** | | | |
| 3.1 | **Take responsibility for effective time management to ensure meeting the deadlines for course deliverables** | **V1** | **Milestone-based Structure** | **Directed Methods: LMS & Version Control Logs** |
| 3.2 | | | | |
| ... | | | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | **JavaScript**<br>• Introduction, JavaScript Where To<br>• JavaScript Output, Statements, Comments<br>• Variables, Let, Const | 4 |
| 2. | **JavaScript**<br>• Operators, Data Types<br>• Functions, Objects<br>• This, Events | 4 |

| | | |
|---|---|---|
| 3. | **JavaScript**<br>• Template Literals<br>Arrays, Array Methods, Sorting Arrays | 4 |
| 4. | **JavaScript**<br>• if, else, and else if<br>• Switch<br>• For Loop, For In<br>• break | 4 |
| 5. | **Node.js**<br>• Introduction, Install<br>Node.js File | 2 |
| 6. | **Node.js**<br>• Modules<br>• HTTP Module<br>• File System Module<br>• URL Module<br>• NPM | 8 |
| 7. | **Mid Term Exam** | 1 |
| 8. | **MongoDB**<br>• Introduction, Install<br>• SQL vs Document Databases<br>• Connect to MongoDB database.<br>• Connect to the database<br>• MongoDB Query API | 6 |
| 9. | **MongoDB**<br>• Create Database and Collection<br>• Insert<br>• Find, Querying Data, Projection<br>• Update<br>• Delete<br>• Query Operators, Update Operators<br>• MongoDB Drivers | 8 |
| 10. | **Using MongoDB with Node.js**<br>• Installing mongodb package<br>• Promise function<br>• Use package to connect to a MongoDB database<br>• CRUD | 8 |
| 11. | **Creating Full-stack Web applications**<br>• Introduction to Next.js<br>• Creating web App<br>• Next.js Project Structure<br>• File Conventions<br>• Routing Fundamentals | 7 |
| 12. | **Lab Exam** | 2 |
| 13. | **Review** | 2 |
| **Total** | | **60** |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Midterm exam | 8 | 20% |
| 2. | Homework's | From 4 to 11 | 10% |
| 3. | Practical exam | 15 | 20% |
| 4. | Final exam | 16 | 50% |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| **Essential References** | Martin Krause, The Complete Developer, Master the Full Stack with TypeScript, React, Next.js, MongoDB, and Docker, No Starch Press (RHPS), 2024, ISBN-13: 9781718503281 |
| **Supportive References** | |
| **Electronic Materials** | • https://www.w3schools.com/<br>• https://nodejs.org/docs/latest/api/<br>• https://www.mongodb.com/docs/<br>• https://nextjs.org/docs |
| **Other Learning Materials** | Working with MongoDB in vscode<br>https://code.visualstudio.com/docs/azure/mongodb |

### 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| **facilities**<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | • Computer lab equipped with a sufficient number of Desktop or laptop computers with specifications suitable for running development environments<br>• Internet |
| **Technology equipment**<br>(projector, smart board, software) | • Whiteboard<br>• Projector<br>• Software: Code editors such as Visual Studio Code. Node.js and NPM environments. MongoDB database. Modern browsers (Chrome, Firefox). |
| **Other equipment**<br>(depending on the nature of the specialty) | None |

## F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Student | Direct: Questioners |
| Effectiveness of Students assessment | • Teacher<br>• Audit and review committees | • Direct: CW & HW<br>• Exercises and short quizzes<br>• Projects<br>• Mid and final paper exams. |
| Quality of learning resources | Teachers and course description committees | • Indirect: Benchmarking<br>• Self-evaluation<br>• External evaluation |
| The extent to which CLOs have been achieved | Teacher | Direct: Measuring the learning outcomes |
| Other | | |

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

## G. Specification Approval

| | |
|---|---|
| COUNCIL /COMMITTEE | |
| REFERENCE NO. | |
| DATE | |