HANU TRAINING MANAGEMENT SYSTEM

Supplementary Specification

Version 1.0

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Revision History

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Supplementary Specification

# Introduction

The **Supplementary Specification** captures the system requirements that are not readily captured in the use cases of the use-case model. Such requirements include:

* Legal and regulatory requirements, including application standards.
* Quality attributes of the system to be built, including usability, reliability, performance, and supportability requirements.
* Other requirements such as operating systems and environments, compatibility requirements, and design constraints.

The purpose of this document is to define the requirements of the training management web of Hanoi university. The supplementary specifications along with use case models, use case specifications and design models will serve as the primary input to the developers, designers, and other groups working on the development and maintenance of HANU Training Management System

## Purpose

This document is intended for software engineers, developers, users, and other stakeholders that have some relation to the system.

The supplementary specification document's purpose is to provide the following information:

* Feature sets and capabilities that need to be offered to the end-users.
* Quality attributes of the system such as usability, reliability, performance, and supportability requirements.
* Design constraints for this software application.

## Scope

This document reflects the requirements of the Training Management Web called “Quản lí đào tạo'' that is to be used by teachers and students for an overview of the HANU Training Management System (old version) – a system developed by Hanoi University. This document will be used as the background for writing up other documents in subsequent phases. This training management system will enable students to register for courses online, and the professor will enable updated grades and teaching courses

This specification defines the non-functional requirements of the system; such as reliability, usability, performance, and supportability as well as functional requirements that are common across a number of use cases. (The functional requirements are defined in the Use Case Specifications.).

## Definitions, Acronyms, and Abbreviations

* **Administrator:** is a privileged user who is responsible for managing user accounts, and managing resources (ex. adding or removing users, rooms, post announcement, etc).

## References

[1] ***Software Architecture Document,*** Nguyen Ngoc Huyen, Lai Hanh Van, 08/12/2021, HANU Training Management System

[2] ***Use-Case Specification:* Course Registration (Student)**, Nguyen Thi Thu Hien, 05/12/2021, HANU Training Management System

[3] ***Use-Case Specification:* View Grade (Student)**, Nguyen Thi Thu Hien, 05/12/2021, HANU Training Management System

[4] ***Use-Case Specification:* View Schedule (Student)**, Nguyen Thi Thu Hien, 05/12/2021, HANU Training Management System

[5] ***Use-Case Specification:* Change Email (Student)**, Nguyen Ngoc Huyen, 08/12/2021, HANU Training Management System

[6] ***Use-Case Specification:* Dormitory Registration (Student)**, Nguyen Ngoc Huyen, 08/12/2021, HANU Training Management System

[7] ***Use-Case Specification:* Student Comments (Student)**, Nguyen Ngoc Huyen, 08/12/2021, HANU Training Management System

[8] ***Use-Case Specification:* Certification Registration (Student)**, Nguyen Dieu Huong Ly, 06/12/2021, HANU Training Management System

[9] ***Use-Case Specification:* View Digital Invoice (Student)**, Nguyen Dieu Huong Ly, 06/12/2021, HANU Training Management System

[10] ***Use-Case Specification:* View Prerequisite Courses (Student)**, Nguyen Dieu Huong Ly, 06/12/2021, HANU Training Management System

[11] ***Use-Case Specification:* Upload Announcement (Student)**, Lai Hanh Van, 08/12/2021, HANU Training Management System

[12] ***Use-Case Specification:* View Tuition Fee (Student)**, Lai Hanh Van, 08/12/2021, HANU Training Management System

[13] ***Use-Case Specification:* Dormitory Payment (Student),** Lai Hanh Van, 08/12/2021, HANU Training Management System.

[14] ***HANU Training Management***, <http://qldt.hanu.vn/Default.aspx?page=gioithieu>, old version.

## Overview

In the following sections, this document will establish the functional and non-functional requirements of the Training Management system. In part 2, the feature set will be available to end-users. From part 3 to part 11, it is known as the quality attributes of the system namely: usability, reliability, performance, supportability, design constraint, Online User Documentation and Help System Requirements, purchased components, user interfaces, and license requirement.

# Functionality

## Students

2.1.1. The system shall authenticate users at the beginning of each session.

2.1.2. The system shall allow the user to view their schedule.

2.1.3. The system shall allow the user to change the password.

2.1.4. The system shall allow the user to change personal information.

2.1.5. The system shall allow the user to view announcements.

2.1.6. The system shall allow the user to view their grades and scores in each semester.

2.1.7. The system shall allow the user to view their study fees and bill (if available) each semester.

2.1.8. The system shall allow the user to register for their course.

2.1.9. The system shall allow the user to register the certificate.

2.1.10. The system shall allow the user to see prerequisites and curriculum courses.

* 1. **Administrator**

2.2.1. Users must be able to be added by the system's administrator.

2.2.2. The administrator must be able to change user information in the system.

2.2.3. Users will be able to be removed from the system by the administrator.

2.2.4. The administrator will be able to post/ delete/ modify announcements.

2.2.5. The administrator will be able to update/ modify students’ grades.

# Usability

* Users must be able to connect to the system through the Internet using HTML.
* No special training is necessary because all users are familiar with how to use browsers in general.
* The system is simple to use and understand.
* In ideal conditions, the estimated time for each operation is quick, but it might vary depending on Internet speed.
* The overall appearance and feel of the web application are consistent across all pages.
* Make use of straightforward, easy-to-read Vietnamese.
* After a single sign-on, the user should be able to access all of the features defined in his/her role on the page. Users can use it in both mobile browsers and desktop browsers.

# Reliability

## Availability

* The system is available 100% for the user and is used 24 hrs a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

## Mean Time Between Failures (MTBF)

* The application should, on general, be built to have a mean duration between failures of 4 months or greater. The system will be designed in such a way that it will only fail once a year.

## Mean Time to Repair (MTTR)

* If there is a system downtime, the system support staff should be alerted instantly. This will be accomplished by real-time system monitoring.
* Any downtime caused by server hardware should be repaired and the service restored within an hour.
* Any downtime of external services should be handled and the service restored within an hour or less.

## Accuracy

* The output of the application should be 100% accurate.

## Bugs or Defect Rate

* Expected defect rate: 1 bug/KLOC.

## Information Security

## The system provides 100% information security

# Performance

## Response Time

## Fast. Maximum 3 seconds. The information is refreshed every two minutes. The access time for a mobile device should be less than a minute. The system shall respond to the member in not less than two seconds from the time of the submittal request. The system shall be allowed to take more time when doing large processing jobs.

## Throughput

## The number of transactions is directly dependent on the number of users, the users may be the administrator, employees of the university, and also the people who use the system for many purposes such as

## Capacity

## The system is capable of handling 250 users at a time.

## Resource Utilization

## The resources are modified according to the user requirements and also according to the changes by the administrator. The system’s resource use should be acceptable for a mid-tier server computer (with 4 CPU cores, 8GB RAM, and 120GB disk space).

# Supportability

## Internet Protocol

The system shall comply with the TCP/IP protocol standards.

* 1. **Information Security Requirement**

The system is secured strictly

* 1. **Maintenance**

Minimum once a month.

* 1. **Standards**

The coding standards and naming conventions

# Design Constraints

## Software Language Used

## HTML, CSS, Node.js, PostgreSQL.

* JavaScript — This language is used to manage client-side operations and events.
* SQL - Structured Query Language – is a query language used to access relational databases. SQL is used for all interactions with the database system.

## Development Tools

## Will make use of the available Java Development Tool kits for working with Notepad++, IntelliJ IDEA. Also will make use of the online references available for developing programs in ASP, HTML and the two scripting languages, JavaScript and VBScript.

## Class Libraries

## Will rely on the current Java libraries for JSP and Servlets. We will also need to create some new libraries for the web-based application. In addition, new programs will be created utilizing ASP and scripting languages.

# Online User Documentation and Help System Requirements

# Purchased Components

Will need to purchase the license for IIS Server. Mostly it is available with Windows Environment. So the system need not purchase any licensing products. Class Libraries and Frameworks Bootstrap, AngularJS.

# Interfaces

## User Interfaces

* The Educational Management System will be accessed via a secure user interface that will need a specified login name and password.
* Any unexpected system operation will be reported to the user via an error web page with information about the source of the issue. If a specific reason cannot be identified, a generic error message will be shown.
* The web interface's design will adhere to common screen resolutions of 1920x1080 (personal computer) and 1080x1920 (laptop) (mobile devices).
* The interface of the system is implemented based on existing web browsers.

## Hardware Interfaces

* The system will only communicate with the web server and database server that is given. The operating system and any other supporting software systems will handle any further system contact directly.
* The existing Local Area Network (LAN) will be used for collecting data from the users and also for updating the Training Management System

## Software Interfaces

### 10.3.1 For database interactions, the system will use MySQL

### 10.3.2. To serve HTML information to clients, the system will use Microsoft IIS Express Web Server.

10.3.4. A firewall will be used with the server to prevent unauthorized access to the system

## Communications Interfaces

### 10.4.1 The ASP.NET Core framework will have systems for interacting with the web server through HTTP and HTTPS.

10.4.2. The Training Management System will connect to the Internet

# Licensing Requirements

No special licensing requirements.

# Legal, Copyright, and Other Notices

The disclaimers, terms, and conditions for using the SDMS are as follows. By using the Online Meeting System, you agree to be bound by the disclaimers, terms, and conditions outlined below.

The product will be released as open-source under the GNU GPL (GNU General Public License). According to the GPL, anybody may copy and distribute verbatim copies of this license agreement, but modifying it is not authorized.

Because the software will be produced utilizing Microsoft products, it must adhere to the Microsoft Software License. Any component of the program may not be distributed unless earnings are produced on behalf of Synergy. All copyright, trademark, and patent warnings provided in the software must be noticed.

# Applicable Standards

* ISO/IEC 27001 - Information Technology Management.
* All documentation should meet IEEE and RUP standards.
* ASP.NET Core 3.0 and web standards.