Software Requirements Specification

for

LNMIIT's Curriculum Data Maintenance

Version 3.0

Prepared by Dheeraj Agarwal - 16UCS059
Dhwanit Chauhan - 16UCS060
Diksha Agarwal - 16UCS061
Jigyasa Yadav - 16UCS084

The LNM Institute of Information Technology, Jaipur

November 18, 2018

Table of Contents

Revision History

Name	Date	Reason For Changes	Version
Diksha Agarwal	21-08-18	Initial preparations	V 1.0
Diksha Agarwal	01-09-18	Some changes & Added Analysis Models	V 2.0
Diksha Agarwal	18-11-18	Final Version With Changes	V 3.0

1. Introduction

1.1 Purpose

This software will be developed exclusively for the institute, The LNM Institute of Information Technology for the following reasons -

1. To provide an easy and direct way to view the current curriculum of your batch/programme or any other batch/programme for that matter.
2. Facility for the *HoD*'s to create, modify or archive the curriculum easily in the platform.
3. DoAA to verify and Director to approve the drafted curriculum.
4. Provides a transparent status view of the curriculum which is undergoing change.

1.2 Document Conventions

The following documentation conventions are followed in preparing this SRS:

a) All key-words related to LNMIIT are formatted in italics.
b) The priority of a requirement is specified at the end of that requirement in curly braces and using the notation { Priority : nn}, where 'nn' is an integer in the range 00 (lowest priority) to 99 (highest priority).

1.3 Intended Audience and Reading Suggestions

This document is specifically created for,

i) The HOD's of various departments like *CSE, ECE,* etc. working at LNMIIT to review and suggest rectification or refinements for curriculum if any.
ii) The students enrolled in any UG or PG programme at LNMIIT to view latest curriculum.
iii) The software development team for their use in analyzing the requirements.
iv) The second section - Overall Description, of this document describes the informal requirements and is used to establish a context for the technical requirement specifications described later in the document.
v) The third section is written primarily for the developers as it describes the functionality of the product in detail using technical terms.

1.4 Product Scope

This software system will be a web based application with a straight forward interface which allows an easier platform to view/modify the curriculum of any batch. The scope of the software is -

i) To enable all the *HoD*'s, *DoAA* and the Director to securely access the software package using internet in order to create/modify, verify and approve the curriculum respectively.
ii) To cater all the students/staff to clearly see the latest curriculum according to their batch.
iii) To cater all activities of the Curriculum Data Maintenance.

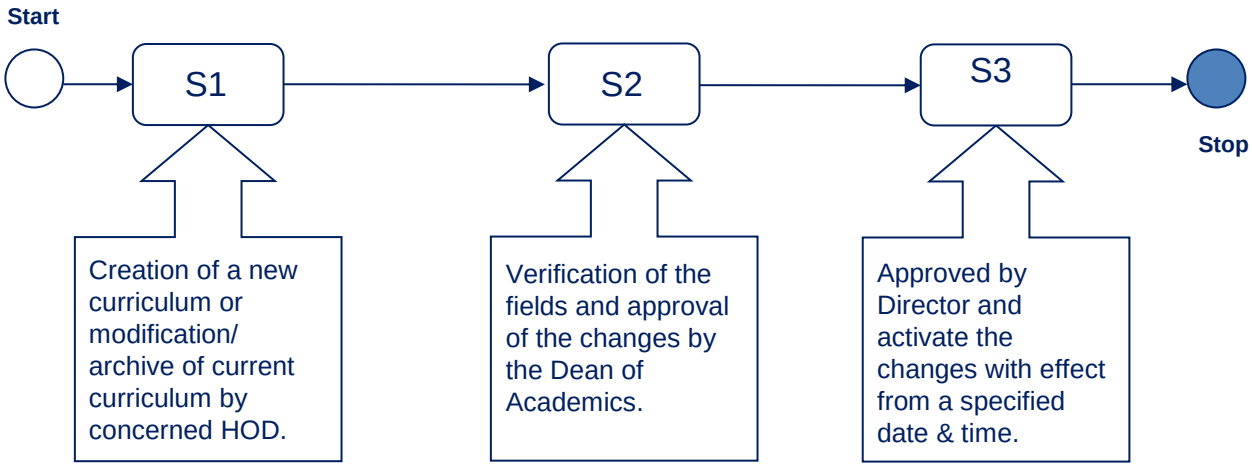
1.5 References

i) Minutes-of-the-Meeting between the LNMIIT SE Course instructor and the developer team, held on August 23, 2018 - 3:00 PM at LNMIIT.
ii) Minutes-of-the-Meeting between the LNMIIT SE Course instructor and the developer team, held on September 4, 2018 - 5:00 PM at LNMIIT.

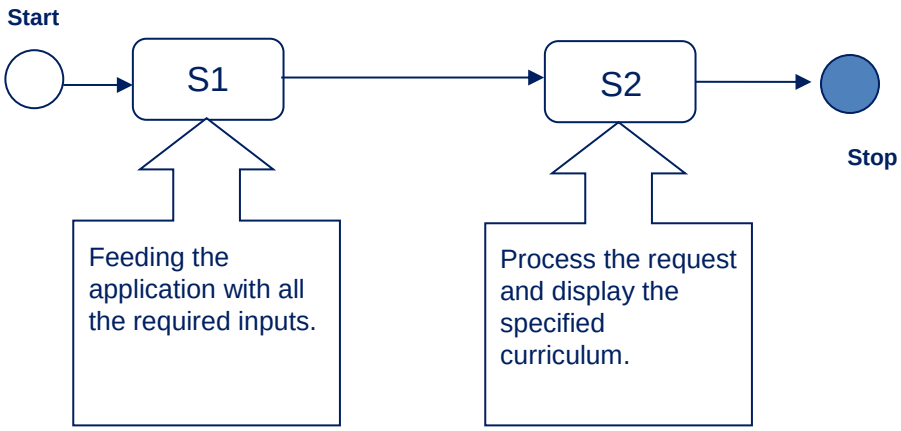
2. Overall Description

2.1 Product Perspective

The following diagram describes the high-level business process of the Curriculum Data Maintenance system.
The Curriculum Data Maintenance Functions Part – I: Creation and Maintenance of Curriculum Data:



The Curriculum Data Maintenance Functions Part – II: Viewing the specified curriculum:



2.2 Product Functions

This software package is expected to offer the following services:

a) For the *HOD*'s of LNMIIT:
    a. Facility to create and modify the current curriculum offered by LNMIIT. The curriculum data includes the core courses along with the various program and other electives to be offered.
    b. Facility to go through the latest curriculum offered in each program according to their batch*(Y-xx)* at LNMIIT.
b) For the DoAA of LNMIIT:
    a. Facility to verify the curriculum proposed by HOD's or reject and suggest changes.
    b. Facility to go through the latest curriculum offered in each program according to their batch*(Y-xx)* at LNMIIT.
c) For the Director of LNMIIT:
    a. Facility to approve the curriculum verified by DoAA or reject and suggest changes.
    b. Facility to go through the latest curriculum offered in each program according to their batch*(Y-xx)* at LNMIIT.
d) For the students/staff of LNMIIT:
    a. Facility to go through the latest curriculum offered in each program according to their batch*(Y-xx)* at LNMIIT.

2.3 User Classes and Characteristics

This software package will be used by 4 categories of users:

a) **Department HoD's:** The HoD's would be using the software package specifically to create, modify or archive curriculums at any given time offered by LNMIIT.
b) **DoAA of LNMIIT:** The DoAA would be using the software package to check the curriculums in pending status and verify/reject them as per the requirement.
c) **Director of LNMIIT:** The Director would be using the software package to approve the curriculum and activate it from a certain date and time.
d) **Student/Staff:** These users will use this software package to find out what type of curriculum is being offered by LNMIIT in the current academic year according to relevant information provided.

2.4 Operating Environment

This software package is expected to work in the following atmosphere:

i) Microsoft stack consisting of,
    a. MS Windows 10 based thin clients
    b. MS Windows based Server OS
    c. Visual C++ and / or Java Standard Edition 2.0 (or above)
    d. Oracle RDBMS version 10g release 2 (or above)

2.5 Design and Implementation Constraints

The design time constraints are:

i) The software package should be architected as a multi-tier system (separate web-server, application and RDBMS servers) with duplication of each type of server to achieve fault-tolerance.

ii) There should be a load-balancer to route incoming requests so as to balance the load on the two sets of servers.

iii) More than 5,000 users should be able to concurrently access the curriculum data of this package per day from all parts of the world.

2.6 User Documentation

i) This software package will come with an On-line Help (web pages) for each of the four types of users how to use the facilities available for them.

ii) The details of the (i) Analysis, (ii) Design and (iii) Test Cases of this software package will be delivered along with this software.

2.7 Assumptions and Dependencies

The assumptions made are -

i) There is already a curriculum existing in the database for every batch in a specific programme studying at LNMIIT.
ii) Any new or modified curriculum would be activated only at the time of starting or ending of a semester.

3. External Interface Requirements

3.1 User Interfaces

The set of User Interfaces consists of:

i) A login portal for the users.
ii) A precise drop down menu for selecting respective course and year.
iii) A portal to view, add or edit any curriculum as per the user class.
iv) A portal to approve/verify/reject any proposed curriculum as per the user class.
v) To view the help section for accessing a specified curriculum.

3.2 Hardware Interfaces

i) The software is compatible with Windows Operating System (Windows 10) only.
ii) The software will be web-enabled (compatible with Google Chrome & Mozilla Firefox).

3.3 Software Interfaces

i) To display edit history of curriculums.

ii) To check status of drafted curriculum (Verified, Approved, Pending, Active).

3.4 Communications Interfaces

This software package should be securely accessible through internet communication channels (wired or wireless). It would also use an e-mail service to notify the *DoAA* or Director about the modification in any of the curriculums.

4. System Features

The requirements of this software package are described per each category of User:

i) All requirements of the *HoD's/DoAA/Director* of LNMIIT.

ii) All requirements of the LNMIIT students/staff.

Business Use Case # 1: All the Requirements of the *HOD*'s/DoAA/Director:

4.1 Create and Modify the curriculum

4.1.1 Description and Priority

The TBD (to-be-developed) software package should facilitate the Curriculum Management staff to:

i) Define a new curriculum, its associated process flow, verify and approval rules.
ii) To modify an existing curriculum with same type of process flow mentioned above.
iii) Draft a newly created curriculum OR modify curriculum with effect from a date and time;

The priority of this requirement is 99 (without this facility, other requirements do not work).

4.1.2 Stimulus/Response Sequences

S No	Stimulus from the User	Response from the Software
1	*HoD*'s logs-in using user-id and password (see Appendix-I for user-id and password rules)	Software will validate the user-id and password; Software will display the dashboard by recognizing the user-id .
2	*HoD* chooses the 'Create a new Curriculum' option.	Software will authenticate whether the *HoD* is permitted to create a new curriculum or not; if permitted, then the software will display the form (see Appendix-I for a list of the fields) to enter the details of the new curriculum.

3	*HoD* will enter all the fields of the new curriculum.	Software will validate all the fields of the new curriculum, if there are any errors, the software will re-display the screen with the errors being high-lighted; else, the software will display a message that the new curriculum is successfully created and asks for the date-and-time of 'Activation of the new Curriculum'.
4	If errors are displayed, the *HoD* will correct the errors and re-submit the new curriculum; else, the HOD enters the date-and-time of 'Activation of the new Curriculum'.	Software will display the Initial Curriculum Management Screen.
5	Dean Of Academics will verify the drafted curriculum and approve it or reject it and suggest the changes.	Software will authenticate the user whether he / she is authorized to perform the chosen option or not and accordingly display either the associated next screen or an error message.
6	The verified curriculum will be forwarded to the Director for approval.	Software will authenticate the user whether he / she is authorized to perform the chosen option or not and accordingly display either the associated next screen or an error message. The software will update the curriculum if approved with the current date & time.

4.1.3 Functional Requirements

As per the above table described in 4.1.2.

Business Use Case # 2: All the Requirements of LNMIIT's Student/Staff:

4.2 View & Download the Curriculum

4.2.1 Description and Priority

The TBD (to-be-developed) software package should facilitate the LNMIIT's students/staff requirements -

i) View the latest curriculum
ii) Download the specified curriculum.
iii) Find out the status of the curriculum.

The priority of this requirement is 90.

4.2.2 Situation-Response Sequence

S. No	Stimulus from the User	Response from the Software
1	The Student accesses the Curriculum Data Management Software through the internet;	Software displays the following options to select preferred options from drop down menu.
2	After entering the details, user will click on submit.	Software will initiate the downloading.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Each request (situation-response case), on an average taken for a duration of 100 hours or till 1000 requests are successfully completed, should have a turn-around time of less than 5 seconds under the following load on the software:

i) There are 100 users accessing this software per hour
ii) There are 30 different curriculum that are 'Active'.

5.2 Safety Requirements

This software should,

i) Create a PDF of each curriculum (whether the curriculum is approved or rejected with reasons for the approval or rejection) along with the *HoD*'s info;
ii) Create a back-up of all these PDF files on google drive every week;

5.3 Security Requirements

This software should,

i) Authenticate each user, who logs in;
ii) When the user performs any actions, Authorize him / her to perform the actions allowed for the user and display an error message if found to be not authorized;

5.4 Business Rules

Unique id and passwords would be generated for HoD's, DoAA and the Director to access the software package.

6. Other Requirements

Appendix A: Glossary

HoD: Head of Department
DoAA: Dean of Academic Affairs
UG: Under Graduate
PG: Post Graduate
CSE: Computer Science & Engineering
ECE: Electronics & Communication Engineering
(Y-xx) : Year of joining the institute, for eg: Y-16, Y-17, etc.
B.Tech: Bachelors of Technology
M.Tech: Masters of Technology
DFD: Data Flow