# CS 255 Module Two Assignment Template

## Functional Requirements

| **Functional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| 1. **User Authentication & Role-Based Access Control** | The LMS must allow secure login for students, instructors, and administrators with different permission levels. This ensures data security and prevents unauthorized access. | Educause. (2021). *Learning Management Systems (LMS)*. <https://library.educause.edu/topics/teaching-and-learning/learning-management-systems-lms> |
| **2. Course Content Management** | Instructors should be able to upload, organize, and update course materials (videos, PDFs, quizzes). This ensures students have access to structured learning resources. | Blackboard. (2023). *Course Content Management*. <https://www.blackboard.com/teaching-learning/learning-management> |
| **3. Assignment Submission & Grading** | Students should submit assignments digitally, and instructors should be able to grade and provide feedback within the LMS. This streamlines the assessment process. | Canvas. (2023). Assignment Features. https://www.instructure.com/canvas |
| **4. Discussion Forums & Communication Tools** | The system should include discussion boards, announcements, and messaging to facilitate student-instructor interaction. This enhances engagement in online learning. | Moodle. (2023). *Communication Tools*. <https://docs.moodle.org/> |
| **5. Gradebook & Progress Tracking** | Students and instructors should be able to view grades and track academic progress. This transparency helps students stay on track. | Brightspace. (2023). *Gradebook Features*. <https://www.d2l.com/brightspace/> |
| **6. Integration with External Tools (Zoom, Google Drive** | The LMS should support third-party integrations for video conferencing and cloud storage. This improves functionality and user experience. | Educause. (2021). *LMS Integration Capabilities*. <https://library.educause.edu/> |

## Nonfunctional Requirements

| **Nonfunctional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| **1. System Availability (99.9% Uptime)** | The LMS should be accessible at all times, minimizing downtime for users across different time zones. | Amazon Web Services. (2023). *High Availability Systems*. <https://aws.amazon.com/> |
| **2. Data Security & Encryption (SSL/TLS, FERPA Compliance)** | Student and instructor data must be protected against breaches, complying with educational privacy laws. | U.S. Department of Education. (2023). *FERPA Compliance*. <https://www2.ed.gov/> |
| **3. Scalability (Supports 10,000+ Users)** | The system should handle increasing user loads without performance degradation. | Microsoft Azure. (2023). *Scalability in Cloud Systems*. <https://azure.microsoft.com/> |
| **4. Mobile Responsiveness (iOS & Android Compatibility)** | The LMS should work seamlessly on smartphones and tablets for on-the-go learning. | Google. (2023). *Mobile-First Design*. <https://developers.google.com/> |
| **5. Fast Load Times (<3 Seconds per Page)** | Slow performance frustrates users; fast loading improves engagement. | Akamai. (2023). *Web Performance Optimization*. <https://www.akamai.com/> |
| **6. Regular Automated Backups (Daily Cloud Backups)** | Prevents data loss in case of system failures or cyberattacks. | IBM. (2023). *Data Backup Solutions*. <https://www.ibm.com/> |

## Assumptions

| **Assumption** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| **1. Users have basic computer literacy.** | Since the LMS is for online learning, students and faculty are expected to navigate digital platforms. | Pew Research Center. (2021). *Digital Literacy Trends*. <https://www.pewresearch.org/> |
| **2. The university provides IT support.** | Technical issues may arise, so an IT help desk is necessary for troubleshooting. | Educause. (2021). *IT Support in Higher Ed*. <https://library.educause.edu/> |

## Limitations

| **Limitation** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| **1. Limited offline functionality.** | Most LMS features require an internet connection, which may be a barrier for users with poor connectivity. | World Bank. (2022). *Global Internet Access*. <https://www.worldbank.org/> |
| **2. Dependence on third-party integrations.** | Some features (like Zoom) rely on external services, which may have their own downtime or restrictions. | Gartner. (2023). *Third-Party Software Risks*. <https://www.gartner.com/> |