# CS 255 Module Two Assignment Template

## Functional Requirements

| **Functional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
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| 1. Course Management- Teachers will be able to upload, organize, and manage course content, including documents, slides, and external links. | The LMS will allow instructors to upload, organize, and manage course contents, including documents, slides, videos, presentations, and external links. | ScienceDirect. (n.d.). *Learning Management System*. Retrieved from <https://www.sciencedirect.com/topics/computer-science/learning-management-system> |
| 1. Discussion Forums: The LMS shall provide discussion forums for students and instructors to utilize asynchronous discussions, facilitating collaboration and sharing of knowledge and skills. | Discussion forums fosters active learning and peer interaction. They allow students to reflect on course materials and engage in meaningful dialogue | Al-Rahmi, W. M., Yahaya, N., Aldraiweesh, A. A., Alamri, M. M., Aljarodi, M. A., & Kustiawan, R. (2021). Use of Discussion Forums in Online Learning Environments. International Journal of Emerging Technologies in Learning (iJET), 16(04), 164-177. Retrieved from <https://www.researchgate.net/publication/350124166_Use_of_Discussion_Forums_in_Online_Learning_Environments> |
| 1. Online Quizzes and Assessments/tests: The LMS must be able to support generate and administer online quizzes and assessments, including multiple-choice questions, true/false, and essay questions. | * Online assessments provide instant feedback to students learners and reduce the administrative workload of grading. * To allow students to check their knowledge and progress in a subject, so that they can adapt their learning as necessary. * To provide an opportunity for students to **develop** their learning **during** the process of the assessment. | University of Melbourne. (n.d.). Using LMS quizzes for formative assessment. Retrieved from <https://le.unimelb.edu.au/news/articles/using-lms-quizzes-for-formative-assessment> |
| 1. Submission of assignments and Grading: The LMS must be able to facilitate the submission of assignments electronically and instructors to grade them with feedback, including rubrics and and comments. | Submission of assignments electronically saves grading efforts, reduces paper consumption, and improves delivery of feedback. The use of rubrics ensures consistency in grading. | >Blackboard. (n.d.). Grading Assignments. Retrieved from [https://help.blackboard.com/Learn/Instructor/Assignments/Grade\_Assignments](https://www.google.com/search?q=https://help.blackboard.com/Learn/Instructor/Assignments/Grade_Assignments)<br> Bates, A.W. (2019). Teaching in a digital age: Guidelines for designing teaching and learning. Tony Bates Associates Ltd. Retrieved from [https://pressbooks.bccampus.ca/teachinginadigitalagev2/https://pressbooks.bccampus.ca/teachinginadigitalagev2/](https://pressbooks.bccampus.ca/teachinginadigitalagev2/) |
| Communication Tools (Messaging, Announcements): The LMS shall provide communication tools, including internal messaging and announcements, to facilitate communication between instructors and students and also to enhance collaboration within the learning environmen.t | Proper communication is crucial to an effective learning environment. Internal messaging provides private communication, and announcements ensure that all the students are aware about the important updates. | Elearning Industry. (n.d.). Enhancing Collaboration and Communication with Learning Management System. Retrieved from <https://elearningindustry.com/enhancing-collaboration-and-communication-with-learning-management-system> |
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## Nonfunctional Requirements

| **Nonfunctional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
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| 1. 1. Performance and Scalability: The LMS shall handle a large number of concurrent users and maintain a response time of less than 2 seconds for all critical functions. | High performance and scalability are central to a positive user experience, especially during periods of peak usage | Nielsen, J. (1993). *Usability engineering*. Academic Press.<br>Smith, C. U., & Williams, L. G. (2001). *Performance solutions: A practical guide to creating responsive, scalable, and available IT systems*. Addison-Wesley Professional.<br>ByteByteGo. (n.d.). Non-Functional Requirements: The Backbone. Retrieved from <https://blog.bytebytego.com/p/non-functional-requirements-the-backbone> |
| 1. Usability and Accessibility: The LMS should be user-friendly and accessible to all, including individuals with disabilities, following WCAG 2.1 guidelines. | Inclusivity and user satisfaction depend on usability and accessibility. A well-designed interface reduces the learning curve and enables all students to use the platform. | https://www.w3.org/WAI/standards-guidelines/wcag/ |
| 1. Security: The LMS will incorporate robust security measures to protect user data and withstand unauthorized access, including encryption and access controls. | Security is the top priority for protecting sensitive student data. The system will be required to comply with relevant data privacy law | Stallings, W. (2017). Cryptography and network security: Principles and practice. Pearson.<br> NIST Cybersecurity Framework. (n.d.). Retrieved from <https://www.nist.gov/cyberframework><br>EdisonOS. (n.d.). Learning Management System: Data Security Features. Retrieved from <https://www.edisonos.com/learning-management-system/data-security-features> |
| 1. Reliability and Availability: The LMS will be extremely reliable and available with minimal downtime and loss of data. | High reliability and availability are crucial for ensuring that students and instructors can access the system whenever needed. This requires redundant systems, robust backup and recovery processes, and proactive monitoring to minimize disruptions. | Lambda 1 Solutions. (n.d.). Reliable LMS Uptime & Learner Engagement. Retrieved from <https://www.lambdasolutions.net/en/blog/reliable-lms-uptime-learner-engagement> |
| 1. Maintainability: The LMS should be implemented in a manner that it is straightforward to handle and update so that future changes and improvement are feasible. | This enables the system to easily update and modify evolving requirements. |  |
| 1. Platform Compatibility: The LMS must accommodate key web browsers (Chrome, Firefox, Safari, Edge) and operating systems (Windows, macOS, iOS, Android). | Platform compatibility enables students to view the LMS on their device and browser of preference, enhancing accessibility and convenience. | W3C. (n.d.). *Web standards*. Retrieved from <https://www.w3.org/standards/><br> Nielsen, J. (2012). *Usability engineering*. Morgan Kaufmann. |

## Assumptions

| **Assumption** | **Rationale for Requirement** | **Source(s), APA format** |
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| 1. Adequate Network Infrastructure: It is assumed that YOUser University has a robust and stable network infrastructure to host the LMS with sufficient connectivity and bandwidth. | If there is no existing network, the LMS will experience performance loss and connectivity problems, rendering its effectiveness impaired. | General system implementation considerartion. |
| 1. Sufficient IT Support: It is assumed that YOUser University will provide adequate IT support for the LMS, such as instructor and student training, and technical support for troubleshooting. | Good IT support is essential to facilitate the proper usage of the LMS by the users and to address any technological issues that may arise. | EDUCAUSE. (2019). *7 Things You Should Know About LMS Support*. Retrieved from [https://library.educause.edu/resources/2019/11/7-things-you-should-know-about-lms-support](https://www.google.com/search?q=https://library.educause.edu/resources/2019/11/7-things-you-should-know-about-lms-support)<br>JISC. (2018). *Effective digital learning environments: Supporting staff*. Retrieved from [https://www.jisc.ac.uk/guides/effective-digital-learning-environments/supporting-staff](https://www.google.com/search?q=https://www.jisc.ac.uk/guides/effective-digital-learning-environments/supporting-staff) |

## Limitations

| **Limitation** | **Rationale for Requirement** | **Source(s), APA format** |
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| 1. The integration of the new LMS with legacy systems for example student information system and library systems may be difficult due to compatibility and data migration issues. These challenges require careful planning and may involve custom development or middleware solutions. | The legacy systems might have outdated architectures and data formats, making them difficult to integrate. This limitation should be properly handled at the implementation level. | Gyrus. (n.d.). LMS Integration: Challenges and Solutions. Retrieved from <https://www.gyrus.com/blogs/lms-integration-challenges-and-solutions> |
| 1. User Training:  Some instructors and students may be hesitant to adopt the new LMS, and it would take extensive training and support to aid its successful adoption. | Change management and user training are essential in order to counteract resistance and allow users to use the new system successfully. | General change management practices. |