

# AI Driven Learning Management Portal



DD(BCA-MCA) Semester-VI  
Submitted By

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Guided by

Submitted to  
Acharya Motibhai Patel Institute of Computer Studies,  
GANPAT UNIVERSITY  
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# AI Driven Learning Management Portal

Empower personalized, adaptive learning journeys through AI-powered insights and automation.

# Project Profile: -

Project category	AI Driven Learning Management Portal
Objective	Empower personalized, adaptive learning journeys through AI-powered insights and automation.
Front End	CSS/HTML/JS
Back End	MySQL, Java 17
Tool	Spring Tool Suit 4.2 (Spring Boot)
Documentation Tool	Microsoft Office 2021
Collage Internal Guide	Narendra Patel
Collage External guide	Narendra Patel
Developed By	Shashwat Nirmal (21032431017)
Group No	
Company Name	BISAG-N
Company Guide	Rashmi Patel
Company Co-Ordinator	Siddharth Patel

# Company Profile

## About BISAG- N



### ABOUT THE INSTITUTE

Modern day planning for inclusive development and growth calls for transparent, efficient, effective, responsive and low cost decision making systems involving multi-disciplinary information such that it not only encourages people's participation, ensuring equitable development but also takes into account the sustainability of natural resources. The applications of space technology and Geo-informatics have contributed significantly towards the socio-economic development. Taking cognizance of the need of geo-spatial information for developmental planning and management of resources, the department of Ministry of Electronics and Information Technology, Government of India, established "Bhaskaracharya National Institute for Space Applications and Geo-informatics" (BISAG- N). BISAG- N is an ISO 9001:2008, ISO 27001:2005 and CMMI: 5 certified institute. BISAG- N which was initially set up to carryout space technology applications, has evolved into a centre of excellence, where research and innovations are combined with the requirements of users and thus acts as a value added service provider, a technology developer and as a facilitator for providing direct benefits of space technologies to the grass root level functions/functionaries.

# Company Profile

## BISAG- N Journey

**2003-04**



**Gujarat  
SATCOM  
Network**

**2007-08**



**Centre for  
Geo-  
informatics  
Application  
s**

**2010-11**



**Academy of  
Geo-  
informatics  
for  
Sustainable  
Developmen  
t**

**2012-13**

**A full-  
fledged  
Campus**



# Company Profile

## Activities



### Satellite Communication..

for promotion and facilitation of the use of broadcast and teleconferencing networks for distant interactive training, education and extension.



### Remote Sensing..

for Inventory, Mapping, Developmental planning and Monitoring of natural & man-made resources.



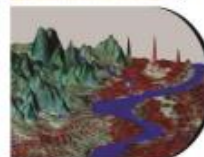
### Geographic Information System..

for conceptualization, creation and organization of multi purpose common digital database for sectoral/integrated decision support systems.



### Global Navigation Satellite System..

for Location based Services, Geo-referencing, Engineering Applications and Research.



### Photogrammetry..

for Creation of Digital Elevation Model, Terrain Characteristic, Resource planning.



### Cartography..

for thematic mapping, value added maps.



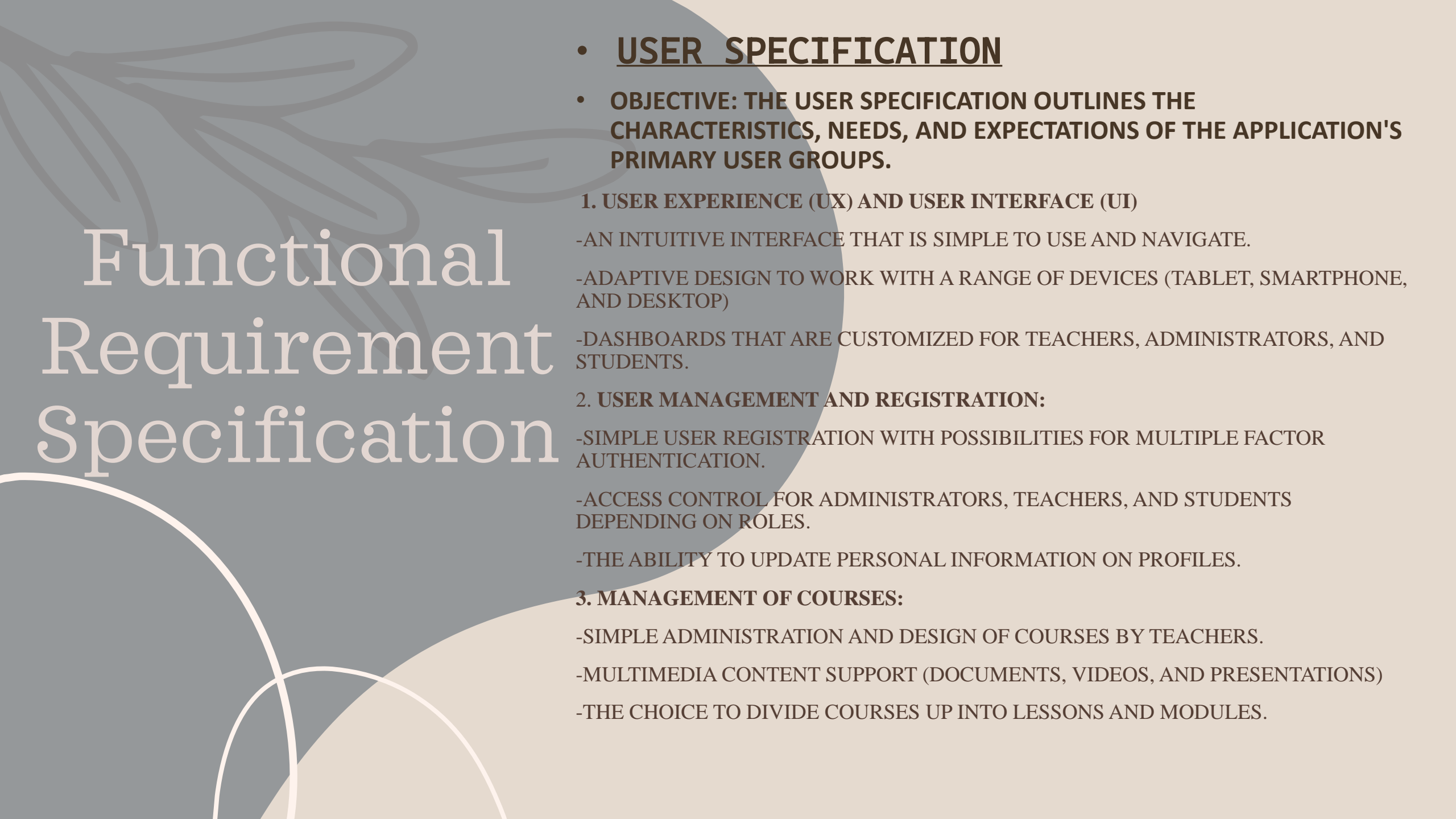
### Software Development..

for wider usage of Geo-spatial applications, Decision Support Systems (desktop as well as web based), ERP solutions.



### Education, Research and Training..

for providing Education, Research, Training & Technology Transfer to large number of students, end users & collaborators.



# Functional Requirement Specification

- **USER SPECIFICATION**
- **OBJECTIVE: THE USER SPECIFICATION OUTLINES THE CHARACTERISTICS, NEEDS, AND EXPECTATIONS OF THE APPLICATION'S PRIMARY USER GROUPS.**
  - 1. USER EXPERIENCE (UX) AND USER INTERFACE (UI)**
    - AN INTUITIVE INTERFACE THAT IS SIMPLE TO USE AND NAVIGATE.
    - ADAPTIVE DESIGN TO WORK WITH A RANGE OF DEVICES (TABLET, SMARTPHONE, AND DESKTOP)
    - DASHBOARDS THAT ARE CUSTOMIZED FOR TEACHERS, ADMINISTRATORS, AND STUDENTS.
  - 2. USER MANAGEMENT AND REGISTRATION:**
    - SIMPLE USER REGISTRATION WITH POSSIBILITIES FOR MULTIPLE FACTOR AUTHENTICATION.
    - ACCESS CONTROL FOR ADMINISTRATORS, TEACHERS, AND STUDENTS DEPENDING ON ROLES.
    - THE ABILITY TO UPDATE PERSONAL INFORMATION ON PROFILES.
  - 3. MANAGEMENT OF COURSES:**
    - SIMPLE ADMINISTRATION AND DESIGN OF COURSES BY TEACHERS.
    - MULTIMEDIA CONTENT SUPPORT (DOCUMENTS, VIDEOS, AND PRESENTATIONS)
    - THE CHOICE TO DIVIDE COURSES UP INTO LESSONS AND MODULES.

# Functional Requirement Specification

- **USER SPECIFICATION**

## **4. AI-POWERED CONTENT SUGGESTIONS:**

- TAILORED CONTENT SUGGESTIONS ACCORDING TO DISTINCT LEARNING PREFERENCES.
- ADAPTIVE LEARNING PATHWAYS TO ACCOMMODATE VARYING PREFERENCES AND SKILL LEVELS.
- APPLICATION OF AI ALGORITHMS TO EVALUATE USER BEHAVIOUR AND MAKE CONTENT RECOMMENDATIONS.

## **5. EVALUATION AND RECOMMENDATIONS:**

- DIVERSE FORMS OF EVALUATION (TESTS, ASSIGNMENTS, QUIZZES).
- AUTOMATIC GRADING WITH A MANUAL OVERRIDE OPTION WHEN APPROPRIATE.
- DETAILED ASSESSMENT FEEDBACK TO HELP LEARNERS.

## **6. MONITORING PROGRESS:**

- REAL-TIME TRACKING OF STUDENTS' AND TEACHERS' PROGRESS.
- THE VISUAL DISPLAY OF PROGRESS VIA GRAPHS AND CHARTS.
- NOTIFICATIONS AND ALERTS FOR ASSIGNMENTS THAT ARE LATE OR UNFINISHED.



# Functional Requirement Specification

- **USER SPECIFICATION**

## **7. REPORTING AND ANALYTICS:**


- ADMINISTRATORS AND TEACHERS CAN ACCESS A COMPREHENSIVE ANALYTICS DASHBOARD.
- DETAILS REGARDING LEARNER PERFORMANCE, COMPLETION RATES, AND ENGAGEMENT.
- REPORTS THAT CAN BE TAILORED FOR VARIOUS STAKEHOLDERS.

## **8. SECURITY AND DATA PRIVACY:**

- USER INFORMATION IS PROTECTED BY STRONG DATA ENCRYPTION.
- CONTINUOUS SECURITY ASSESSMENTS AND UPDATES TO GUARD AGAINST WEAKNESSES.
- ADHERENCE TO PERTINENT DATA PRIVACY LAWS (SUCH AS HIPAA AND GDPR)

## **9. TRAINING AND SUPPORT FOR USERS:**

- THOROUGH USER GUIDES AND DOCUMENTATION.
- PROMPT CUSTOMER SERVICE FOR QUESTIONS AND TECHNICAL PROBLEMS.
- TRAINING MATERIALS FOR TEACHERS, ADMINISTRATORS, AND STUDENTS.



# Functional Requirement Specification

- **MODULE SPECIFICATION**

- 1. USER AUTHENTICATION MODULE:**

- MULTI-FACTOR AUTHENTICATION DURING USER REGISTRATION.
- ACCESS CONTROL FOR ADMINISTRATORS, TEACHERS, AND STUDENTS DEPENDING ROLES.

- 2. COURSE MANAGEMENT MODULE:**

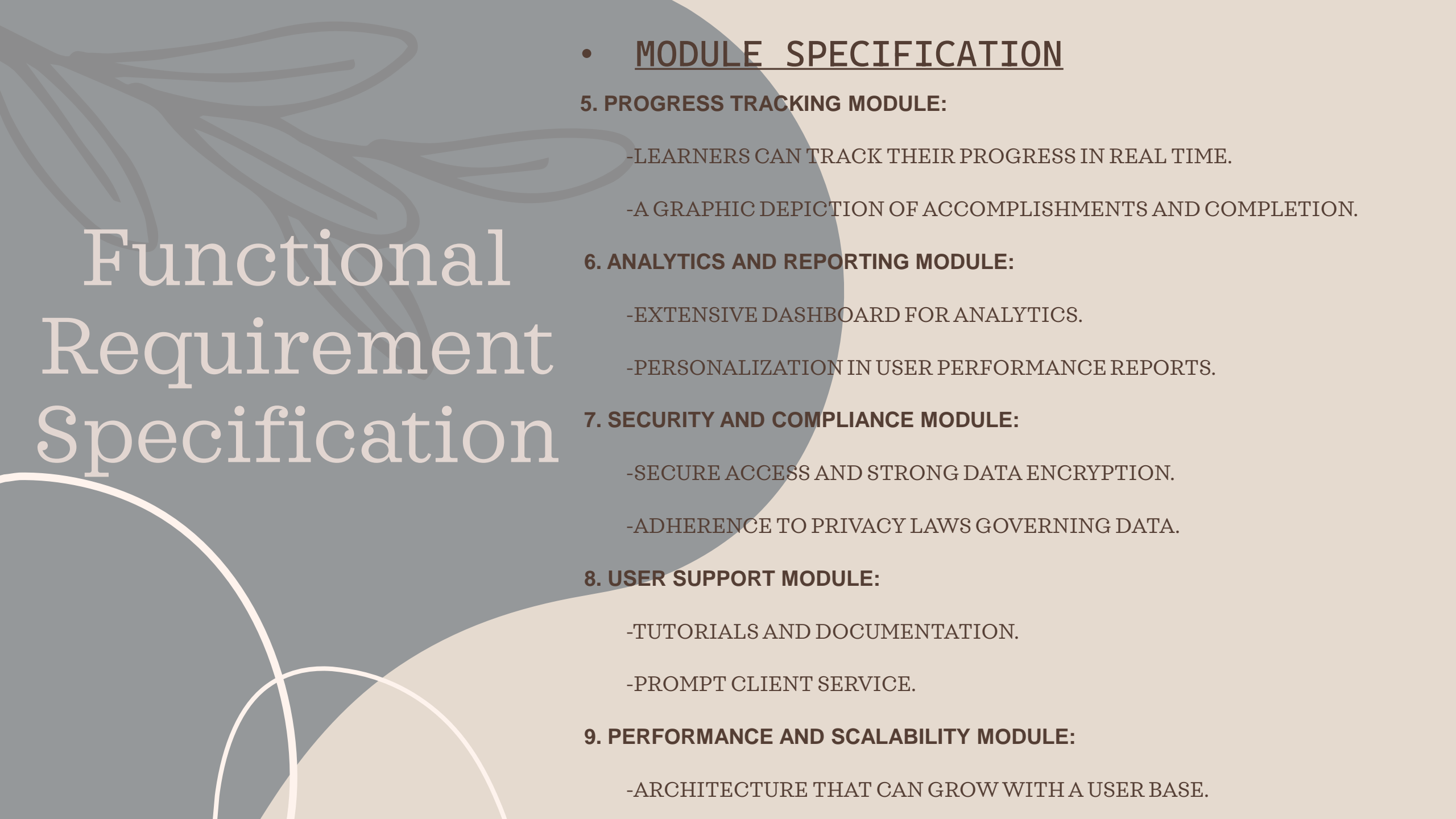
- EASY-TO-USE TOOL FOR CREATING AND EDITING COURSES.
- MULTIMEDIA CONTENT UPLOAD SUPPORT.

- 3. AI-POWERED RECOMMENDER MODULE:**

- TAILORED SUGGESTIONS FOR MATERIAL.
- LEARNING ROUTES THAT ADAPT ACCORDING TO USER BEHAVIOUR.

- 4. ASSESSMENT MODULE:**

- MULTIPLE FORMATS FOR ASSESSMENTS (ASSIGNMENTS, QUIZZES).
- AUTOMATED FEEDBACK AND GRADING.



# Functional Requirement Specification

- **MODULE SPECIFICATION**

**5. PROGRESS TRACKING MODULE:**

- LEARNERS CAN TRACK THEIR PROGRESS IN REAL TIME.
- A GRAPHIC DEPICTION OF ACCOMPLISHMENTS AND COMPLETION.

**6. ANALYTICS AND REPORTING MODULE:**

- EXTENSIVE DASHBOARD FOR ANALYTICS.
- PERSONALIZATION IN USER PERFORMANCE REPORTS.

**7. SECURITY AND COMPLIANCE MODULE:**

- SECURE ACCESS AND STRONG DATA ENCRYPTION.
- ADHERENCE TO PRIVACY LAWS GOVERNING DATA.

**8. USER SUPPORT MODULE:**

- TUTORIALS AND DOCUMENTATION.
- PROMPT CLIENT SERVICE.

**9. PERFORMANCE AND SCALABILITY MODULE:**

- ARCHITECTURE THAT CAN GROW WITH A USER BASE.

# About Existing System(Limitations)

## **1. LIMITED ENGAGEMENT:**

- SOME LMS SYSTEMS MAY FIND IT DIFFICULT TO PROPERLY INCLUDE USERS, WHICH LOWERS MOTIVATION AND INVOLVEMENT.

## **2. CONTENT RESTRICTION:**

- AN ALL-ENCOMPASSING LEARNING EXPERIENCE MAY BE HAMPERED BY AN LMS'S INABILITY TO ACCOMMODATE A VARIETY OF CONTENT KINDS OR INTERACTIVE LEARNING FORMS.

## **3. CUSTOMIZATION CHALLENGES:**

- ADAPTING AN LMS TO A PARTICULAR ORGANIZATION'S DEMANDS CAN BE DIFFICULT AND NECESSITATE TECHNOLOGICAL KNOW-HOW.

## **4. USER ACCESSIBILITY:**

- PROBLEMS WITH ACCESSIBILITY COULD OCCUR AND AFFECT HOW PEOPLE WITH IMPAIRMENTS LEARN.

## **5. EXPENSIVE IMPLEMENTATION:**

- SOME BUSINESSES MAY FIND IT FINANCIALLY CHALLENGING DUE TO THE HIGH INITIAL SETUP COSTS AND CONTINUING MAINTENANCE CHARGES.

# About Existing System(Limitations)

## **6. TECHNOLOGICAL DEPENDENCE:**

- THE EFFECTIVENESS OF LMSS IS HIGHLY DEPENDENT ON THE STATE OF THE TECHNOLOGY INFRASTRUCTURE AND INTERNET CONNECTIVITY, WHICH MAY LEAD TO DISRUPTIONS.

## **7. SCALABILITY ISSUES:**

- AS USER BASES INCREASE, SOME LMS MAY FIND IT DIFFICULT TO SCALE EFFICIENTLY, WHICH COULD HAVE AN IMPACT ON RESPONSIVENESS AND PERFORMANCE.

## **8. DATA SECURITY CONCERNS:**

- MAINTAINING PRIVATE STUDENT DATA INVOLVES SECURITY CONCERNS THAT CALL FOR STRONG DEFENCES AGAINST DATA BREACHES.

## **9. LIMITED INTERACTIVITY:**

- LACK OF SOPHISTICATED INTERACTIVE LEARNING CAPABILITIES IN CERTAIN LMSS MIGHT AFFECT USER ENGAGEMENT AND RETENTION OF INFORMATION.

## **10. RESISTANCE TO CHANGE:**

- USERS' OR STAFF MEMBERS' RESISTANCE TO THE NEW SYSTEM CAN IMPEDE ITS EFFECTIVE ADOPTION AND USE.

# Need for new system?

- ENHANCED USER EXPERIENCE
- IMPROVED SECURITY MEASURES
- BETTER SEO
- CUSTOMIZATION OF COURSES AND PROGRAMS
- ENHANCED ANALYTICS AND REPORTING
- LEGAL COMPLIANCE
- COMPETITIVE ADVANTAGE
- FUTURE-PROOFING



# Technical Requirements

- **HARDWARE REQUIREMENTS**

- ❖ **HARDWARE (SERVER SIDE):**

- **PROCESSOR (CPU):**

- DUAL-CORE OR QUAD-CORE PROCESSOR OR HIGHER

- **RAM (MEMORY):**

- AT LEAST: 2GB TO 4GB

- **SSD STORAGE:**

- 20GB TO 50GB FREE SPACE

- ❖ **HARDWARE (CLIENT SIDE): -**

- INTERNET-CONNECTED DEVICE: DESKTOP, LAPTOP, TABLET, OR SMARTPHONE.

# Technical Requirements

- **SOFTWARE REQUIREMENTS**

- ❖ **SOFTWARE (SERVER SIDE):**

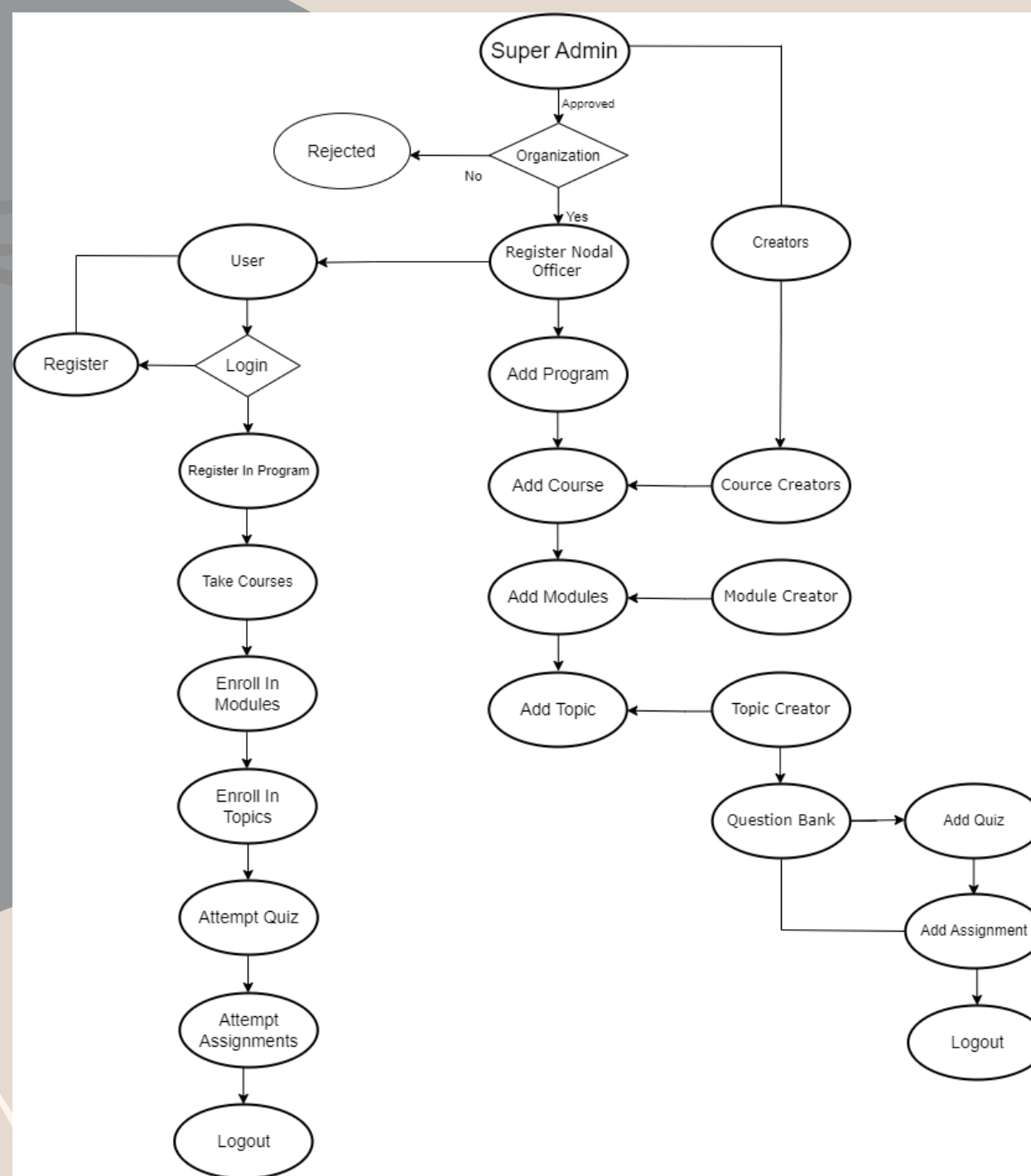
- **WEB SERVER SOFTWARE:** APACHE, TOMCAT
- **DATABASE MANAGEMENT SYSTEM:** MYSQL
- **SSL CERTIFICATE:** ENABLE HTTPS FOR SECURITY
- **SECURITY MEASURES:** FIREWALL, IDS, AND MALWARE SCANNING
- **BACKEND SOFTWARE:** STS (SPRING BOOT)

- ❖ **SOFTWARE (CLIENT SIDE): -**

- **COMPATIBILITY WITH VARIOUS OPERATING SYSTEMS** (E.G., WINDOWS, MACOS, IOS, ANDROID) FOR CLIENT DEVICES.
- **WEB BROWSER:** MODERN WEB BROWSERS LIKE CHROME, FIREFOX, SAFARI, OR EDGE FOR ACCESSING THE APPLICATION.
- **OPERATING SYSTEM:** LINUX (E.G., UBUNTU, CENTOS)

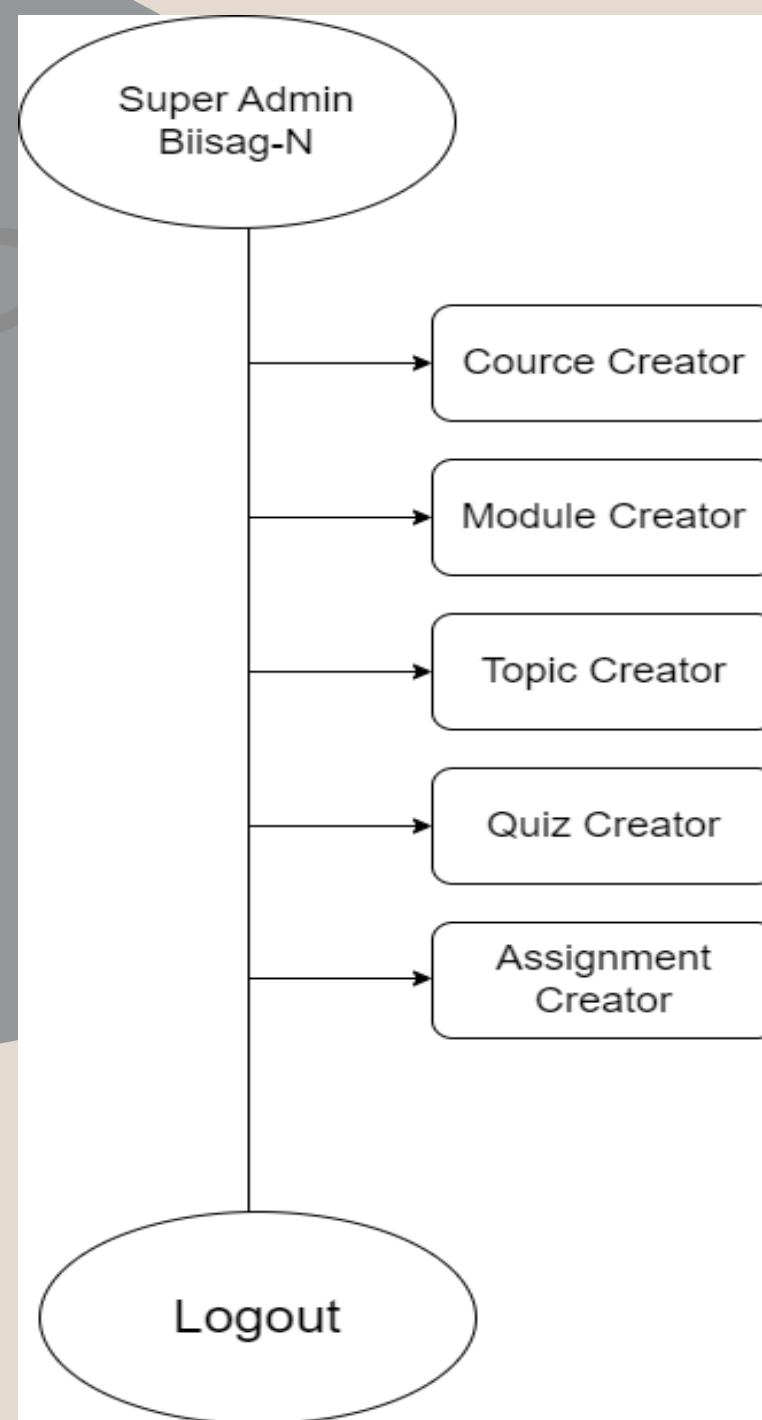
# Flow Chart

## System Flow Chart



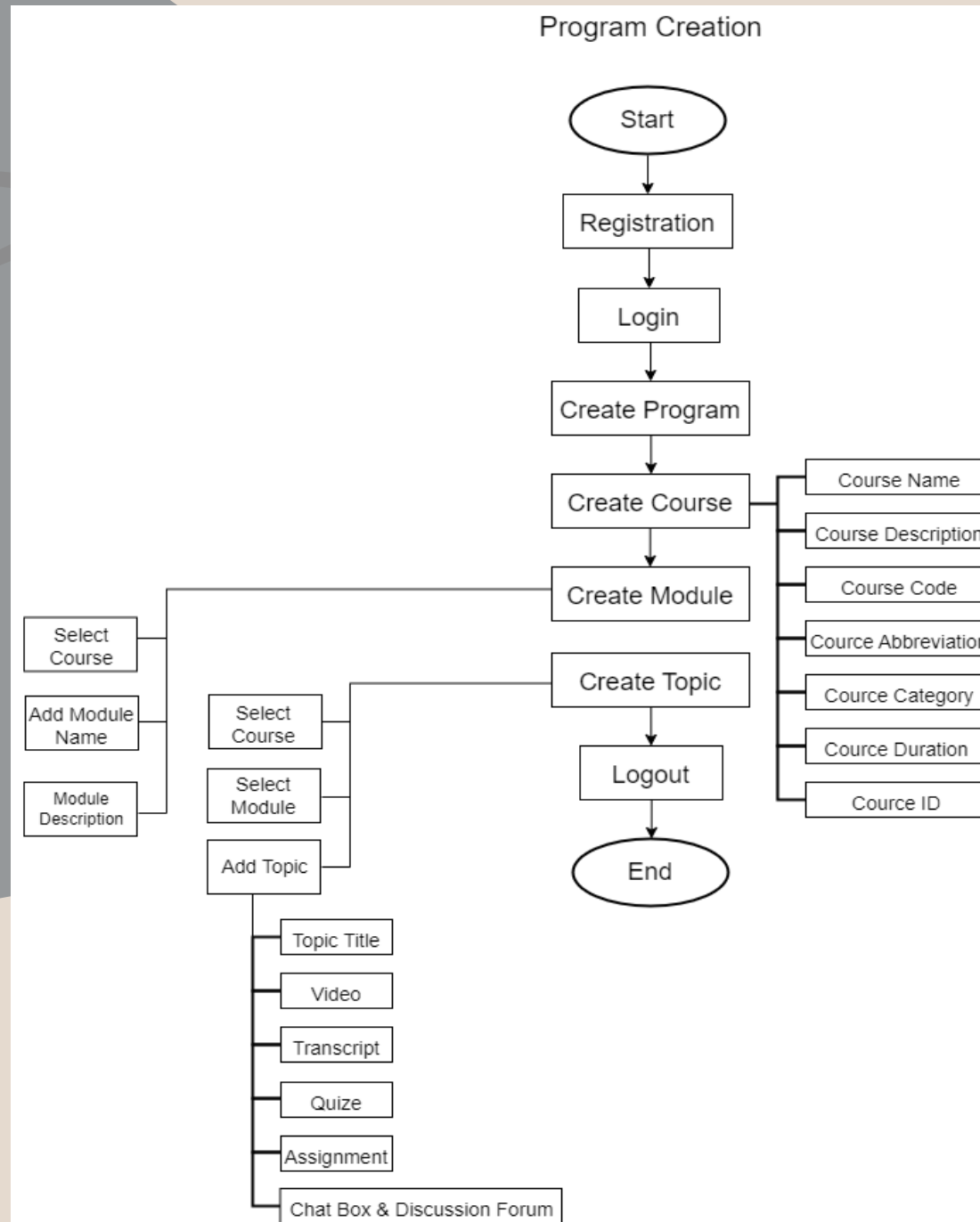
# ❑ Flow Chart

## Admin Flow Chart



# ❑ Flow Chart

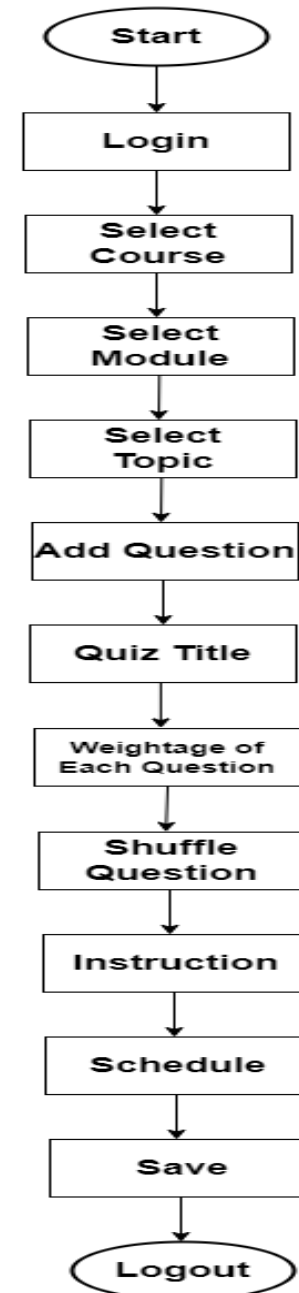
## Program:-Course, module and topic Creation Flow Diagram



# Flow Chart

## Quiz Creation Flow Diagram

### Quiz Creation

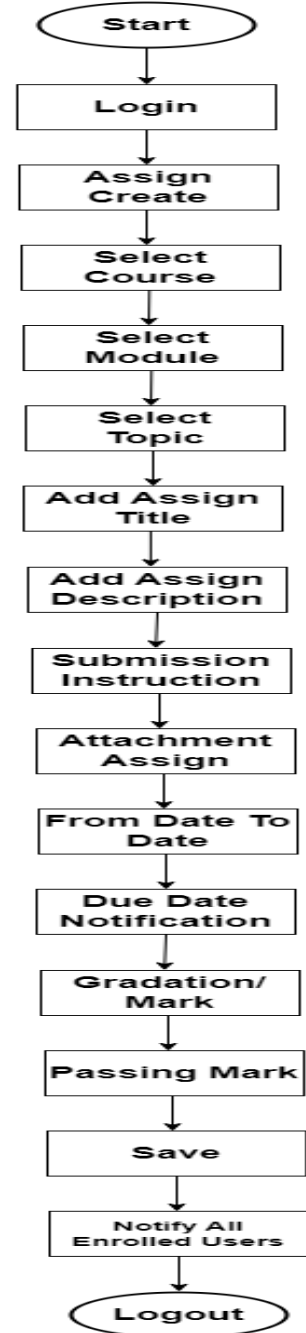




# ❑ Flow Chart

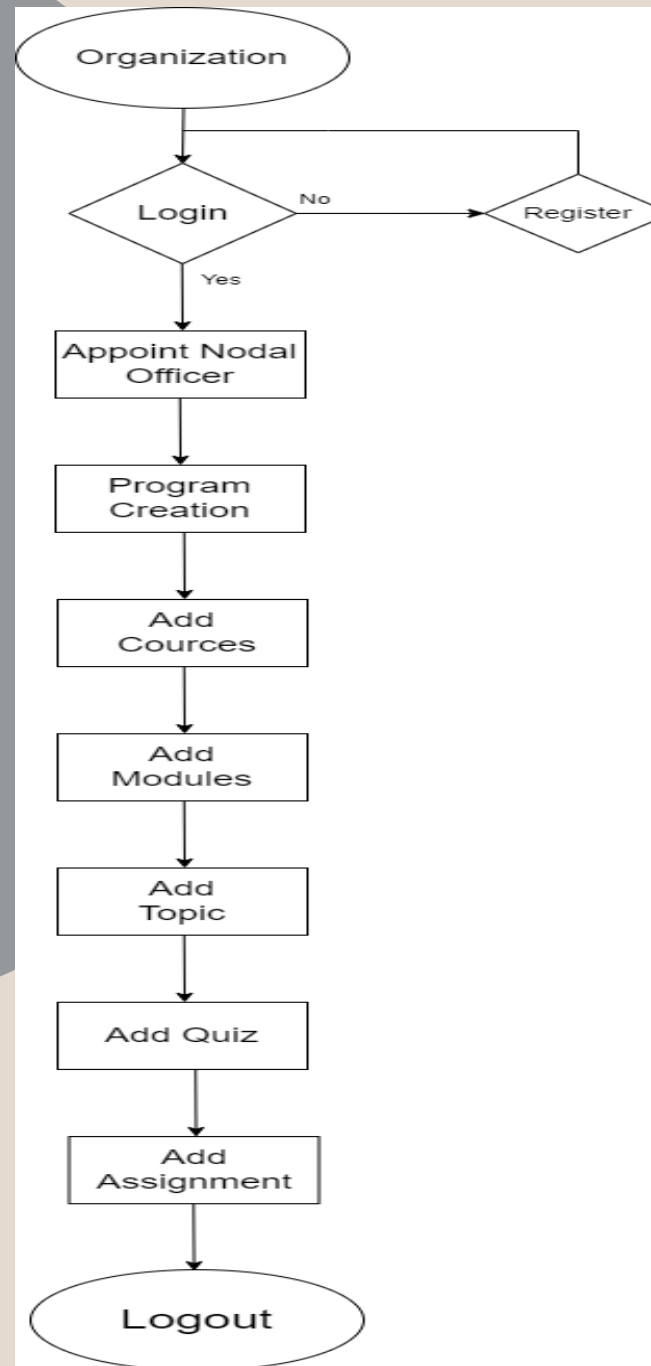
## Assignment Creation Flow Diagram

### Assignment Creation



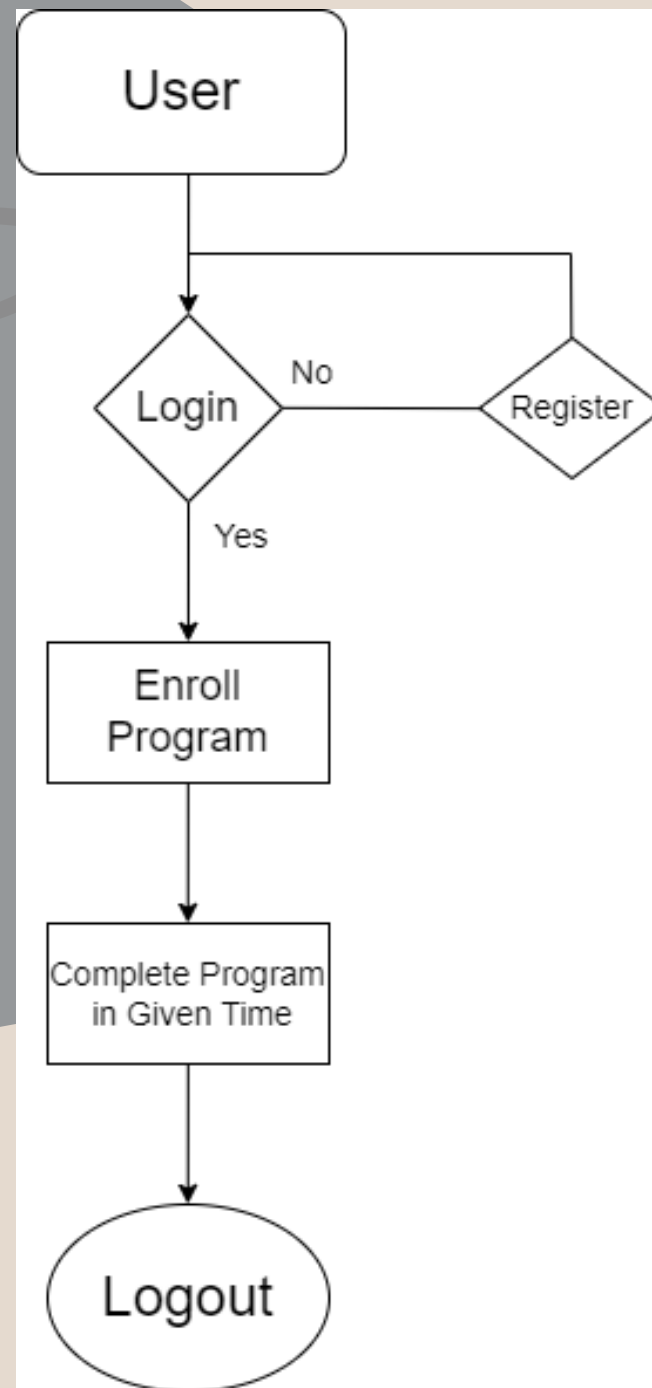
# ❑ Flow Chart

## Organization Flow Diagram



# ❑ Flow Chart

## Learner (End User) Flow Diagram



The background features a light gray base with large, soft-edged organic shapes in muted red and olive green. A thin white line outlines a shape on the right. In the top left, there is a faint, light gray sketch of a leafy branch.

Thank you