# CS 255 Module Two Assignment Template

## Functional Requirements

| **Functional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| User authentication and role-based access control | Protecting private information and system integrity. | Ülker, D., & Yilmaz, Y. (2016). Learning management systems and comparison of open source learning management systems and proprietary learning management systems. Journal of Systems Integration, 7(2), 18-24. <https://doi.org/10.20470/jsi.v7i2.255> |
| Course content management | Enables the creation, upload, and organization capabilities for creating and managing online materials such as syllabus, readings, videos, assignments, quizzes, and so on. This is a critical component for online course structures. | Berkani, L. (2021). Learning management systems: Concept and challenges. Computers, 10(9), 112. <https://doi.org/10.3390/computers10090112> |
| Assignment submission and grading | Facilitates assignment workflow for online classes by giving instructors tools to easily grade submissions and leave feedback on each assignment. Allows students to submit their work online. | Dube, S., & Scott, E. (2014). An empirical study on the use of the Sakai learning management system. In Proceedings of the e-Skills for Knowledge Production and Innovation Conference (pp. 101-107). <https://doi.org/10.13140/RG.2.1.3159.1048> |
| Discussion forums | Important part of the online course structure as it allows students the opportunity to engage with other students and instructors, encouraging collaboration, and building an online learning community. | Bozkurt, A. (2019). From distance education to open and distance learning: A holistic evaluation of history, definitions, and theories. In Handbook of Research on Learning in the Age of Transhumanism (pp. 252-273). IGI Global. <https://doi.org/10.4018/978-1-5225-8431-5.ch016> |
| Grade management and reporting | Track student and instructor performance. Offers the ability to enter, calculate, and manage student grades. This also allows third parties such as registrar and advisors to track students progress toward their degree. | Ülker, D., & Yilmaz, Y. (2016). Learning management systems and comparison of open source learning management systems and proprietary learning management systems. Journal of Systems Integration, 7(2), 18-24. <https://doi.org/10.20470/jsi.v7i2.255> |
| Mobile responsiveness | This enables flexibility and accessibility, which are key components of an online course structure. Allowing material to be viewed and completed with a mobile interface is crucial to the LMS interface. | Bozkurt, A. (2019). From distance education to open and distance learning: A holistic evaluation of history, definitions, and theories. In Handbook of Research on Learning in the Age of Transhumanism (pp. 252-273). IGI Global. <https://doi.org/10.4018/978-1-5225-8431-5.ch016> |

## Nonfunctional Requirements

| **Nonfunctional Requirement** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| High Availability | Minimal downtown is needed so that students and faculty can access the system with 24/7 availability. | Berkani, L. (2021). Learning management systems: Concept and challenges. Computers, 10(9), 112. <https://doi.org/10.3390/computers10090112> |
| Scalability | Scalable to handle high user volumes and large amounts of data, such as course material and media. With online enrollment growing, the system will need to maintain performance without interrupting the services. | Dube, S., & Scott, E. (2014). An empirical study on the use of the Sakai learning management system. In Proceedings of the e-Skills for Knowledge Production and Innovation Conference (pp. 101-107). <https://doi.org/10.13140/RG.2.1.3159.1048> |
| Usability | Interface should be intuitive, user-friendly, and easy-to-learn and navigate. This allows users of varying technical skill levels to use the system without a learning curve. Usability while enabling core tasks is essential for LMS adoption and engagement. | Ülker, D., & Yilmaz, Y. (2016). Learning management systems and comparison of open source learning management systems and proprietary learning management systems. Journal of Systems Integration, 7(2), 18-24. <https://doi.org/10.20470/jsi.v7i2.255> |
| Accessibility | Students and faculty should be able to access course content and tools with assistive technologies that meet relevant regulations such as Section 508 and W3C accessibility guidelines, making the system accessible to those with disabilities. (A good example of this, while working in the analytics department at SNHU, a coworker was color-blind. This led to us using data labels for all of our bar graphs due to my coworker being unable to distinguish colors in our interactive dashboard graphs. | Bozkurt, A. (2019). From distance education to open and distance learning: A holistic evaluation of history, definitions, and theories. In Handbook of Research on Learning in the Age of Transhumanism (pp. 252-273). IGI Global. <https://doi.org/10.4018/978-1-5225-8431-5.ch016> |
| Security | Due to the sensitive information contained within an LMS, robust security is critical to safeguard academic data, personal information, and financial data. It requires secure logins, data encryption, regular security testing, and other measures to guard against breaches and unauthorized access. | Ülker, D., & Yilmaz, Y. (2016). Learning management systems and comparison of open source learning management systems and proprietary learning management systems. Journal of Systems Integration, 7(2), 18-24. <https://doi.org/10.20470/jsi.v7i2.255> |
| Interoperability | A connected ecosystem streamlines the flow of data and improves the user-experience. It should support standards such as LTI for 3rd party tools and content to integrate the LMS with other key campus systems, including student information systems, authentication services, and so on. | Berkani, L. (2021). Learning management systems: Concept and challenges. Computers, 10(9), 112. <https://doi.org/10.3390/computers10090112> |

## Assumptions

| **Assumption** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| The university has a budget equipped to fund LMS hosting, licensing, implementation, and other support costs. | Deploying an enterprise LMS is a SIGNIFICANT investment. An assumption of adequate funds is needed to properly plan for the system selection, deployment, and maintenance/ongoing costs. | Ülker, D., & Yilmaz, Y. (2016). Learning management systems and comparison of open source learning management systems and proprietary learning management systems. Journal of Systems Integration, 7(2), 18-24. <https://doi.org/10.20470/jsi.v7i2.255> |
| The university has IT staffing with the skills and experience to implement and support the selected LMS platform. | Given LMS requires specialized technical skills, such as system integration, database administration, and educational technology support, the project must assume existing IT staff have this expertise, will have this expertise, or that new personnel with the proper skillsets will be hired. | Berkani, L. (2021). Learning management systems: Concept and challenges. Computers, 10(9), 112. <https://doi.org/10.3390/computers10090112> |

## Limitations

| **Limitation** | **Rationale for Requirement** | **Source(s), APA format** |
| --- | --- | --- |
| The aggressive timeline may limit the ability to deploy all desired LMS features for the initial release. | LMS implementation is complex, and a multi-stage process. With a tight project timeline, a phased approach may necessitate where some non-essential features are pushed post-launch. | Dube, S., & Scott, E. (2014). An empirical study on the use of the Sakai learning management system. In Proceedings of the e-Skills for Knowledge Production and Innovation Conference (pp. 101-107). <https://doi.org/10.13140/RG.2.1.3159.1048> |
| Incompatible technologies can make integration with some of the existing campus systems unfeasible. | Though we should integrate with as many of the other university systems as possible, older platforms may have limited interoperability, which is constrained by the age and architecture of legacy applications. | Bozkurt, A. (2019). From distance education to open and distance learning: A holistic evaluation of history, definitions, and theories. In Handbook of Research on Learning in the Age of Transhumanism (pp. 252-273). IGI Global. <https://doi.org/10.4018/978-1-5225-8431-5.ch016> |