Software Requirements Specification

For

LNMIIT's Course Registration Portal

Version 1.0

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Revision History

Name	Date	Reason For Changes	Version
Anshul Jain	07-02-12	Initial preparation	V 1.0

1. Introduction

1.1 Purpose

This software package is developed from scratch exclusively for the LNM Institute of Information Technology in order to,

- Facilitate students in registration avoiding any **first cum first serve basis** and remove inconveniences caused by manual course registrations.

- Reduce time taken in registration process.

- Enable the students to register for courses online and avoid standing in line for hours.

- Avoid wastage of time due to manual processing of registration forms.

- Remove problem of shortage of seats in any particular courses by making the students follow the curriculum strictly.

1.2 Document Conventions

The following documentation conventions are followed in preparing this SRS:

a) All key-words related to the university are formatted in italics.
b) The keywords having special importance needed attention are formed in "**bold**".
c) Some abbreviations and acronyms adopted are as follow:
   - SRS – Software Requirement Specification
   - OS – Operating System
   - MS – Microsoft

1.3 Intended Audience and Reading Suggestions

This document is created for,
   i) The staff of the academic department of the LNMIIT to review and suggest refinements if any (when submitted for their review at appropriate times).
   ii) The student's body of the LNMIIT, i.e. the actual user of this software, for their review and approval at appropriate times.
   iii) The software development team for their use in analyzing the requirements.

1.4 Product Scope

The scope of the to-be-developed '**Registration Management Portal**' software package is:

i)   To make the process of course registration easy by enabling students to sit in their rooms and register.
ii)   To enable the students to see all the courses they have completed along with the course categories, i. e. Program elective, Science Elective, HSS Elective and Open Elective.
iii)   To facilitate the academics department and the **Dean (A)** in keeping a check in number of special registrations.
iv)   Dean (A) can **accept/reject** applications regarding different issues online.
v)   Make sure students follow the given curriculum until taken prior permission for special registration.
vi)   To avoid students taking courses falling under same time slots.

1.5 References

The following reference manuals were used in preparing this SRS(combined minutes attached):
i)   Minutes-of-the-Meeting between the LNMIIT SE Course instructor.
ii)   Project Group Discussions.
iii)   Meeting with the academic council and the Dean (A) of LNM IIT.
iv)   Meeting with the Registrar of the LNM IIT.

2. Overall Description

2.1 Product Perspective

The following diagram describes the high-level business process of the Registration Management functions of the LNM IIT:

The Registration Management Functions Part – I: Creation and Maintenance of Courses:

S1	S2	S3
Addition of a new course OR modification of / deletion of an existing course by the Dean (A)	Validation of the fields addition of the instructor's name, number of seats. Addition of prerequisites (if any) by course instructor	Activate the changes with effect from a specified date and time.

Start ... Stop
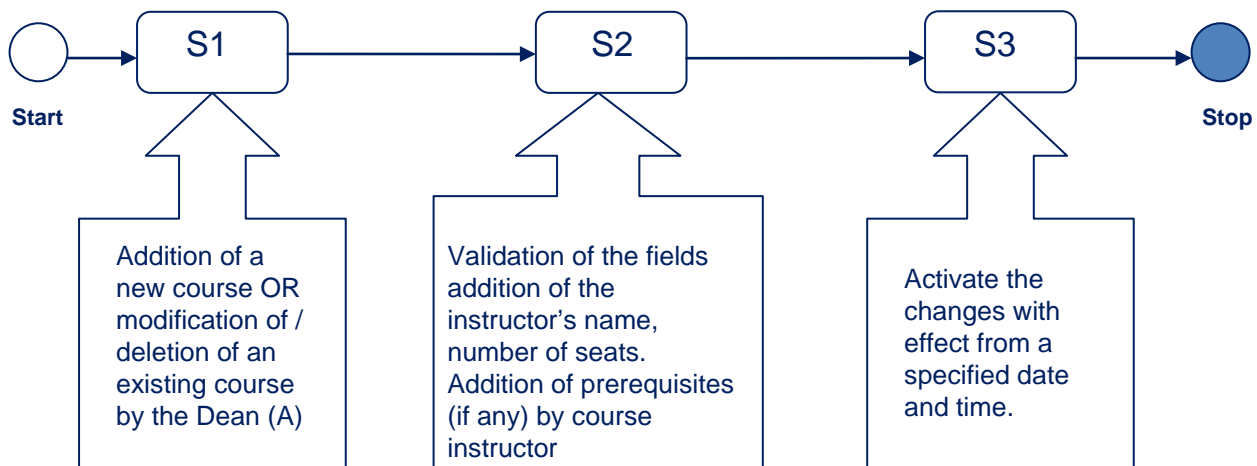
The Registration Management Functions Part – II: Registration of the courses
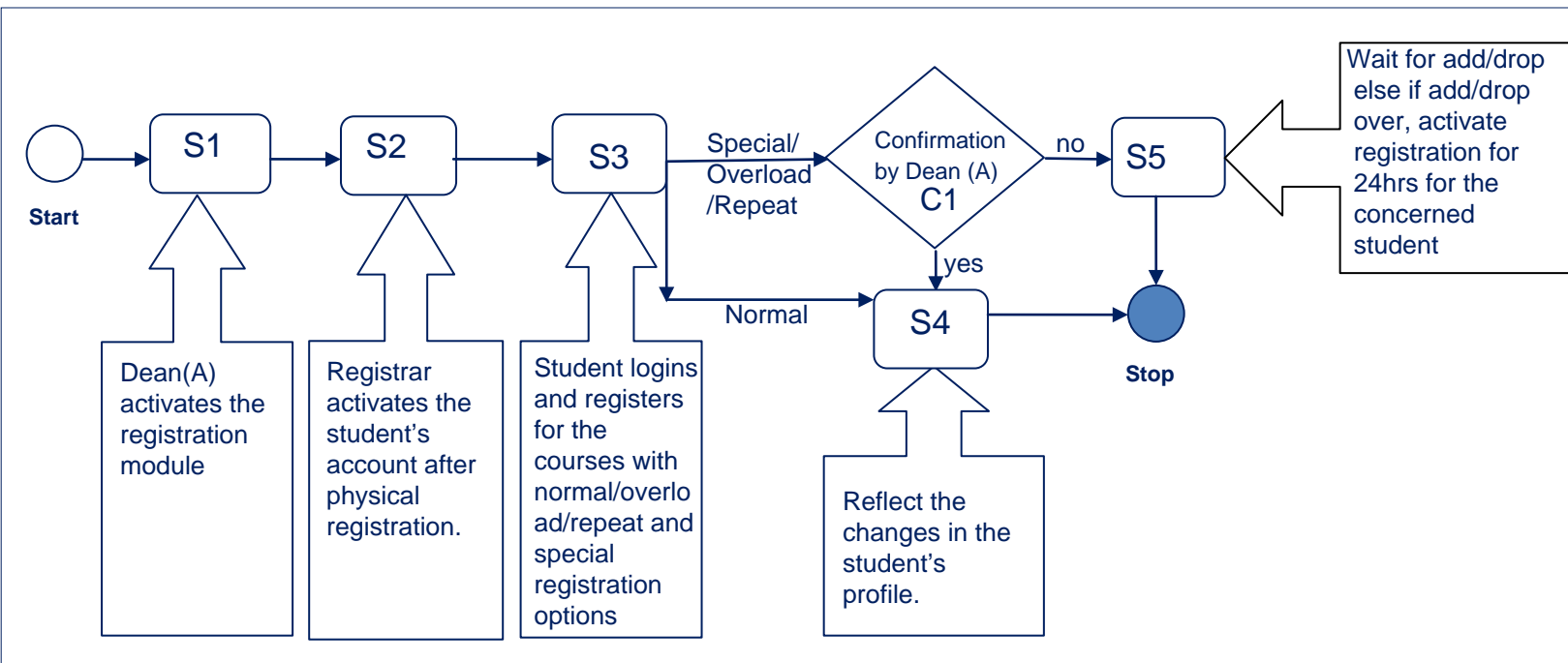
2.2 Product Functions

This software package is expected to offer the following services:

a) For the Academics and Registration Staff of LNMIIT:
   a. Facility to register and maintain the different courses offered by the LNMIIT institute online.
   b. Facility for Dean(A) to read and consider all the applications for overloads, repeat and special registrations online.

b) For the Course Instructors of LNMIIT:
   a. Facility to go through the list of students enrolled in their courses
   b. Facility to modify course details and other rules.

c) For the Users of the LNMIIT registration module:
   a. Facility to go through the courses offered for all years online;
   b. Facility to fill-in and register for the courses online without having to stand in registration line for hours;
   c. Facility to find out the status of credits completed and courses left.

2.3 User Classes and Characteristics

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

a) **Staff of the Academics Department of the LNMIIT:** these users will use this software package to create and modify the list of students registered for the different courses offered at any given time by the LNMIIT institute and the eligibility rules and process activities and flow for each course.

b) **Students of LNMIIT:** these users will use this software package to find out what types courses are available, how many seats are available at any given time for a particular course, whether they are eligible to sit into these courses and if so, to register for a course, and find the status of the request sent to the dean for applied course. The software also allows to add and drop the courses online.

c) **Professors of LNMIIT:** these users will use this software package to find out how many students are enrolled in their course and see their details, and make changes in the course structure(if any).

2.4 Operating Environment

This software package is expected to work in the following atmosphere:
a. MS Windows based Server
b. Java Standard Edition 4.0 (or above)
c. MySQL Standard Edition 5.0 (or above)
d. Any Operating System

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)   More than **1000** customers should be able to concurrently access the registration portal per day.

The implementation constraints are:

i) Client side scripting is allowed, but the side must work if it is turned off.

ii) Cross browser/platform design is of primary importance.

2.6 User Documentation

i)   This software package will come with an online Help (web pages) for each of the three types of users (i.e. Academic Department Staff, institute professors and Students of the college) on 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

i)   The online course registration portal is open only for the students who have registered in the college physically.
ii) Student's profile is already in the database
iii) Curriculum with the time table is already specified and designed.

Therefore, dependencies on curriculum management portal and institute database.

3. External Interface Requirements

3.1 User Interfaces

The set of User Interfaces consists of,

i)   To login to the software for authorization using a user **LoginID and Password** provided by the institute.
ii)   To register, add or drop for courses with different types of registration.
iii)   To add, delete or edit courses (only for Dean (A)).
iv)   To accept/reject applications for special and overload registration to the Dean (A).
v)   To specify any prerequisites by the instructor with the category.
vi)   To activate/deactivate the software by the Dean (A).
vii)   Activation of students profile by the Registrar on receiving fees.
viii)   To view the list of students registered in a particular course.

3.2 Hardware Interfaces

NIL

3.3 Software Interfaces

This software package should have an interface with,

i)   The service of College Students Database

ii)   The Curriculum Management System of the Institute.

3.4 Communications Interfaces

This software package should be securely accessible through internet communication channels (wired or wireless) from within the campus of the university. Services like HTTP will be required to connect and communicate with the server.

4. System Features

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

i)   All requirements of the LNMIIT's Registration and Academics Department Staff

ii)   All requirements of the LNMIIT's Instructors

iii)   All requirements of the LNMIIT's Students

Business Use Case # 1: All the Requirements of the Dean and the Academics Department Staff:

4.1 Define Course List and Maintain Student List

4.1.1   Description and Priority

The TBD (to-be-developed) software package should facilitate the LNMIIT academic staff to,

i)   define a new course in any category, its associated credits and eligibility rules;
ii)   modify an existing course and its associated rules (all of the above kinds of rules);
iii)   activate the students account depending on his/her successful completion of physical registration process OR de-activate the registration process with effect from a date and time;
iv)   re-activate/de-activate the software for add/drop on a particular date and time.

The priority of this requirement is 9 (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	The Dean(A) and the **LAS (LNMIIT Academics Staff**) logs-in using user-id and password (user-id and password for every staff member is already present in the institute's	Software will validate the user-id and password; Software will display the LAS Initial Screen by recognizing the user-id;

	database)	
2	LAS enables the student's account for registration after receiving the fee.	Software will display the confirmation screen and the list of all the students that have been registered.
3	Dean(A) chooses the 'Define a New Course' OR 'Modify an Existing Course' option;	The software will display a form to enter the details of the corresponding course and all the associated rule-sets.
4	If errors are displayed, the Dean(A) will correct the errors and re-submit the new course details;	Software will display the Dean's(A) Initial Screen;
5	Dean(A) can choose either to 'Accept' OR 'Reject' the application of the student for Overload / Repeat / Special Registration;	Software will update the student's profile if he / she is permitted for the applied option and then will display the previous screen;

4.1.3   Functional Requirements

- All the users of the software will be provided by a LoginID and Password.
- Special/Repeat/Overload registration needs to be confirmed by the Dean (A).
- A student cannot register until he completes physical registration (**fee payment**).
- The Dean (A) can add/modify/delete a course. He specifies all the details (**Course Name, Course Code, Course Credits, Course Instructor and Course Type**).
- The Dean (A) can view the list of students in any particular course.
- The Dean (A) can view details of all the students.
- The Registrar activates the account for registration of those students who has paid the fees. The Registrar can see (year wise) all the students who have paid the fees.

Business Use Case # 2: All the Requirements of the LNMIIT Course Instructors:

4.2   Modify the Course Details and View the Student List

4.2.1   Description and Priority

The TBD (to-be-developed) software package should facilitate the LNMIIT instructors to:

i)   Review the List of Students enrolled in their course,
ii)   Provide and Modify the course details like pre-requisites, number of seats available, course structure etc.

The priority of this requirement is 8.

4.2.2   Stimulus/Response Sequence

S No.	Stimulus from the User	Response from the Software
1	The professor logs-in using user-id and password (user-id and password is already provided to all).	Software will validate the user-id and password; if successful will display the instructor's Initial Screen displaying the courses taken by him/her in the current semester, otherwise will display an error message;
2	The instructor selects the 'Edit' option;	Software will display a screen of the corresponding course to modify the course details;

4.2.3   Functional Requirements

- An instructor can view the list of students falling under his/her course.
- **Prerequisite** and **condition (year/branch)** for the course will be mentioned by the instructor.

Business Use Case # 3: All the Requirements of the LNMIIT students:

4.3   Register for the Courses

4.3.1   Description and Priority

The TBD (to-be-developed) software package should facilitate the LNMIIT students to,

i)   Review the Courses they have done till date,
ii)   Complete the Registration Application details and submit it,
iii)   Check which courses are available in his/her curriculum for the current semester,
iv)   Find out the status of a submitted registration application for **overload, special and repeat**.

The priority of this requirement is 7.

4.3.2   Stimulus/Response Sequence

S No.	Stimulus from the User	Response from the Software
1	The students accesses the LNMIIT's Registration Software through the internet after completing the physical registration;	Software displays the Log-in screen.
2	The students logs-in using user-id and password (user-id and password for every student is already present in	Software will validate the user-id and password; if successful will display the student's Initial Screen

	the institute's database and will be activated after physical registration);	by recognizing the user-id displaying the courses done till date, otherwise will display an error alert;
3	The Student fills-in the registration form fields;	Software validates the fields; if there are any errors like clash in the time slots, software will display the error messages else it will display the message that the Student has been successfully registered;
4	The Student chooses which type of registration he/she wants whether special or overload or normal or repeat;	In case of Special or Overload or Repeat registration software will send an application to Dean(A) for permission for that course;
5	The Student chooses to 'Add' or 'Drop' a course;	Software will display the list of courses from which the student can add or drop a course and will update the student's profile with proper validation checks ;
6	The Student selects the 'Swap' option;	Software will display the screen to enter the details of the course and the student with whom the course is to be swapped; A message for the request of swapping the course is sent to the corresponding student. If he / she accepts the request then the course will be swapped, else an alert message will be displayed;

4.3.3   Functional Requirements

- Students can view all the courses opted by them till the last semester. If registered, courses of the current semester can also be viewed.
- After paying fees, a student can register for courses in the specified time of registration.
- A student can register for courses with special/overload/normal curriculum.
- A student can opt for special/overload/repeat on confirmation by Dean (A). He sends a written application with the registration form for the Dean (A).
- A student can view only his/her details only.
- During add/drop, a student can drop any of his/her course from the earlier registration and/or add any new course. The resultant curriculum, if falls under special/overload/repeat, will go for confirmation to the Dean (A).
- A student can opt for courses falling in the same time slot.
- A student can view details of any course, as specified by the Dean (A) and the instructor.

5 Other Nonfunctional Requirements

5.1 Performance Requirements

The software should be capable of handling burst of users for duration of 3 hours atleast. Each transaction (situation-response case), on an average taken for a duration of 8 hours or till 1000 transactions 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 40 student profiles views
    iii)   There are 40 course details 'Active' and
    iv)   The database of atleast 25 different courses may be 'Active' at a time.

5.2 Safety Requirements

This software makes the registration process 'paperless'; but it should have a provision of printing the names of all the students registered for a particular course. In order to safeguard University's database, back-up in PDF format should be created after every semester.

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;
    iii)   Any new registered user needs to be confirmed by the academics.
    iv)   Should be protected against SQL injection.

5.4 Other Software Quality Attributes

    i)   Extensibility/Maintainability: The software should be incremental type and any further modifications can be implemented depending upon the hardness level of modifications.
    ii)   Security and Availability: This software is accessible from within the campus of the university only and also an authorization service is being implemented so that only those students/instructors who are having a valid LoginID and Password will be given access to this software.
    iii)   Portability: The software will run on any system connected to university LAN or WLAN. However, the browser should support basic CSS, javascript, ajax, jquery, php etc.
    iv)   Reliability: A failure should not occur while submitting the registration form or when a user is making changes in his/her account.

5.5   Business Rules

i)   Only Dean (A) is allowed to add/delete a course.
ii)   The Dean (A) has to confirm registrations under overload or special registration.
iii)   Number of seats in each course is decided by the instructor.
iv)   The curriculum pattern is decided by the Dean (A).
v)   A student can register only his/her courses.
vi)   A student can see all the courses completed by him till date.
vii)   A student can select course only according to the curriculum applicable to him/her. Else, he/she should opt for special registration which will be confirmed by the Dean (A).
viii)   A professor can see all the students registered in his/her course only.

6   Other Requirements

NIL

Appendix A: Glossary

Special: *Registration of courses without following the given curriculum.*
Overload: *Registration with more credits than specified in the curriculum.*
Normal: *Registration in accordance to the given curriculum.*
Dean (A): *Dean Academics.*

Appendix B: Analysis Models

NIL

Appendix C: To Be Determined List

NIL