



## **Software Engineering and Web Technologies Laboratory**

**Integrated Project on**

# **DUGC**

**Bachelor of Engineering  
IN  
COMPUTER SCIENCE AND ENGINEERING**

*Submitted By*

**D2 Batch**

**Faculty In charges**

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# Chapter 1

## INTRODUCTION

### 1.1 Preamble

DUGC plays a crucial part in understanding students' learning abilities and challenges, and how they have performed in each area of the syllabus. Data analysis consolidates information to provide the big picture of trends and patterns using suitable conventions(eg. tables & graphs) for higher education leadership teams that can be used to evaluate and improve the overall student experience. So it is important to develop an automated model to display the analysis by taking the raw input.

The website is used by three types of clients who have different designations who are DUGC Coordinator, DUGC Chairman and Course Coordinators.

Course Coordinators will have three choices as buttons which are Single Sheet Upload, Consolidated Sheet Upload and Delete Sheet. They select the academic year, type of semester (odd or even), semester, course, division, exam (minor1, minor2 or Activity) and choose a file. Course Coordinator can also upload Consolidated sheets which include marks of all divisions in a single excel sheet and get acknowledgement of all divisions uploaded.

The DUGC Coordinator selects the semester, and exam type, a consolidated table is displayed which includes division and mark wise analysis of data. Below the table, we get visualizations of each course in the form of Bar Graphs which shows performance of each division and hence each division performance on a particular course can be compared with the previous year performance.

For Lab CIE analysis, the Course Coordinator can view the results of previous years by selecting particular year, semester and division to get graphical analysis. They can view the Lab CIE marks deviation of the current year with the previous year analysis.

For Sem-End analysis, the DUGC Coordinator will have a table to enter passing percentage for each course for a particular semester. Further they can view two graph analyses for comparison of passing percentage and total passing percentage with previous years data.

For generating Student Ineligibility List, Course Coordinator can upload the excel

sheet containing CIA marks and respective course code. System shall generate a consolidated list for every sem that is for theory and lab which can be printed as per the specified template.

The Course Withdrawal system interface can be used to approve or reject the course withdrawal application and then generate a report.

For Automated Mail Circular/Notices, the user can view and edit the circular and notices which are already saved in the website. Edited documents (circular/notices) will be saved and sent with reminder messages to the DUGC members.

Constituting all these modules, we will be creating a website for the DUGC department for the ease of managing, uploading, analyzing and storing the analysis made by DUGC.

## 1.2 Problem Definition

To design and implement a website for the DUGC department which will be managing Makeup Minor Approval, Theory Result analysis, Lab Result Analysis, Semester-End Examination Analysis, Ineligibility List Approval, Course Withdrawal and Automated Circulars/Notices.

## 1.3 Objectives

- To develop a web application for the DUGC department for automating DUGC Analysis.
- To automate entering marks, calculations and giving visualizations (graphs) to the DUGC department.
- To provide functionalities like circular/notice, ineligibility list, course withdrawal.

# Chapter 2

## SOFTWARE REQUIREMENT SPECIFICATIONS

### 2.1 Functional requirements and use case diagram

#### User requirements :

- Users shall use the DUGC makeup minor interface to add the student details for those who can apply for the makeup minor and the DUGC coordinator will approve or disapprove the student and finally approved students will be listed.
- The DUGC chairman can add a new course by entering the course code and course name. For a certain semester, division, and exam type, the course coordinator uploads marks in the form of spreadsheets or a consolidated spreadsheet, the course coordinator can also delete spreadsheets uploaded. The DUGC coordinator can view the consolidated marks table of a particular semester of a particular exam type (minor1, minor2 or activity), DUGC coordinator can also view the graphical analysis of the marks in comparison with the marks of previous year.
- For Lab CIE analysis, the Course Coordinator can view the results of previous years by selecting particular year, sem and division and the current year spreadsheets can also be uploaded which instantly gives the graphical analysis. Further they can view the Lab CIE marks deviation of the current year with the previous year analysis.

- For Sem-End analysis, the DUGC Coordinator can enter passing percentage for each course After choosing for which semester courses they are entering data for. Further they can view two graph analyses; one for comparison of passing percentage for courses with previous year courses, and another for comparison of total passing percentage of that semester with previous year total passing percentage.
- For generating student ineligibility list, course coordinator should upload the excel sheet containing student USN, attendance ,CIA marks and respective course code ,System shall generate consolidated list for every sem that is for theory and lab.DUGC member and Course coordinator shall be able to print consolidated student ineligibility list as per the specified template.
- Users shall use the DUGC course withdrawal system interface to approve or reject the course withdrawal application and then generate a report.
- For Automated Mail Circular/Notices, the user can view and edit the circular and notices which are already saved in the website. And edited documents (circular/notices) should be saved and mail should be sent to the DUGC members. And also user can send reminder message to the DUGC members.

## **System requirements :**

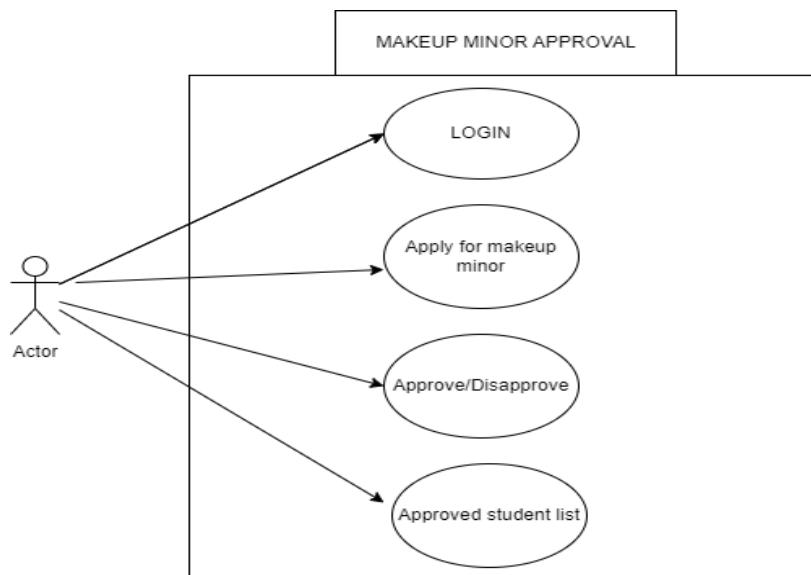
- The user shall be able to login to the page.
- The student shall be able to fill up the makeup minor form.
- The system shall generate a list of students who are attending a makeup minor exam.
- The staff member using the system shall be uniquely identified by the student USN.
- The module shall allow the course coordinator to upload the marks of students for a particular semester, division and course or consolidated sheet of all the divisions.
- The module shall allow the DUGC to allow the DUGC chairman to add a new course to the database by taking course code and course name as input.
- The module shall be able to store the marks in the database.

- The module shall be able to show the consolidated table of mentioned exam and semester to the DUGC coordinator.
- The module shall be able to show the analysis of marks and visualizations of each semester of particular exam type to the DUGC coordinator.
- The module shall allow the course coordinator to upload the spreadsheets.
- The module shall be able to download the spreadsheet or view the spreadsheets in the browser itself.
- The module shall allow the course coordinator to view the previous year Lab CIE result analysis.
- The module shall allow the course coordinator to enter Ens-Sem results in the table after choosing the semester.
- The module shall provide visual representation for the deviation and distribution of passing percentage for various courses.
- The module shall not proceed without entering details in all the fields.
- The module shall provide visual representation for the distribution of total passing percentage of this year and previous year.
- System shall generate a consolidated list for every sem.
- System shall allow the DUGC coordinator to upload the student ineligibility list.
- DUGC members shall be able to view the consolidated student ineligibility list for each sem.
- The system shall only accept file format xls and Xlsx.
- DUGC member and Course coordinator shall be able to print consolidated student ineligibility list as per the specified template.
- The module shall fetch or store the details about students and courses from or into a database.
- The module shall allow the user to enter the student details.
- The module shall provide the user to choose the courses.
- After the submission of withdrawal form, the system shall generate a list with student name,courses and checkbox for approval or rejection.
- The module shall allow the user to Approve or Reject applications.
- Withdrawal report shall be created and shall list student name, USN of students,course details and with grade(i.e W).
- The module shall allow the DUGC coordinator to open the document and edit the file on the website as well.

- The module shall be able to save and download the file.
- The module shall be able to send mail which is edited by the user.
- The module shall be able to send reminder message to the DUGC members before meeting.

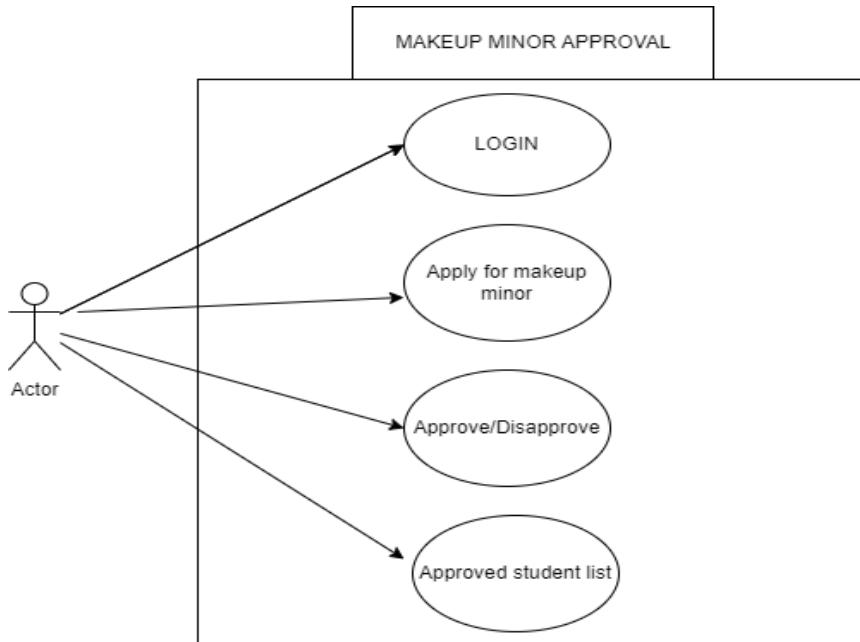
## **Use case diagrams :**

### **Module 1 Makeup Minor Approval**



**Fig.1:** Use case diagram for, adding/editing students' details for makeup, to indicate approval or disapproval for makeup, or displaying students' status as permitted with or without CAP.

**Use case description :Use case diagram for makeup minor approval**



**Actors:** Users, System

**Pre-condition:** Data for the selected options is available

**Post-condition:** Data of the selected options is displayed

#### **Main Scenario :**

1. The DUGC coordinator has to be logged in.
2. The DUGC coordinator has to fill up the makeup minor form.
3. The DUGC coordinator approve or disapprove the student
4. The approved students list will be generated.

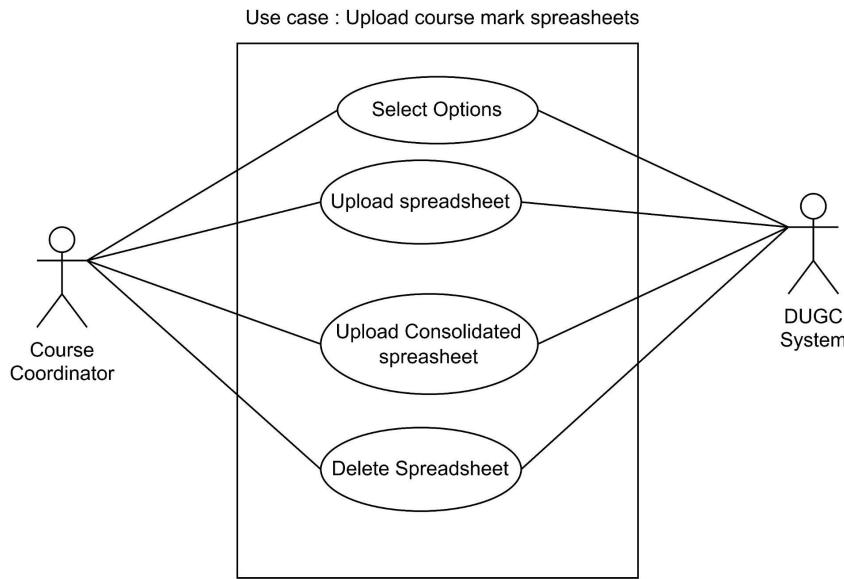
#### **Exception Scenario:**

Data is not available.

- User is asked to upload excel sheets for the missing data.
- System displays analysis based on that data.

## **Module 2 : ISA Analysis(theory)**

### **Use Case 1 : Upload Course marks spreadsheets**



**Fig. 1 : Use case diagram for upload marks sheet**

### Use case description :

Actors : Course Coordinator, DUGC system.

Pre-condition : Course coordinator has logged in.

Post Condition : Marksheets uploaded successfully.

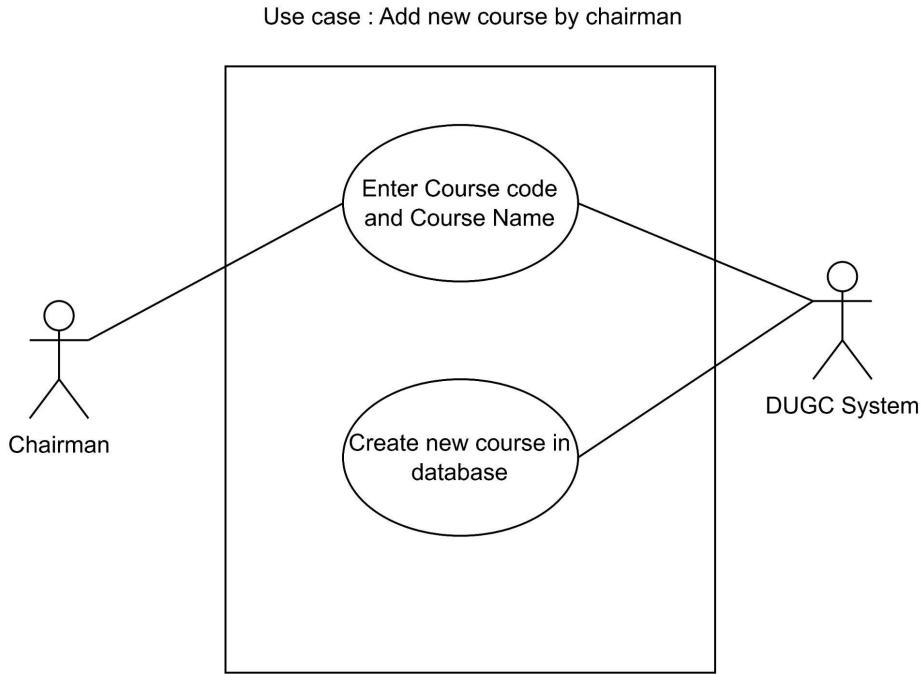
#### Main Scenario :

1. Course coordinator selects the options of which the marks need to be uploaded.
2. Chooses a file from a local device and submits for upload.
3. An acknowledgement is given to the course coordinator.

#### Exception Scenario :

1. User does not select all the options.
  - Error message is displayed.
2. User uploaded the wrong marksheets.
  - Users can delete uploaded marksheets.

### Use Case 2 : Add new course by Chairman



**Fig. 3 : Use case diagram for Adding new course by Chairman**

### Use case description :

Actors : DUGC Chairman, DUGC system.

Pre-condition : DUGC chairman has logged in.

Post Condition : Added new course successfully.

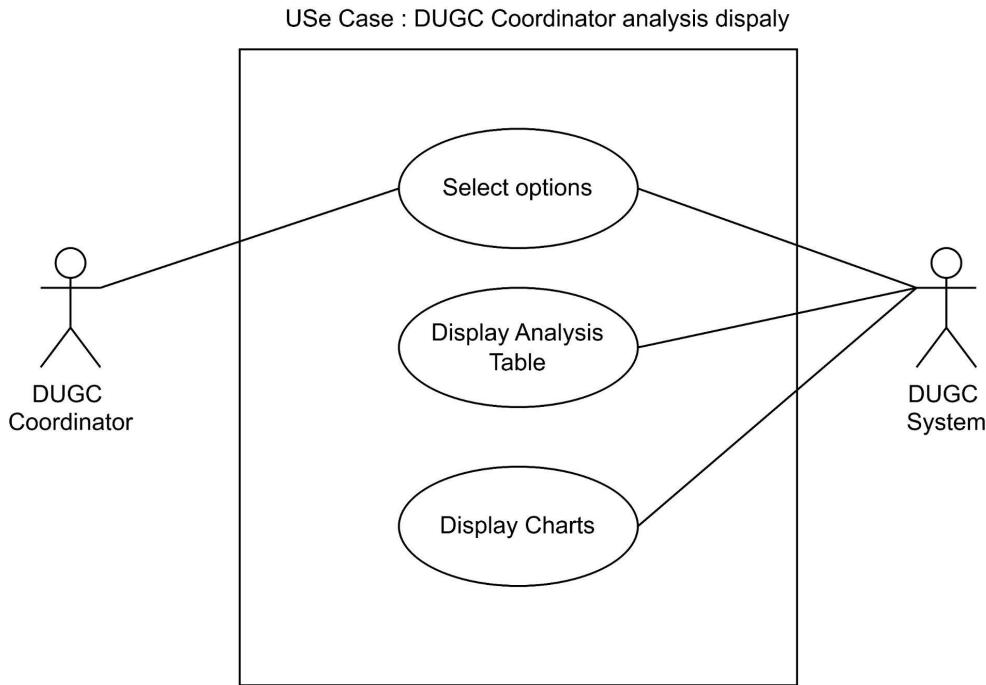
#### Main Scenario :

5. The DUGC chairman selects the sem type and sem.
6. The DUGC chairman enters course code, course name and credits for the course to be added.
7. The DUGC chairman submits the course .
8. Acknowledgement is given to the chairman.

#### Exception Scenario :

1. The DUGC chairman wants to erase all the details entered.
  - Chairman can click on the reset button to erase all the details entered.

### Use Case 3 : Display consolidated analysis and graphical visualizations



**Fig. 4 : Use Case Diagram for DUGC coordinator to display the analysis in tabular and graphical form.**

#### Use case description :

Actors : DUGC Coordinator, DUGC system.

Pre-condition : DUGC coordinator has logged in.

Post Condition : DUGC coordinator views the consolidated analysis.

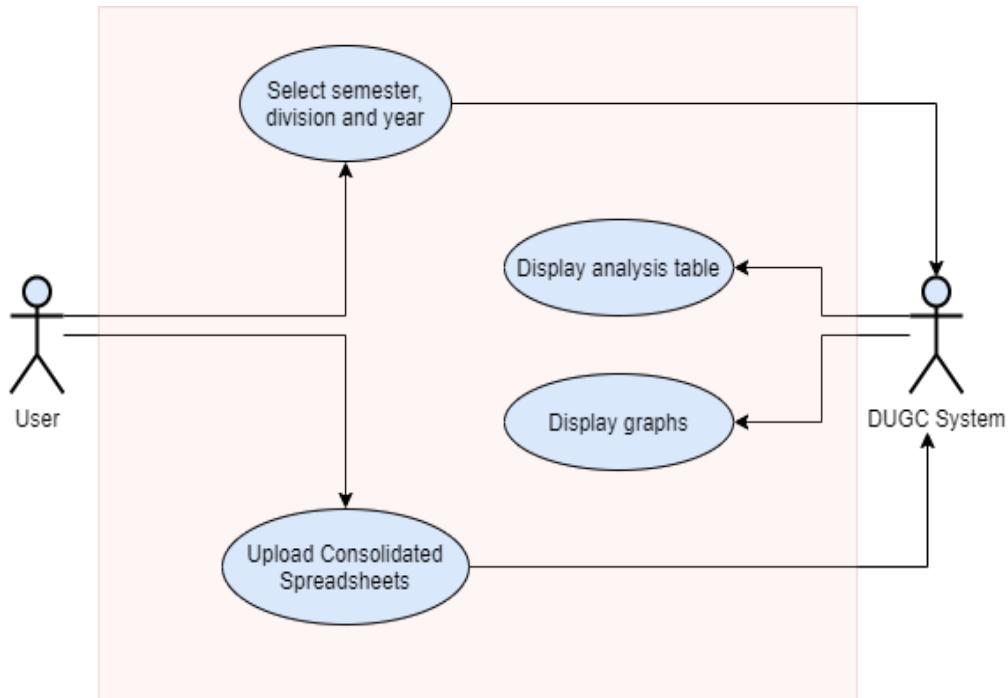
#### Main Scenario :

1. The DUGC coordinator selects the options of which the marks analysis has to be viewed and submits the selected options.
2. The DUGC coordinator views the consolidated marks table and visualizations of present and previous year marks.
3. The DUGC coordinator can take a print of the analysis by clicking the print button.

#### Exception Scenario :

1. DUGC enters options of which marks have not yet been uploaded.
  - An empty table is displayed and no visualizations can be viewed.

### Module 3 : Lab CIE Analysis



**Fig. 5: Use case diagram for uploading spreadsheets and displaying lab CIE analysis.**

**Actors:** Users, System

**Pre-condition:** Data for the selected options is available

**Post-condition:** Data of the selected options is displayed

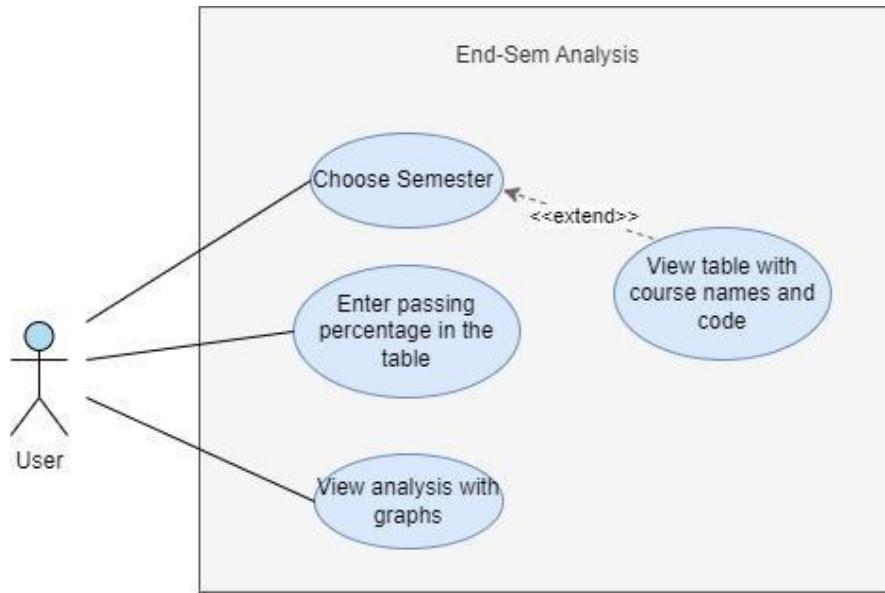
#### Main Scenario:

1. User selects year, semester and division.
2. System displays the analysis based on the selected options.

#### Exception Scenario:

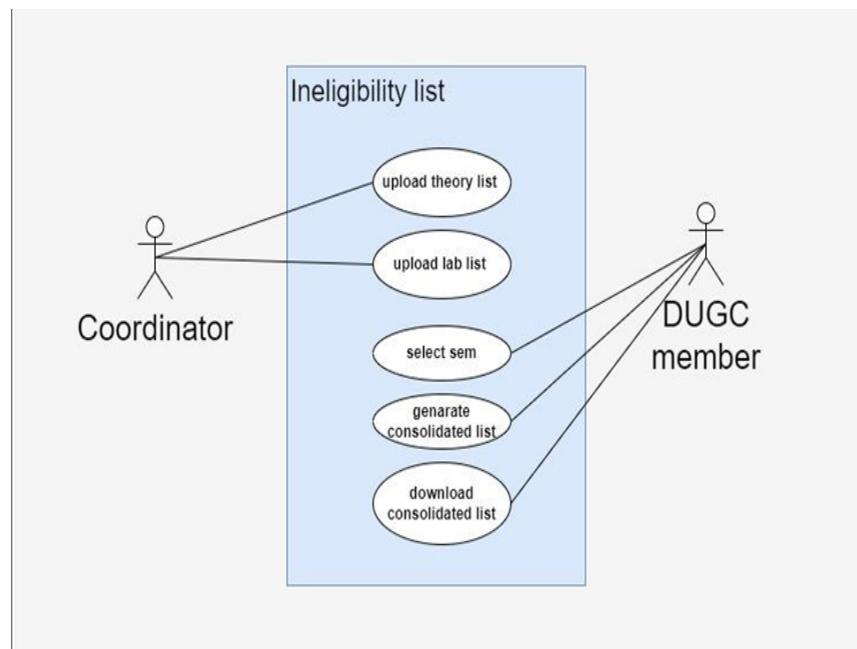
1. Data is not available.
  - User is asked to upload excel sheets for the missing data.
  - System displays analysis based on that data.

## Module 4 End-Sem Analysis



**Fig. 6: Use case diagram for viewing analysis and graphs based on passing percentage entered manually by the user for end sem analysis.**

## Module 5 Ineligibility List Approval



**Fig. 7: Use a case diagram to generate a list of students who are ineligible so that the DUGC coordinator may see it based on the grades that the course's coordinator has uploaded.**

**Actors:** DUGC Coordinator, Course Coordinator

**Pre-condition:**

1. select the respective actor in order to upload and view the consolidated ineigibility list
2. select the thoery or lab for uploading and viewing the respective ineligibility list
3. select sem to upload or view list of ineligible students

**Post-condition:**

1. uploaded list has to be displayed before uploading the sheet
2. success message on sheet uploaded
3. generate ineligible consolidated list sem wise
4. print consolidated list as per the template

**Main Scenario:**

1. User uploads the list.
2. System displays a table containing student details before uploading .
3. sheet uploaded successfully
4. dugc coordinator select sem to view ineligible students list
5. generate consolidated list
6. print consolidated list

**Exception Scenario:**

1. If the uploaded file is not xl or CSV
  - display the message upload the file in appropriate formate That is CSV or xl.

**Pre-condition:**

4. Course name and code for the selected Semester is available
5. Table for the selected semester is displayed

**Post-condition:** Graphs for the given passing percentage and total passing percentage is displayed

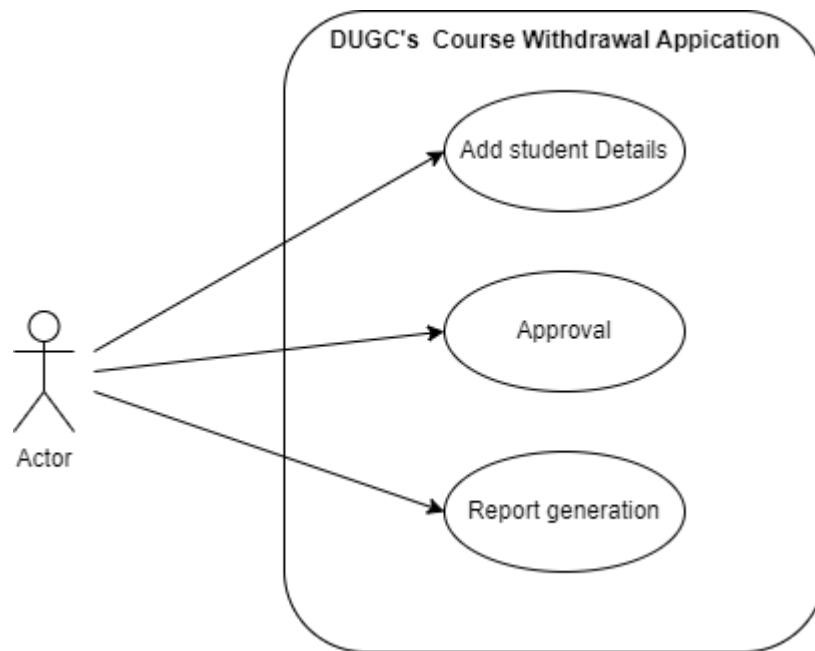
**Main Scenario:**

7. User selects semester.
8. System displays a table containing course name and code according to the semester chosen.

### Exception Scenario:

1. The passing percentage is less than 0 or more than 100.
  - Users cannot type more than '100' numbers in the table.
  - Graph will not be displayed.
2. Any one of the entries not made in the table.
  - Graph is not displayed.
  - Error message is shown.

### Module 6 Course Withdrawal



**Fig. 8: Use case diagram for course withdrawal system for students.**

#### Use case description :

Actors : DUGC Coordinator, DUGC system.

Pre-condition :

1. Course name, code and credits for the selected semester is available.
2. The student's application is submitted successfully.
3. The student's application's status is updated.

Post Condition :

1. Application is submitted and details are stored in the database.
2. The student's application's status is updated.
3. The withdrawal report is generated.

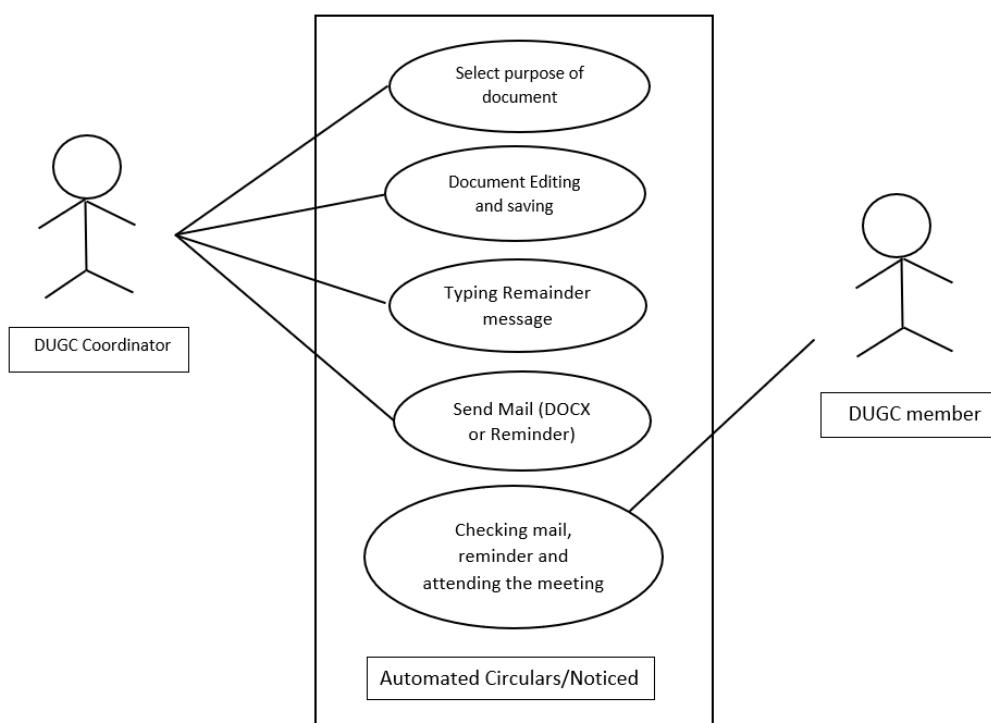
### Main Scenario :

1. The user enters the details like student name, USN, Roll no, and semester. Based on the selected semester the courses will be selected, CIE and Attendance are to be entered. And if the student's selected semester's remaining credits are greater than or equal to 16 then the form is submitted.
2. The student's withdrawal details are displayed and two options are given, to accept or to reject. If the user wants to accept the withdrawal of that student, they will click accept and reject otherwise.
3. A list of withdrawal accepted students is displayed and a button is provided to print the report. Upon clicking the button, the report is printed.

### Exception Scenario :

1. The course details are not fetched. The remaining credits are less than 16.
2. The withdrawal details of the students are not fetched from the database. Or the status of the student's withdrawal request is not updated in the database.
3. The approved students' details are not fetched from the database.

## Module 7 Automated Circular/Notices



**Fig. 9: Use case diagram for sending notices by course coordinator.**

## 2.2 Non-Functional requirements

- The system should be available most of the time (99.99%) to the DUGC coordinator.
- The website must be responsive to all devices like mobile phones, tablets, laptops and desktop.
- Website's overall response time should be less than 800 ms.

## 2.3 Hardware and Software requirements

### Software Requirements

1. Browser (Chrome, Firefox, Brave etc).

### Hardware Requirements Specification

1. Working PC/Laptop.
2. Minimum of 8GB RAM.
3. Minimum 64 GB Hard Disk.
4. Internet connection.

## 2.4 Test plan and Test cases

### 2.4.1 Module 1 Makeup Minor Approval

R_Id	Test_Id	Test Data	Test Case Description	Excepted Results	Actual Results	Pass/Fail

1	<b>1.1</b>	option	DUGC members login	DUGC member has to be logged successfully	DUGC member has to be logged successfully	PASS
2	<b>2.1</b>	option	Enter the details of the student.	Enter all valid student details..	Details entered successfully	PASS
3	<b>3.1</b>	option	Approve / Disapprove student.	Based on the reason given student is approved or disapproved.	Student approved or student rejected.	PASS
4	<b>4.1</b>	option	Student report	Approved students list will be displayed	Approved student list.	PASS

**Table. 1****2.4.2 Module 2 Result Analysis(theory)**

Requirement ID	Test Case ID	Test Description	Case	Test data	Input	Expected results	Actual results	Pass/Fail

1	1.1	Course Coordinator uploads spreadsheet(new)	Spreadsheets	Data should be entered into a database and marked with a green checkmark for that division.	Data stored in the database with a green checkmark highlighted.	Pass
	1.2	Course Coordinator uploads spreadsheet(already exists)	Spreadsheets	Store the newly uploaded data into database	Data is updated in database	Pass
2	2.1	DUGC Coordinator selects options to view consolidated table	Options	Display table and visualization in the form of graph	Table is displayed with appropriate results and graphs	Pass
	2.2	DUGC Coordinator selects options to delete the sheet.	Options	Delete the particular spreadsheet from the database and display a red cross mark for that particular division.	Spreadsheet deleted and green tick mark turned to red cross mark on website.	Pass
3	3.1	DUGC Chairman creates a new course	Options	Creation of a course with the information provided and showing it to the course coordinator	Particular course has been created.	Pass

Table. 2

#### 2.4.3 Module 3 Result Analysis(lab)

Requirement ID	Test case id	Test case description	Test Steps	Test input Data	Expected Results	Actual Results	Pass/Fail

RE1	T01	View WT performance of 2021 A division	Select year:2021 Sem: 5 Div: A Click on submit Select course: WT	Spread sheets	Should display table which contains data of no. Students with S, A, B, C, D,E grades in WT and display the grades correspondingly	Table with grades and no. of students and graphs are displayed	Pass
RE 02	T02	View DBMS performance of 2021 B division	Select year:2020 Sem: 3 Div: A Click on submit Select course: DBMS	Spread sheets	Should display table which contains data of no. Students with S, A, B, C, D,E grades in DBMS and display the grades correspondingly	Table with grades and no. of students and graphs are displayed	Pass
RE 03	T03	Download spreadsheet which has individual student data	Select year:2021 Sem: 6 Div: A Click on submit Click on download logo to download the excel sheet contains name and marks of student	Option provided through button	Should download the excel sheet of course with all student details	Excel sheet with all student details	Pass

RE 04	T04	View consolidated results	Select year:2020 Sem: 4 Div: A  Click on submit	Option	Results of all division alongside of all courses should be displayed	Displays a table containing all grades, divisions, courses with graphs	Pass
RE 05	T05	View previous year results	Select year:2020 Sem: 4 Div: A  Click on submit  Click on previous year	Option	Comparing this year result with previous year with deviation column	Displays a table containing all grades, divisions, courses, deviation from previous year with graphs	Pass
RE 06	T06	Upload new results of 2022	Select year:2022 Sem: 4 Div: A  Click on submit  Choose file you need to upload from PC	Option	Uploaded excel should be converted into Json table and graph should be plotted.	Table with graphical analysis	Pass

RE 07	T07	Compare newly upload results with previous year data	Select year:2022 Sem: 4 Div: A  Click on submit  Choose file you need to upload from PC  Click previous year and choose file which you need to compare	Option	Uploaded excel should be converted into Json table and graph should to plotted.	Table with graphical analysis	Pass
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**Table. 3****2.4.4 Module 4 End-Sem Analysis**

Req. ID	Test ID	Test case description	Test case steps	Input	Expected output	Actual output	Pass/ Fail
R_01	T_11	Correct Course details are displayed for a selected semester.	1. Select Semester for analysis	Sem 04	Course details displayed from database	Course details displayed appropriately	Pass
R_02	T_21	Valid input to be taken from course wise passing percentage field	1. Select Semester for analysis. 2. Give percentage numbers for respective courses	Sem 05 56, 69, 80...	Valid input	Valid input	Pass
	T_22	Valid input to be taken from course	1. Select Semester for	Sem 05	Input should not	Input not taken	Pass

		wise passing percentage field	analysis. 2. Give percentage numbers for respective courses	56, 69, -80..	be taken for -80		
	T_23	Show invalid input if exceeds 100	1. Select Semester for analysis. 2. Give percentage numbers.	Sem 05 56, 69, 101...	Input should not be taken for 101	Not Taken	Pass
	T_24	Show invalid input if character or symbol entered	1. Select Semester for analysis. 2. Give percentage numbers.	Sem 05 56, 69, ab...	Input should not be taken for ab	Not taken	Pass
	T_25	Display error if any form is not entered	1. Select Semester for analysis. 2. Enter values	Sem 05 56, 69, 34 ...	Graph should not be displayed	Graph not displayed	Pass
R_03	T_31	Display graphs when analyze button is clicked	1. Select Semester for analysis. 2. Enter values 3. Click 'Analyze'	Sem 05 56, 69, 34 ...	Graph should be displayed after clicking 'Analyze' button	Graph displayed	Pass

Table. 4

#### 2.4.5 Module 5 Ineligibility List Approval

R.Id	Test.id	Test case description	Test steps	Test input data	Expected result	Actual result	Pass/ Fail
R1	T_01	Validation with correct upload button	1. Go to DUGC website 2.select sem	xl-sheet of student	Student data should be successfully	Upload Successful	Pass

			3.select division 4.select sheet which has to upload 5. Click on upload	ineligibility list	uploaded		
R2	T_02	Viewing theory consolidated list	1.click on the eligibility button. 2.Select theory ineligibility list 3.click on consolidated list 4.select sem 5.click on submit	sem=5	System should display the consolidated ineligibility list of theory	System display the consolidated ineligibility list of theory	Pass
R3	T_03	Viewing Lab consolidated list	1.click on the eligibility button. 2.Select Lab ineligibility list 3.click on consolidated list 4.select sem 5.click on submit	sem=4	System should display the consolidated ineligibility list of Lab	System display the consolidated ineligibility list of Lab	Pass
	T_04	Uploading Theroy sheet	1.click on eligibility button. 2.Click on Upload button 3.Click on Theory sheet. 4.select sem 5.Click on choose file 6.Select file 7.Click on upload	sem=5	the file should be uploaded with a success message	uploaded successfully with a success message	Pass
	T_05	System should not allow user to enter negative inputs for CIE and attendance	1.click on eligibility button. 2.Click on Upload button 3.Click on Lab sheet. 4.select sem 5.Click on choos file	sem=5	the file should be uploaded with a success message	uploaded successfully with a success message	Pass

			6.Select file 7.Click on upload				
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**Table. 5****2.4.6 Module 6 Course Withdrawal**

R.Id	Test.id	Test case description	Test steps	Test input data	Expected result	Actual result	Pass/Fail
R1	T_01	System should store and fetch data from the database correctly.			Data stored and fetched from database is correct	Data stored and fetched from database is correct	Pass
R2	T_02	System should allow the user to enter the student details	1. Navigate to application page 2. Enter the student details	Name=s anddeep rno=467 div=D sem=5	System allows the user to enter the student details	System allows the user to enter the student details	Pass
R3	T_03	The checkbox provides users to choose the course.	1. Navigate to application page 2. Choose sem. 3. Respective courses will be displayed to choose.	sem=5	Courses respective to the sem chosen are displayed. And is chosen by the user.	Courses respective to the sem chosen are displayed. And is chosen by the user.	Pass
	T_04	User should be allowed to enter negative inputs for CIE and attendance	1. Navigate to application page 2. Choose sem and select course. 3. Enter CIE and attendance	CIE=22 attd = 80	The input is accepted.	The input is accepted.	Pass
	T_05	System should	1. Navigate to	CIE=	The input is	The input is	Pass

		not allow user to enter negative inputs for CIE and attendance	<p>application page</p> <p>2. Choose sem and select course.</p> <p>3. Enter CIE and attendance</p>	-22 attd = 80	not accepted and shows a warning.	not accepted and shows a warning.	
	T_06	System should not allow the user to submit the application if inputs are blank or empty.	<p>1. Navigate to the application page.</p> <p>2. Without entering any details, click the submit button.</p>		Show warning about blank fields.	Show warning about blank fields.	Pass
R5	T_07	System should allow the user to approve or reject the application.	<p>1. Navigate to the application page.</p> <p>2. Select Approve or reject.</p>	btn-appr ove	Application approved successfully.	Application approved successfully.	Pass

**Table. 6****2.4.7 Module 7 Automated Circular/Notices**

Requirement ID	Test Id	Test Case Description	Input Data	Expected Output	Actual Output	Progress
1		Sending mail with attached circular	Click on Send button	Mail sent	Mail Not sent	Fail

2		Sending mail with attached notice	Click on Send button	Mail sent	Mail sent	Pass
3		Sending Reminder Message	Typing message And click on send	Mail sent	Mail sent	Pass
4		Sending Text Message	Typing message And click on send	Mail sent	Mail sent with wrong data	Fail
5		Editing and saving the Document	Making changes in document & save it	Document should be saved with edited data	Document saved successfully	Pass
6		Downloading the Document	Click on download	Document downloaded	Document not downloaded	Fail

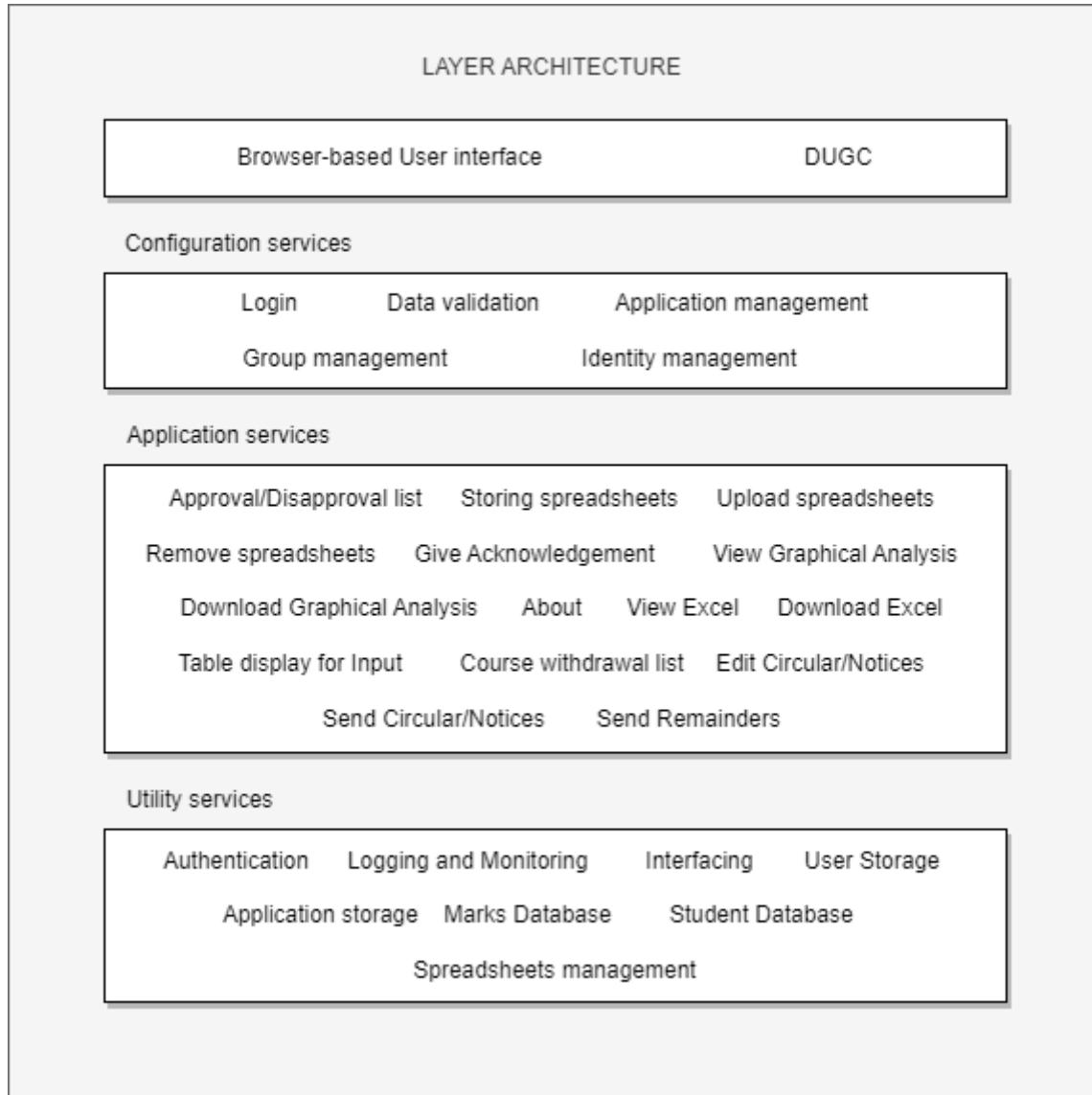
**Table. 7**

# Chapter 3

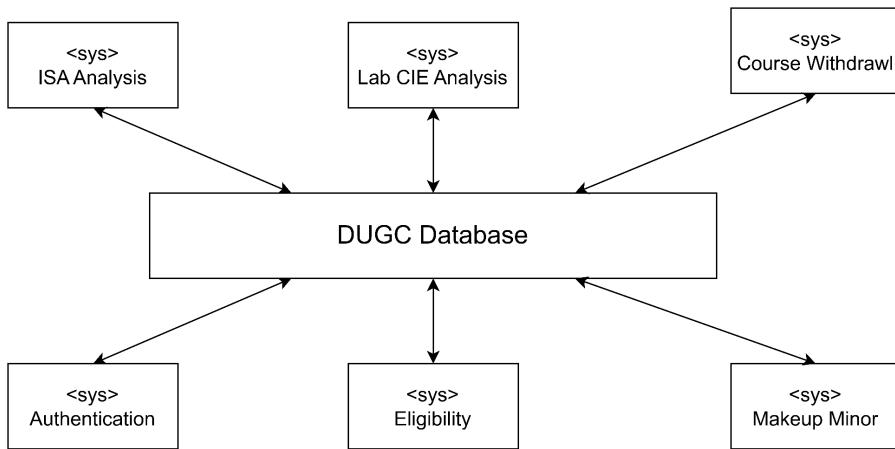
## System Design & Implementation

### 3.1 Architecture and System model

#### Integrated System Layer Architecture

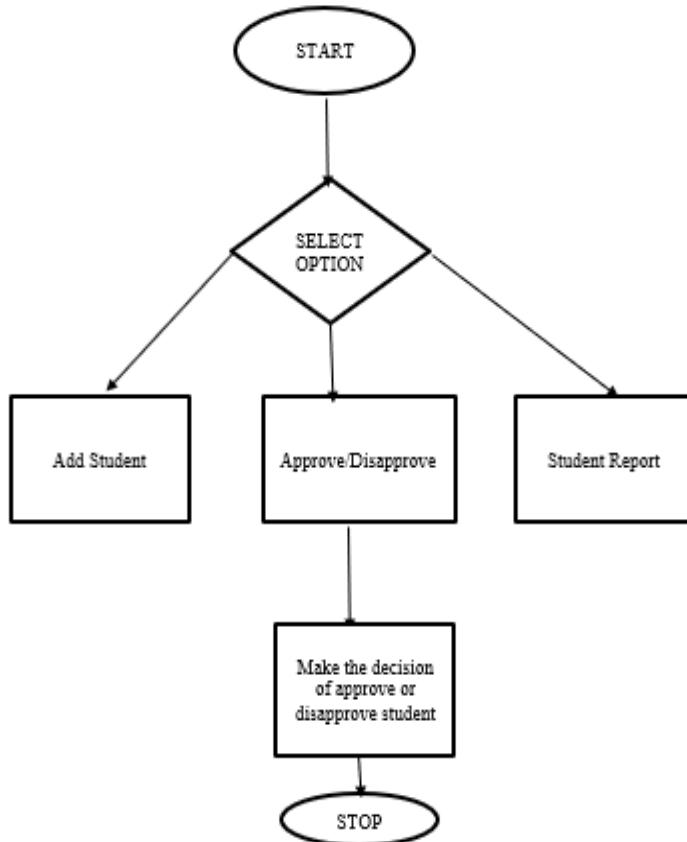


#### Integrated System Common Repository Architecture



## Module 1: Makeup Minor Approval

### 3.1 Flow Charts



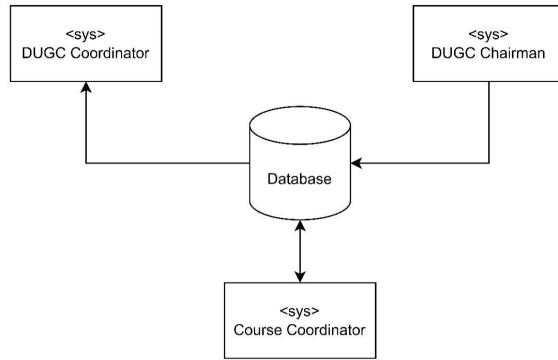
**Fig. 10: Flowchart for adding/editing students' details for makeup and to indicate approval or disapproval for makeup.**

- The DUGC member will be logged in.
- The DUGC member fills up the form for those who are applying for makeup minor and verifies manually also.
- The DUGC member once fill the form the students list will be displayed They can approve or disapprove the students.
- After approving and disapproving the students the final list will be displayed.

## Module 2 Result Analysis (theory)

### 3.1.1 Context Model

Context of DUGC Module 2

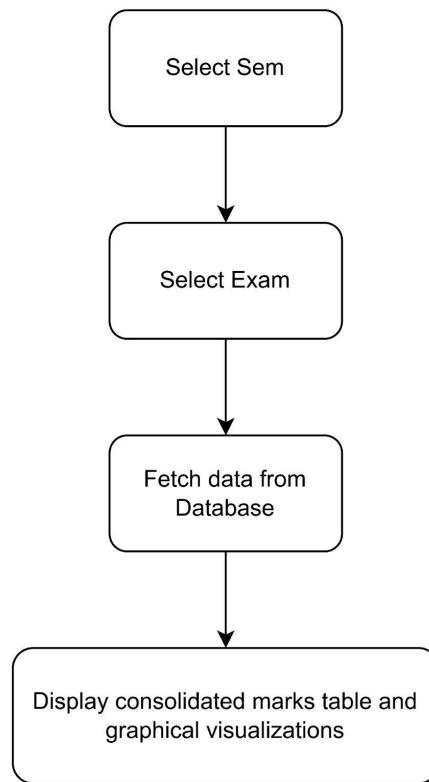


**Fig. 11 : Context model for storing the data uploaded by course coordinator and DUGC chairman.**

- There are three sub-systems in module 2, which are DUGC coordinator, DUGC Chairman and Course Coordinator.
- All the three subsystems are connected to the database in which all the details of marks are stored.
- The DUGC Chairman adds new courses into the database.
- The Course Coordinator will upload spreadsheets of marks into the database.
- The DUGC Coordinator can view the consolidated table of marks which is fetched from the database and also can view the graphical analysis.

### 3.1.2 Flow Charts

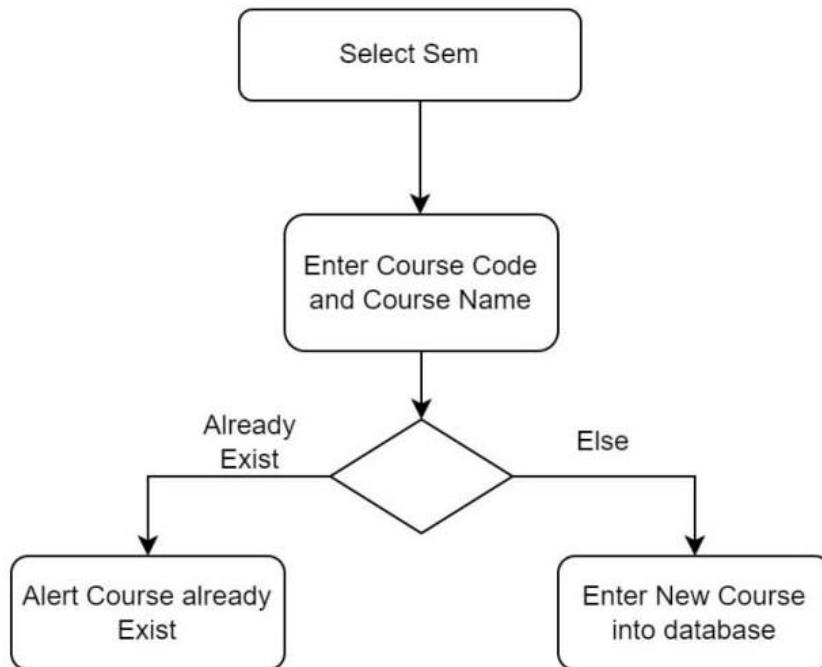
#### 1. DUGC Coordinator



**Fig. 12 : Flowchart for generating analysis for marks uploaded by course coordinator in consolidated table and graphs.**

- The DUGC coordinator selects the sem, exam type (minor1, minor2, activity) and submits the options.
- Consolidated table and graphical analysis is displayed by fetching the data from the database.

## 2. DUGC Chairman



**Fig. 13 : Flowchart for adding new courses by the DUGC chairman.**

- The DUGC chairman can add new courses to the database.
- He/she can add the course code and course name and click the submit button.
- If the course already exists the course is not added twice and an alert is given saying the course already exists.
- Else the course is added to be database and now marks for these courses can be added by the course coordinator.

## 1. Course Coordinator



**Fig. 14 : Flowchart for uploading spreadsheets/markssheets by course coordinator to the portal in order to display the analysis for DUGC coordinators. The course coordinator also has the option of deleting the spreadsheets.**

- Course Coordinator can upload marks spreadsheets and can also delete uploaded marks.
- Course Coordinator can upload marks in two ways, in single sheet upload he/she can upload marks of one division at one time and in consolidated sheet upload he/she can upload all the division's marks in a single sheet.
- Course coordinator can also delete sheets that are not correct. Uploading the same division marks twice will overwrite the data with the new marks uploaded.

## Module 3 Result Analysis (lab)

### 3.1.1 Flow Chart

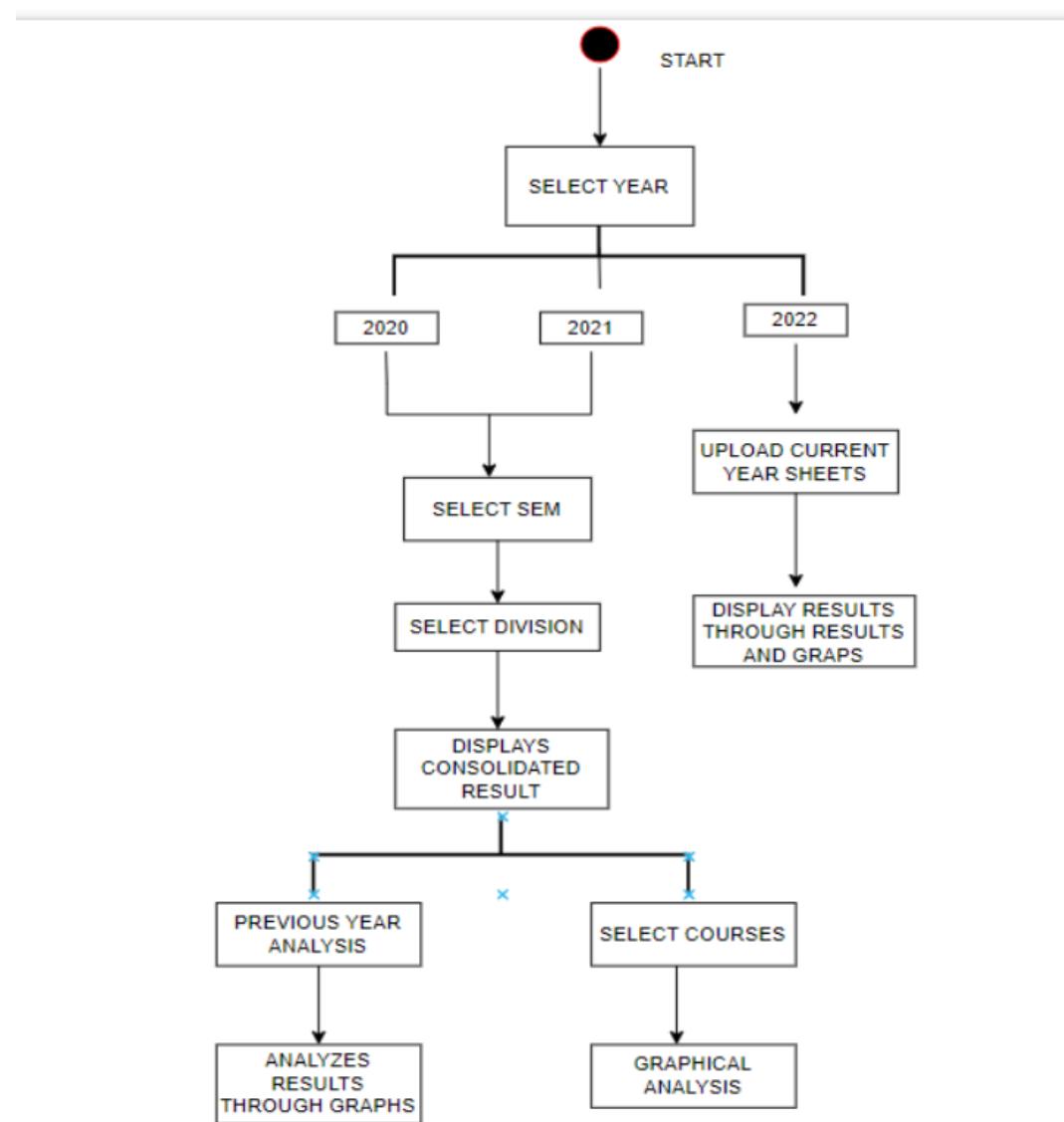
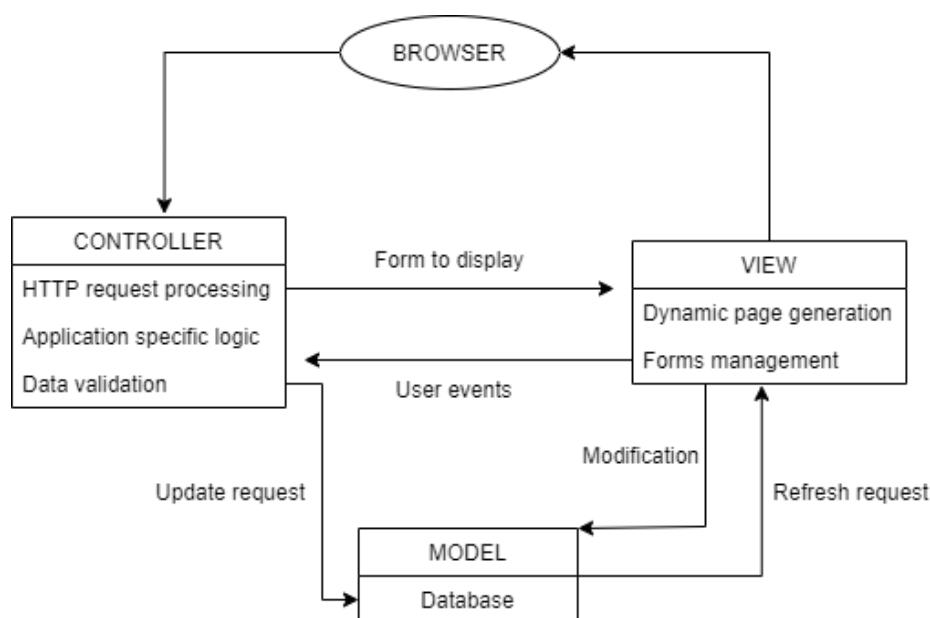


Fig. 15: Flowchart for Lab CIE analysis.

- A course coordinator will be provided the options to select the year, sem and division.
- If the course coordinator selects the current year, he/she shall upload the spreadsheets.
- The course coordinator can also view the previous year result analysis with the graphical representation.

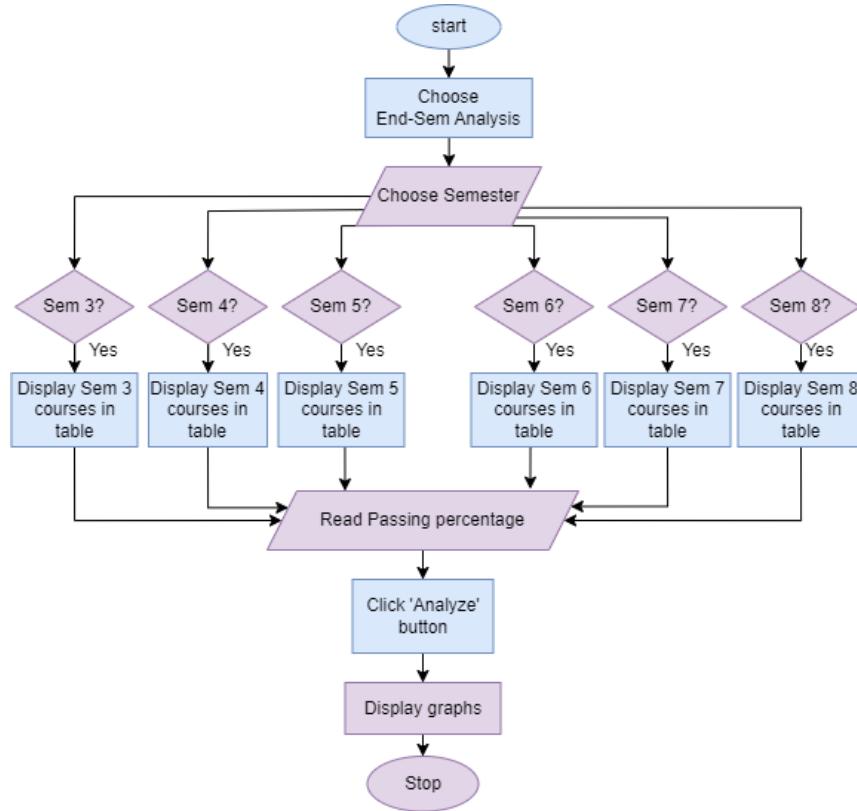
### 3.1.2 MVC Architecture



**Fig. 16: Model view controller architecture diagram for module.**

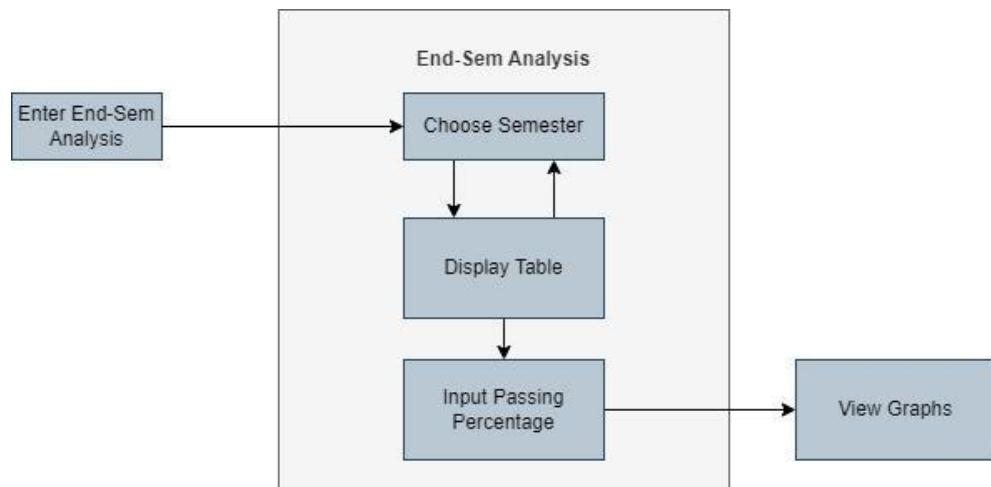
## Module 4 End-Sem Analysis

### 3.1.1 Flowchart:



**Fig. 17:** Flowchart shows the flow of the web page through a flow chart. After selecting options for semester selection, course details are displayed and passing percentages are taken from the user. Analyze button is provided and graphs are displayed.

### 3.1.2 Block diagram:



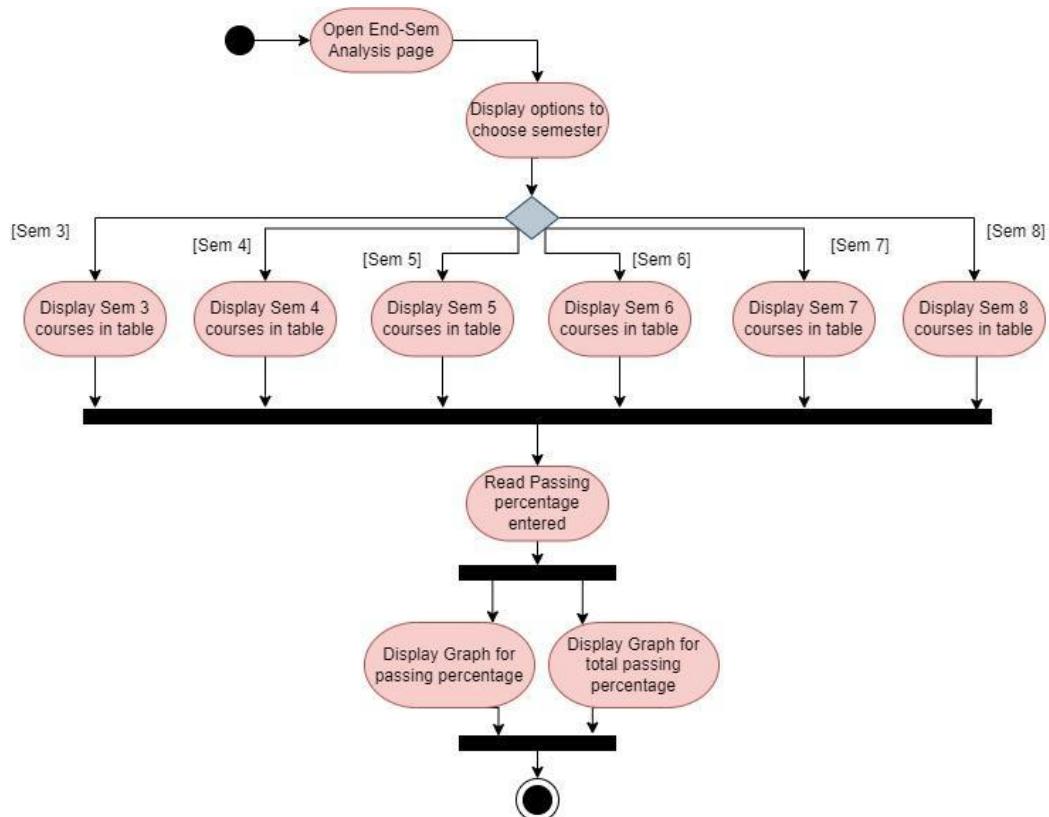
[Fig : 3.1.2]

**Fig. 18 : Block diagram shows the working of the web page through Block diagram. Once we go to the End-Sem Analysis page, it displays an option to choose the semester and according to it, displays a table with all the courses with the course code of that semester in the table.**

Then, it takes passing percentage as input for analysis and gives graphs accordingly. Analysis will display two graphs:

1. Passing percentage of all the courses in that semester.
2. Total passing percentage comparison with Previous year passing percentage comparison.

### 3.1.3 Activity diagram:



[Fig : 3.1.3]

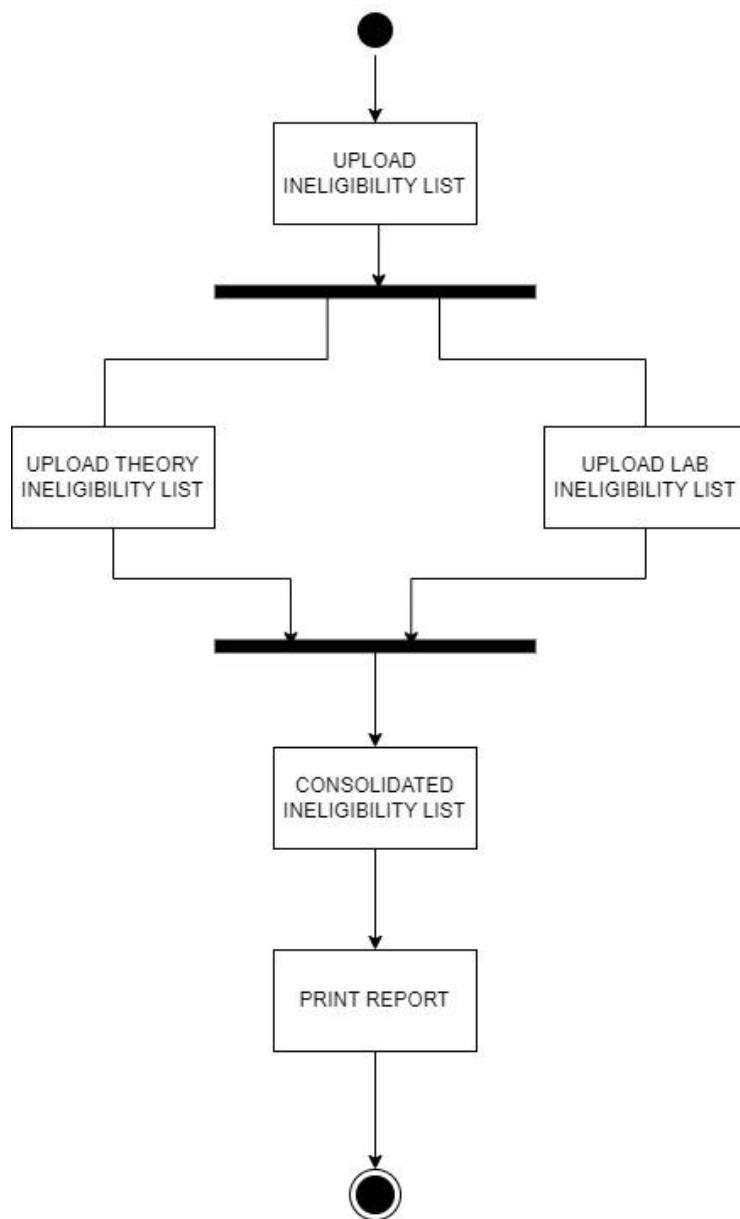
**Fig. 19: Activity diagram shows the working of a web page through an activity diagram.** Initially when we go to the End-Sem page, it displays an option to choose Semester. The decision symbols show which course names and course code will appear in the table.

Then it reads the input passing percentage given in the table and uses that for graph analysis. Analysis will display two graphs:

1. Passing percentage of all the courses in that semester.
2. Total passing percentage comparison with Previous year passing percentage comparison.

## **Module 5 Ineligibility List Approval**

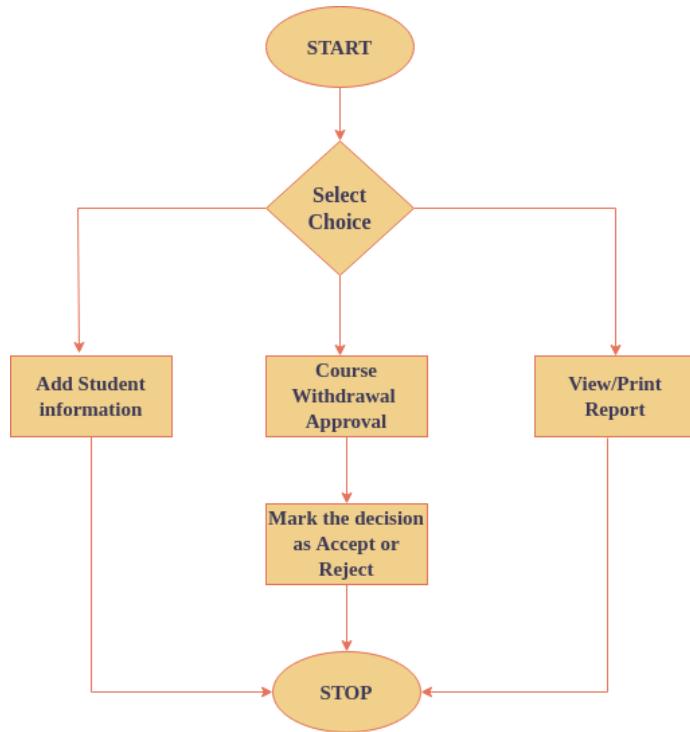
**Activity diagram:**



**Fig. 20 : Activity diagram to generate a list of ineligible students in consolidated form.**

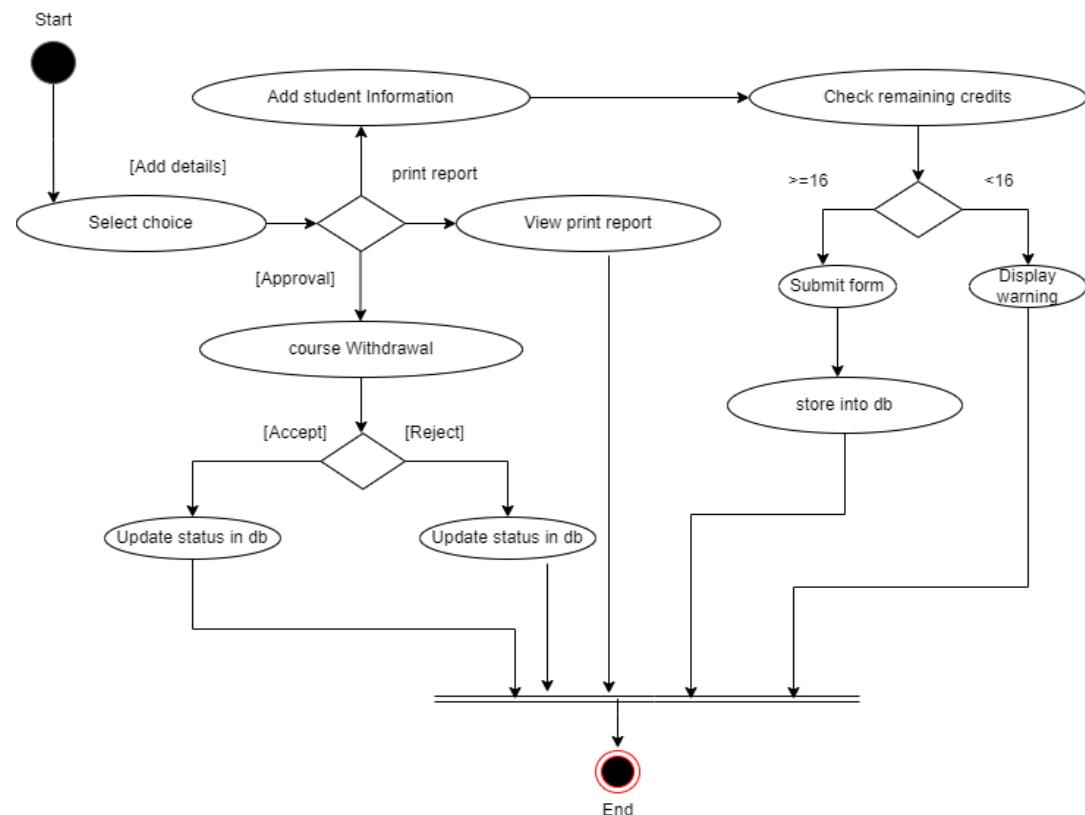
## Module 6 Course Withdrawal

### 3.1.1 Flowchart



**Fig. 21: Flowchart for course withdrawal system .**

### 3.1.2 Activity Diagram



**Fig. 22: Activity diagram for course withdrawal system for students.**

## Module 7 Automated Circular/Notices

### 3.1.1 Block Diagram

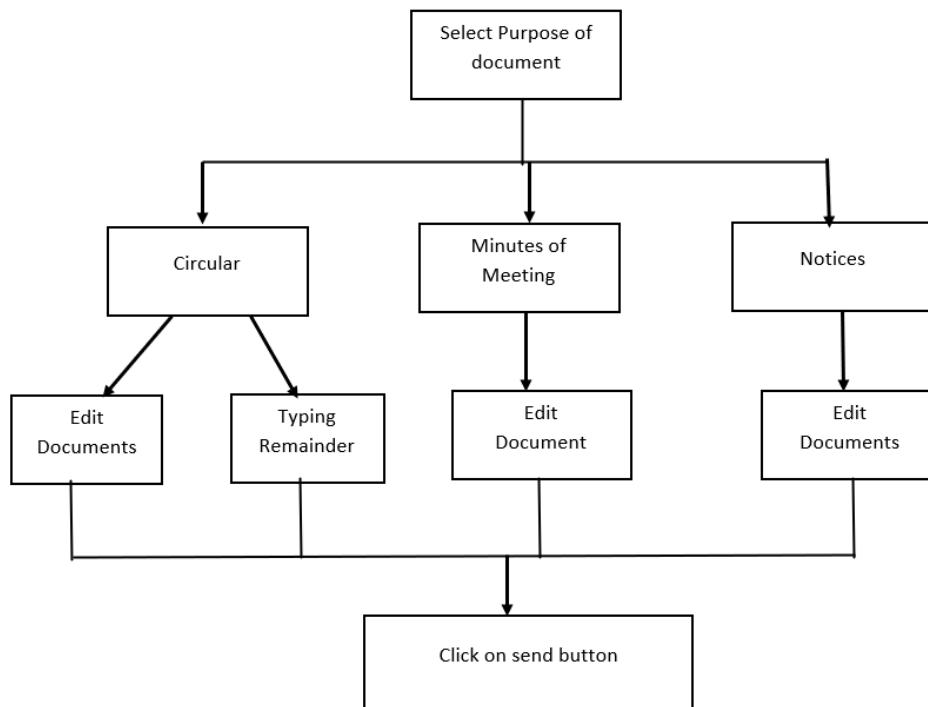
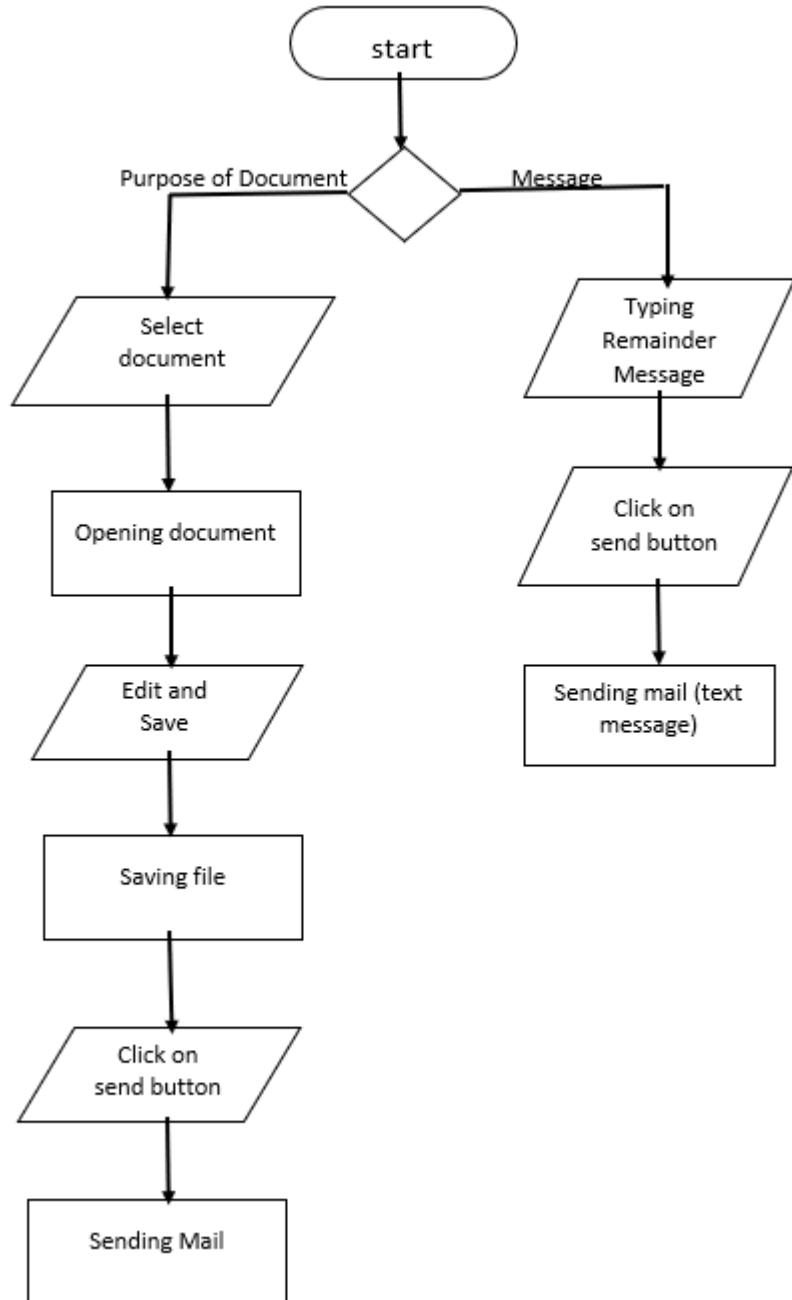


Fig.23 : Block diagram for sending circular notices by coordinators.

### 3.1.2 Flow chart



**Fig.24:** Flow chart sending circular notices by coordinators.

## 3.2 Database design

### 1. Courses Database

```
{
  "three": {
    "22ECSC303": {
      "Name": "",
      "Minor 1": "",
      "Minor 2": "",
      "Activity": ""
    }
  },
  "four": {
    "21ECSC210": {
      "Name": "",
      "Minor 1": "",
      "Minor 2": "",
      "Activity": ""
    }
  },
  "five": {
    "22ECSC301": {
      "Name": "",
      "Minor 1": "",
      "Minor 2": "",
      "Activity": ""
    }
  },
  "six": {},
  "seven": {},
  "eight": {}
}
```

- Courses are stored in json format.
- The semesters are the keys, we only have 6 keys, from semester 2 to semester 8.
- The values are of type objects In each value object we course. name as keys, and the values are json array, where we have details of the course Name , Minor 1 , Minor 2 , Activity.
- The values of Minor 1 , Minor 2 are (Yes or No) indicating whether the data is uploaded or not.

## 2. Analysis Database

```
{
  "2022-23": {
    "five": {
      "22ECSC301": [
        {
          "B": {
            "Average": "0.00",
            "S": 0,
            "A": 0,
            "B": 0,
            "C": 0,
            "D": 73,
            "Total": 73
          },
          "C": {
            "Average": "12.30",
            "S": 5,
            "A": 34,
            "B": 16,
            "C": 5,
            "D": 0,
            "Total": 60
          },
          "D": {
            "Average": "10.69",
            "S": 6,
            "A": 29,
            "B": 16,
            "C": 14,
            "D": 7,
            "Total": 72
          },
          "E": {
            "Average": "8.78",
            "S": 1,
            "A": 17,
            "B": 20,
            "C": 16,
            "D": 12,
            "Total": 66
          },
          "A": {
            "Average": "10.09",
            "S": 4,
            "A": 18,
            "B": 22,
            "C": 6,
            "D": 7,
            "Total": 57
          }
        ]
      }
    }
  }
}
```

- Analysis of the marks are stored in json format

- The scores of each section are identified by three values , academic year, semester , and course code , and type of exam.
- We have two keys upfront , the current year and previous year , the scores are stored separately for each year.
- In each semester , the values will be the courses, in courses we have an array , of size three, first one is for minor 1 , second for minor 2 , third for Activity.
- For each type of exam , there are five sections A,B,C,D and E.
- In Each section we have a json object , the key value pairs for Average marks of the section , number of students who scored S grade , number of students who scored A grade and so on, at last we have total number of students in the section.

## Preamble for implementation :

The **MEAN** stack project is a full-stack JavaScript solution for creating web applications. It is composed of four main technologies: MongoDB, Express, Angular, and Node.js. These technologies work together to provide a complete development environment for creating dynamic, scalable, and efficient web applications.

**MongoDB** is a popular NoSQL database that is used to store and retrieve data for web applications. It provides a flexible and scalable way to manage data, allowing developers to easily create and modify the structure of their data as needed.

**Express** is a web application framework that runs on top of Node.js. It is used to build web servers and APIs, providing a simple and efficient way to handle HTTP requests and responses.

**Angular** is a front-end web development framework that is used to build user interfaces for web applications. It provides a powerful set of tools for building responsive and dynamic user interfaces, allowing developers to create engaging and interactive web experiences.

**Node.js** is a JavaScript runtime that allows developers to write server-side code using JavaScript. It is fast and efficient, making it a popular choice for building web servers and APIs.

Together, these four technologies form the **MEAN stack**, providing a complete development environment for building web applications. The mean stack is a popular choice among developers due to its flexibility, power, and ease of use. It allows developers to use a single language, JavaScript, throughout the entire development process, simplifying development and speeding up the creation of web applications.

With the mean stack, developers can quickly and easily create dynamic, scalable, and efficient web applications. Whether you are building a simple web application or a complex, high-performance system, the mean stack provides the tools you need to build it.

## 3.3 Modules description

### 3.3.1 Module 1: Makeup Minor Approval

There are three options in the module, They are addstudent, approve or disapprove student and display student. The DUGC member has to login and click on the makeup minor; it shows the three components.

In addstudent component the DUGC member enters the details of the student that also be verified manually.

In the approved student component the member can approve or disapprove the students who are applied for the makeup minor.

In the display student component the student details will be updated that is in the consolidated table and prints that particular consolidated table.

### 3.3.2 Module 2: Result Analysis (theory)

#### 3.3.2.1 Course Coordinator

There are mainly three modules i.e the course coordinator, the members of the DUGC, and the chairman of the DUGC, where each user has different interfaces/options.

The coordinator basically has three choices. First, uploading a single spreadsheet (i.e., one Excel sheet in a single file), second uploading consolidated spreadsheets (i.e., numerous Excel sheets in a single file) where coordinator needs to select appropriate options like academic year, semester, course, division, type of exam, and lastly selecting the spreadsheet file by pointing to the file location in our home device once he submits on successful submission the data will be displayed and will be stored in the database.

The coordinator has a variety of options for uploading, including the ability to submit a single sheet or numerous sheets, depending on their convenience. Additionally, the most current spreadsheet will be overwritten or changed in the database if the coordinator uploads it over an existing spreadsheet.

If the marks sheet that was previously uploaded was found to be incorrect or if the coordinator wishes to re-upload the marksheet/spreadsheet in place of the earlier sheet the option is available for the same to delete the existing spreadsheet.

### **3.3.2.2 DUGC Coordinator/member**

DUGC members can view the analysis of marks and visualizations of each semester's particular exam type by making the appropriate selections for semester and type of exam. And on-submission the detailed analysis will be generated in tabular format along with graphs for easy visualization, which will be useful for easy comparison between division to division and can be used to inspect the performance of students.

The analysis includes data in tabular form with course code, number of students scoring marks within the specific range of marks listed in the table for all divisions, and total number of students scoring the particular marks. It also includes average marks from the current year and the previous year, which will be useful to study the discrepancy between them.

And at last the report generated can also be downloaded or can take a print out.

### **3.3.2.3 DUGC Chairman**

The primary user is the DUGC Chairman, who manually enters the course code (for example, 22ECSC301) and course name (for example, Software Engineering), both of which are not already in the database, after choosing the type of semester or semester. The course won't be uploaded to the database until it has been successfully constructed.

At that point the DUGC Coordinator can add the spreadsheets for a particular course by selecting from a drop-down menu only after the course has been successfully produced and added to the database. So as a result, the DUGC chairman might be seen as the key figure behind the module's launch.

### **3.3.2 Module 3 Result Analysis (lab)**

In our Lab CIE analysis, the Co ordinator first needs to enter the particular year, sem and division. Then, the consolidated result of that sem and division is provided with previous year Lab CIE marks deviation, with graphical analysis.

Select Course option is provided to view the Lab CIE analysis of a particular course with graphical analysis. For the current year, the spreadsheets can be uploaded and then the graphs are displayed dynamically.

### **3.3.4 Module 4 End-Sem Analysis**

In End-Sem analysis, The coordinator has to select semester from the option to enter the passing percentage in the table. Once a semester is selected, a table is displayed which contains course name and course code according to the selected semester. Further passing percentage and total passing percentage is taken as input. Graphical visualization of courses compared to previous year passing percentage and total passing percentage compared to previous year total passing percentage is shown for analysis on the same page.

### **3.3.5 Module 5 Ineligibility List Approval**

In ineligibility list genataring module course coordinator has to select upload option in that their will be two option to upload the sheet Theory sheet and lab sheet respectively, after selecting theory sheet the course coordinator has to select the sem and choose the file for uploading the data will be stored in the database than click on upload button after uploading the data in the theory section click on consolidated list ,then select the sem and click on submit the consolidated ineligibility list will be displayed ,by clicking on print button the consolidated list will be displayed as per the template specified by the DUGC.And the process will be same for generating the lab ineligibility consolidated list.

### **3.3.6 Module 6 Course Withdrawal**

#### **3.3.6.1 Home page**

This module contains the details of the student who has applied for course withdrawal, with their Name, USN, Roll No, selected course to withdraw along with two options, one to accept the withdrawal application and other to reject the withdrawal application.

#### **3.3.6.2 Application page**

In this module, a form is displayed to get the details for course withdrawal. The form has text fields like Name, USN, roll no, division, semester. Upon selecting the semester, the courses respective to that semester are displayed. The course to be withdrawn should be selected from the courses which are displayed. After selecting the course to be withdrawn, it will ask for the attendance and CIE marks for those respective courses. And a text area is given to enter the reason for which they are withdrawing the course. Upon clicking the submit button the student details with the selected course to be withdrawn is uploaded into the Database.

#### **3.3.6.3 Report**

In this module, a drop down box to select the semester is provided. Upon selecting the semester, the details of the students with respect to the semester selected are displayed in a consolidated table manner. The user can take the print of the report which is in the form of a consolidated table, by clicking the print button in the bottom.

### **3.3.2 Module 7 Automated Circular/Notices**

- This Module is helpful for sending mail. In this module we can send text messages or attached documents. We can see Circulars, Minutes of meeting or Notices Buttons in our first page. In the Circulars part we can see types of circular and remainder section. In the remainder section we can type message and send mail. In the circular section we can select any of the documents. Which we need to edit the document and save it after saving the document we should click on the send button to send mail, and the edited document should be sent.

Same as in minutes of meeting and Notices. In minutes of meeting, we provided blank documents because in each meeting discussion should be a different process.

## Chapter 4

### Results and Discussions

#### 4.1 Results/ Snapshots with description

##### 4.1.1 Module 1 Makeup Minor Approval



- The DUGC member has to be logged in and click on the makeup minor option.

**Application for Makeup Minor**

Name:	<input type="text" value="Enter Name"/>
Sem:	<input type="text" value="Choose semester"/>
SRN:	<input type="text" value="SRN"/>
Roll No:	<input type="text" value="Roll no"/>
Division:	<input type="text" value=""/>

Select the Courses you want apply for Makeup

Reason:

- The form shall be filled up with the student name, SRN, RollNO, Semester, and Division
- The reason should be valid to submit the form.

### Makup Minor Approval

Sl no.	Sem	USN	Name	Course	Reason	Approve/Reject
1	3	01fe21bcs429	swaroop	1 GTLA code:15EMAB204% credits:4	health issue	<input checked="" type="checkbox"/> <input type="checkbox"/>
2	4	01fe21bcs455	sandeep	2 POCD code:19ECSC203% credits:3 3 OOPS code:20ECSC204% credits:3	health issue	<input checked="" type="checkbox"/> <input type="checkbox"/>
3	5	01fe21bcs475	manju	5 SE code:22ECSC301% credits:3 6 ML code:22ECSC306% credits:4	health issue	<input checked="" type="checkbox"/> <input type="checkbox"/>

- The DUGC member can approve or disapprove the students.

5

**Approved Students List of sem 5.**

Sl no.	USN	Name	Sem	Course	Attendance	Grade
1	01fe21bcs412	jithu	5	SE	22ECSC301	approved
2	01fe21bcs475	manju	5	ML	22ECSC306	approved
3	01fe21bcs475	sandesh	5	IOT	17ECSC303	approved
4	01fe21bcs476	sidhu	5	SS	17ECSC302	approved
				IOT	17ECSC303	approved
				SS	17ECSC302	approved
				CN-1	19ECSC302	approved

[Print](#)

- By selecting the semester list of students who are approved for makeup is displayed.

## 4.1.2 Module 2 Result Analysis (theory)

### 4.1.2.1 Home Page



**Fig. 8**

This is the homepage for our module, which primarily has three different user interfaces for the course coordinator, the members of the DUGC, and the chairman of the DUGC, where each user has different options.

The coordinator basically has three choices. First, uploading a single spreadsheet (i.e.,

one Excel sheet in a single file), second uploading consolidated spreadsheets (i.e., numerous Excel sheets in a single file), and last, deleting option where each spreadsheet is deleted individually by choosing from a menu of options.

#### 4.1.2.2 Single Sheet Upload page for Coordinator

The screenshot shows the 'Single Sheet Upload' page for a coordinator. At the top, there are two logos: 'KLE Technological University' on the left and 'DUGC DEPARTMENT OF UNDERGRADUATE COURSES' on the right. Below the logos, there are three buttons: 'Coordinator' (highlighted in red), 'DUGC', and 'DUGC Chairman'. Underneath these buttons are three more buttons: 'Single Sheet Upload' (highlighted in red), 'Consolidated Sheet Upload', and 'Delete Sheet'. The main form area has a heading 'Please enter the details below:' followed by several input fields:

- 'Choose the academic year:' dropdown menu showing '2022-23 ▾'
- 'Choose the type of semester:' dropdown menu showing 'Odd ▾'
- 'Choose the semester:' dropdown menu showing 'V - five ▾'
- 'Choose the course:' dropdown menu showing '22ECSC301 - Software Engineering ▾'
- 'Choose the division:' dropdown menu showing 'D ▾'
- 'Choose the exam:' dropdown menu showing 'Minor 2 ▾'
- 'Choose from the spreadsheets directory:' file input field showing 'Choose File SE\_Marks\_Minor\_2.xlsx'

To the right of the form, there is a section titled 'Upload Status' which displays the following data:

	A	B	C	D	E
<b>22ECSC301 - Software Engineering</b>	✓	✓	✓	✓	✓
<b>Minor 1:</b>	✓	✓	✓	✓	✓
<b>Minor 2:</b>	✗	✓	✓	✗	✗
<b>Activity:</b>	✗	✗	✓	✓	✓

At the bottom of the page are two buttons: 'Submit' and 'Reset'.

**Fig. 9**

The coordinator basically has three choices. First, uploading a single spreadsheet (i.e., one Excel sheet in a single file), second uploading consolidated spreadsheets (i.e., numerous Excel sheets in a single file), and last, deleting option where each spreadsheet is deleted individually by choosing from a menu of options.

In the single sheet uploading option, the coordinator has a number of options to choose from in order to successfully upload the spreadsheet and store it in the database so that the data can be analyzed. There are options for selecting the academic year, semester, course, division, type of exam, and lastly selecting the spreadsheet file which has a single excel sheet in it, by pointing to the file location in our home device. The marksheet and marks are updated when you reupload the spreadsheet with the same choices.

Additionally, the green and red marks displayed on the right side of the page reflect the status of uploads; a green checkmark means that a spreadsheet was successfully uploaded for that division, while a red cross indicates that the marksheet upload was not yet submitted/failed.

#### 4.1.2.3 Consolidated Sheet Upload page for Coordinator

**KLE Technological University**  
Creating Value  
Leveraging Knowledge

**DUGC**  
DEPARTMENT OF  
UNDERGRADUATE COURSES

**Coordinator** **DUGC** **DUGC Chairman**

**Single Sheet Upload** **Consolidated Sheet Upload** **Delete Sheet**

Please enter the details below:

Choose the academic year:	2022-23
Choose the type of semester:	Odd
Choose the semester:	V - five
Choose the course:	22ECSC306 - Machine Learning
Choose the exam:	Activity
Choose from the spreadsheets directory:	Choose File ML_Marks_Activity.xlsx

**Upload Status**

22ECSC306 - Machine Learning

Minor 1:	A <input checked="" type="checkbox"/>	B <input checked="" type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input checked="" type="checkbox"/>	E <input checked="" type="checkbox"/>
Minor 2:	A <input checked="" type="checkbox"/>	B <input checked="" type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input checked="" type="checkbox"/>	E <input checked="" type="checkbox"/>
Activity:	A <input checked="" type="checkbox"/>	B <input checked="" type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input checked="" type="checkbox"/>	E <input checked="" type="checkbox"/>

**Submit** **Reset**

**Fig. 10**

In the consolidated sheet uploading option, the coordinator has the almost same options followed for single sheet uploading i.e selecting the academic year, semester, course, division, type of exam, and lastly selecting the spreadsheet file which has multiple excel sheets under it by pointing to the file location in our home device. The marksheet and marks are updated when you reupload the spreadsheet with the same choices.

Additionally, the green and red marks displayed on the right side of the page reflect the status of uploads; a green checkmark means that a spreadsheet was successfully uploaded for that division, while a red cross indicates that the marksheet upload was not yet submitted/failed. Reset button clears all the selected choices.

#### 4.1.2.4 Delete Sheet interface for Coordinator.

**KLE Technological University**  
Creating Value  
Leveraging Knowledge

**DUGC**  
DEPARTMENT OF  
UNDERGRADUATE COURSES

**Coordinator** **DUGC** **DUGC Chairman**

**Single Sheet Upload** **Consolidated Sheet Upload** **Delete Sheet**

Please enter the details below:

Choose the academic year:	2022-23
Choose the type of semester:	Odd
Choose the semester:	V - five
Choose the course:	22ECSC301 - Software Engineering
Choose the division:	C
Choose the exam:	Minor 2

**Upload Status**

22ECSC301 - Software Engineering

Minor 1:	A <input checked="" type="checkbox"/>	B <input checked="" type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input checked="" type="checkbox"/>	E <input checked="" type="checkbox"/>
Minor 2:	A <input checked="" type="checkbox"/>	B <input checked="" type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input checked="" type="checkbox"/>	E <input checked="" type="checkbox"/>
Activity:	A <input checked="" type="checkbox"/>	B <input checked="" type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input checked="" type="checkbox"/>	E <input checked="" type="checkbox"/>

**Delete** **Reset**

**Fig. 11**

If the marks sheet that was previously uploaded was found to be incorrect or if the

coordinator wishes to re-upload the marksheet/spreadsheet in place of the earlier sheet, a third option is also available. This option allows the coordinator to delete each individual marksheet/spreadsheet one at a time by selecting the appropriate options for the academic year, semester, course, division, and type of exam, and then re-upload the spreadsheet to the portal if he so chooses.

#### 4.1.2.5 Page for DUGC members

The screenshot shows a web page for the DUGC member interface. At the top, there are two logos: 'KLE Technological University' with the tagline 'Creating Value Leveraging Knowledge' and 'KLE TECH'. To the right is the 'DUGC' logo with the text 'DEPARTMENT OF UNDERGRADUATE COURSES'. Below the logos are three buttons: 'Coordinator' (highlighted in red), 'DUGC', and 'DUGC Chairman'. A sub-navigation bar below these buttons contains three dropdown menus: 'Choose the type of semester:' (set to 'Odd'), 'Choose the semester:' (set to 'V - five'), and 'Choose the exam:' (set to 'Minor 1'). At the bottom of this section is a red 'Submit' button. Above the sub-navigation bar, a small instruction reads: 'Please enter the details below:'.

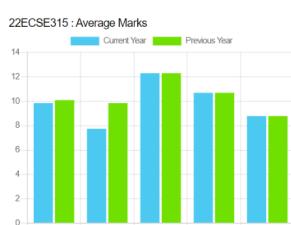
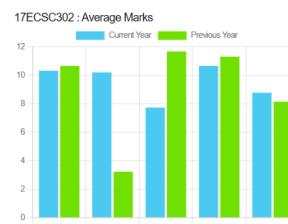
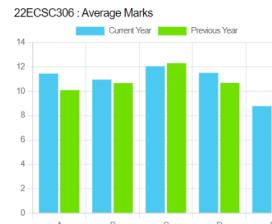
**Fig. 12**

This is the DUGC member interface where they can view the analysis of marks and visualizations of each semester's particular exam type by making the appropriate selections for semester and type of exam. Once he submits, the portal will automatically generate the detailed analysis in tabular format along with graphs for easy visualization, which will be useful for easy comparison between division to division and can be used to inspect the performance of students and take appropriate measures in order to improve the performance of students wherever it is found to be necessary.

#### On-submit by DUGC Coordinator

**Analysis Report**
**Analysis for Minor 1 | Sem five | 2022-23**

Sl no.	Course code	No. of students scoring, marks										Total students										Average Marks 2022-23					Average Marks 2020-21																			
		0-4					5-7					8-11					12-16					17-20					A div	B div	C div	D div	E div															
1	22ECSC301	18	18	34	29	17	22	22	16	16	20	6	6	5	14	16	7	7	0	7	12	4	4	5	6	1	57	57	60	72	66	10.09	10.09	12.3	10.69	8.78	11.45	10.95	12.05	11.51	8.78	10.09	10.67	12.3	10.69	8.78
2	22ECSC306	26	33	32	31	20	12	15	12	13	12	4	9	6	12	21	7	8	4	6	11	11	8	8	10	1	60	73	62	72	66	11.45	10.95	12.05	11.51	8.78	10.09	10.67	12.3	10.69	8.78					
3	19ECSC302	18	26	34	21	17	22	12	16	11	20	6	4	5	11	16	7	7	0	7	12	4	11	5	7	1	57	60	60	57	66	10.09	11.45	12.3	10.67	8.78	9.84	9.18	10.1	12.17	8.02					
4	17ECSC302	8	22	7	21	34	19	6	10	11	5	10	19	11	11	12	7	20	22	7	15	19	12	7	7	1	63	79	57	57	67	10.33	10.21	7.74	10.67	8.78	10.67	3.23	11.68	11.32	8.15					
5	22ECSE315	16	7	34	29	17	14	10	16	16	20	6	11	5	14	16	13	22	0	7	12	8	7	5	6	1	57	57	60	72	66	9.84	7.74	12.3	10.69	8.78	10.09	9.84	12.3	10.69	8.78					
6	22ECSE303	7	10	15	20	9	10	5	21	18	1	11	16	13	10	12	22	35	8	7	38	7	7	3	17	6	57	73	60	72	66	7.74	6.48	9.23	11.97	8.2	7.74	6.48	9.23	11.97	8.2					

**Visualizations**


**Fig. 13**

The report produced by the analysis can also be downloaded or printed as an additional option.

#### 4.1.2.6 DUGC Chairman



**Coordinator**    **DUGC**    **DUGC Chairman**

Please add the course :

Choose the type of semester:	<input type="button" value="Even ▾"/>
Choose the semester:	<input type="button" value="VI - six ▾"/>
Enter the course code :	<input type="text" value="Ex: 22ECSC301"/>
Enter the course name :	<input type="text" value="Ex: Software Engineering"/>

**Submit**    **Reset**

**Fig. 14**

The third option in our module is for the DUGC Chairman to create a course by selecting the type of semester or semester and manually entering the course code (eg, 22ECSC301) and course name (eg, Software Engineering) that does not already exist. After the course is successfully created, it is added to the database, and from that point on, the DUGC Coordinator can add the spreadsheets for that specific course by selecting from a drop-down menu.

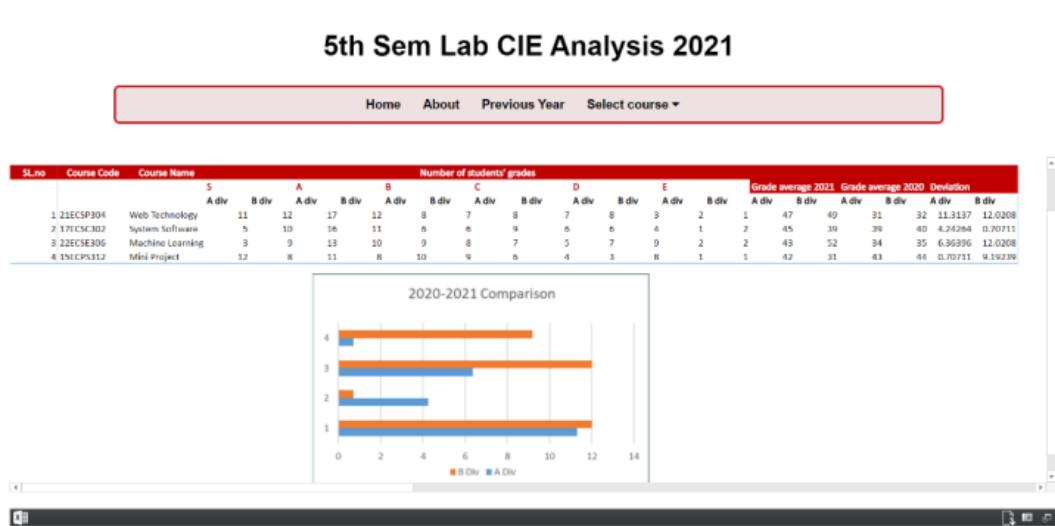
#### 4.1.2 Module 3 Result Analysis (lab)

**Lab CIE Result Analysis**

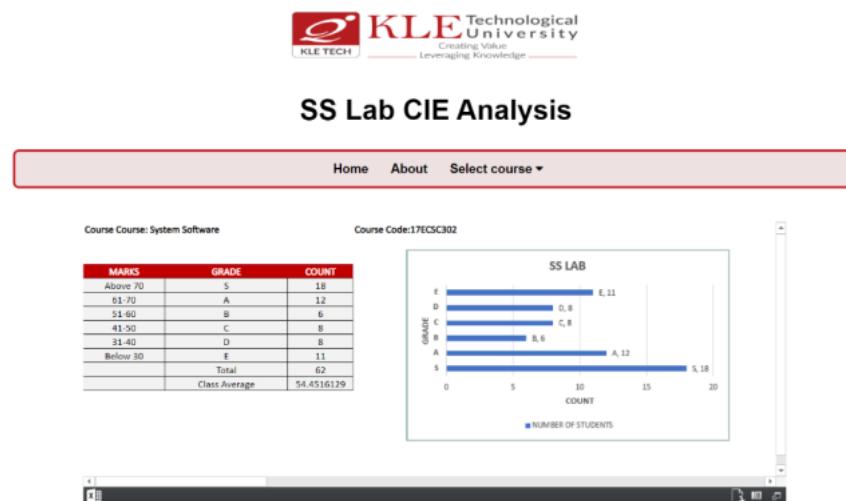
Select Year:	<input type="button" value="▼"/>
Select Sem:	<input type="button" value="▼"/>
Select Division:	<input type="button" value="▼"/>

**Submit**

**Fig 4.1.1 This is the login page for lab CIE analysis where they need to enter year, Sem and division**



**Fig 4.1.2** Consolidated page which compares with previous results. Other subjects can be selected from the select course button.



**Fig 4.1.3** Example SS course is selected and the result table is displayed along the side of the graph.

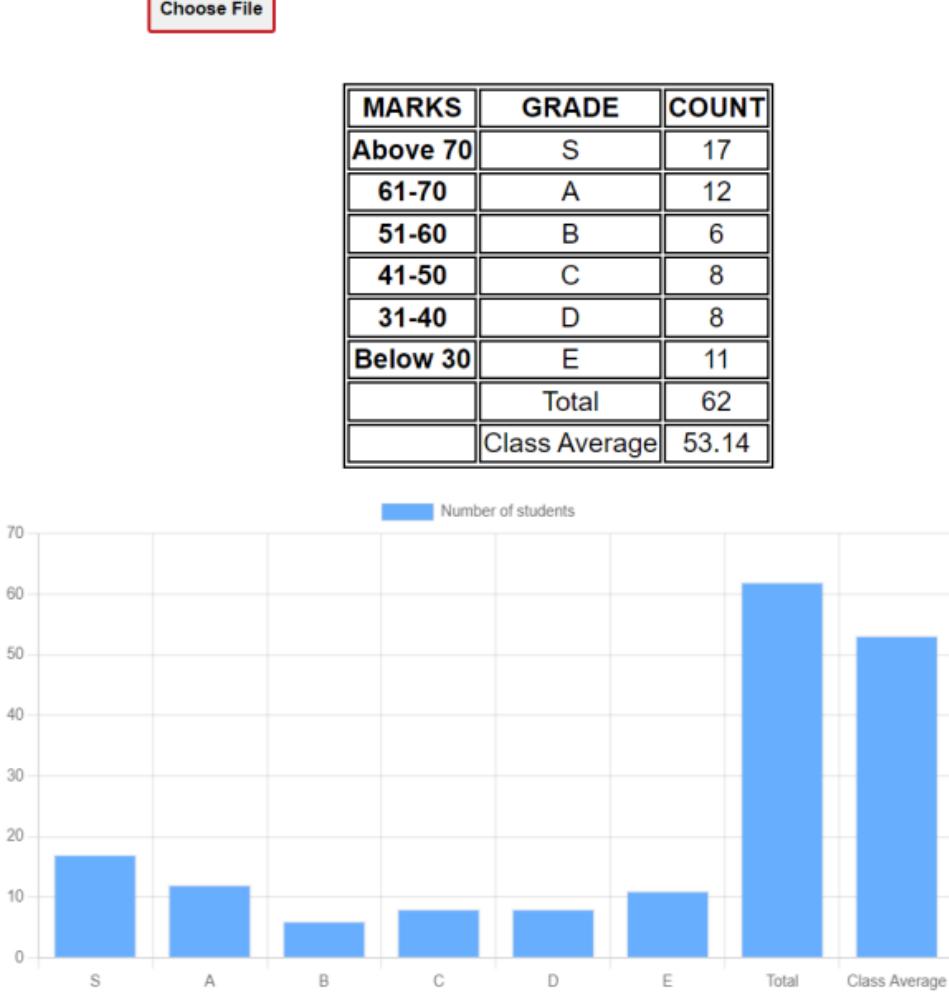
  
**Uploading Result - 2022**

[Home](#)   [About](#)   [Select Sem](#)

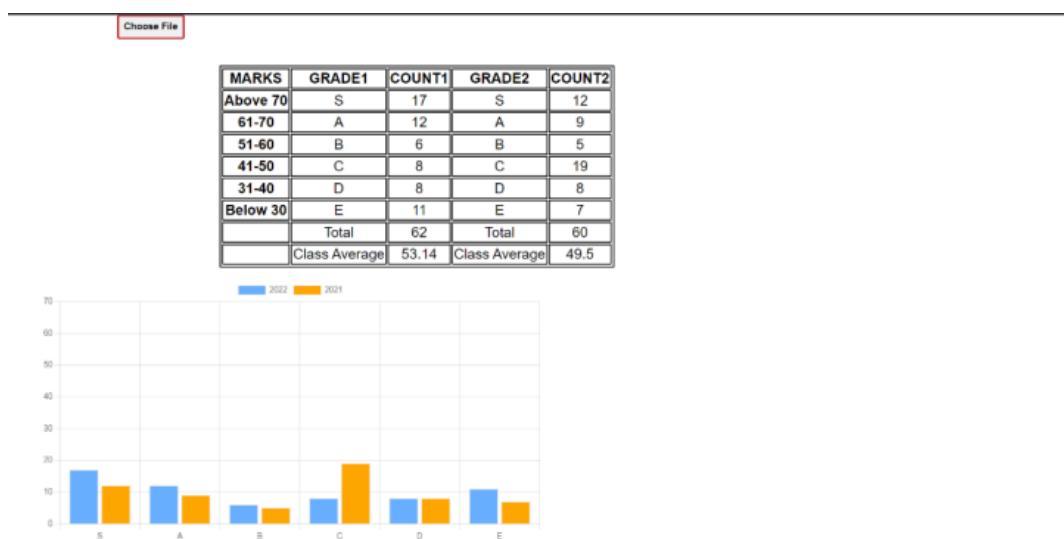
**Choose File**

MARKS	GRADE	COUNT
Above 70	S	17
61-70	A	12
51-60	B	6
41-50	C	8
31-40	D	8
Below 30	E	11
	Total	62
	Class Average	53.14

**Fig 4.1.4** For uploading results of the year 2022 a file needs to be chosen from the choose file button and the result is displayed as a Json table.



**Fig 4.1.5** Current year result in Json table with graphical analysis.



**Fig 4.1.6 Result is compared with previous year and graphs are plotted dynamically.**

#### 4.1.4 Module 4 End-Sem Analysis

##### 4.1.4.1 Initially, Semester has to be chosen.



**SEMESTER-END RESULTS**

Choose Semester: <input style="border: none; border-radius: 5px; padding: 2px 10px;" type="button" value="select here"/>		
Course Name	Course Code	Passing percentage
Total Passing percentage		
<input style="border: none; border-radius: 5px; padding: 2px 10px;" type="button" value="Analyze"/>		

Table will be displayed according to the selected semester. Once all the inputs are filled with valid numbers, the Analyze button is clicked. The analyze button will further display the graphs; one with course-wise passing percentage and another with total passing percentage comparison with previous year passing percentage side by side.

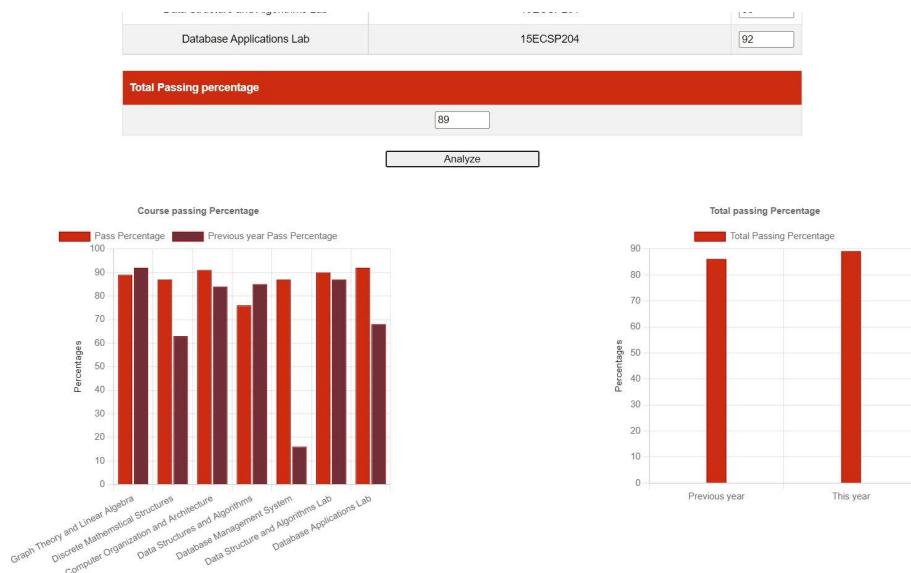
##### 4.1.4.2 Passing Percentage is to be given

**SEMESTER-END RESULTS**Choose Semester: 

Course Name	Course Code	Passing percentage
Graph Theory and Linear Algebra	15MEAB204	89
Discrete Mathematical Structures	19ECSC202	87
Computer Organization and Architecture	20ECS201	91
Data Structures and Algorithms	20ECS205	76
Database Management System	15ECSC208	87
Data Structure and Algorithms Lab	19ECSP201	90
Database Applications Lab	15ECSP204	92

<b>Total Passing percentage</b>
89

**4.1.4.3 Result**

## 4.1.5 Module 5 Ineligibility List Approval

### 4.1.5.1 Ineligibility list home page

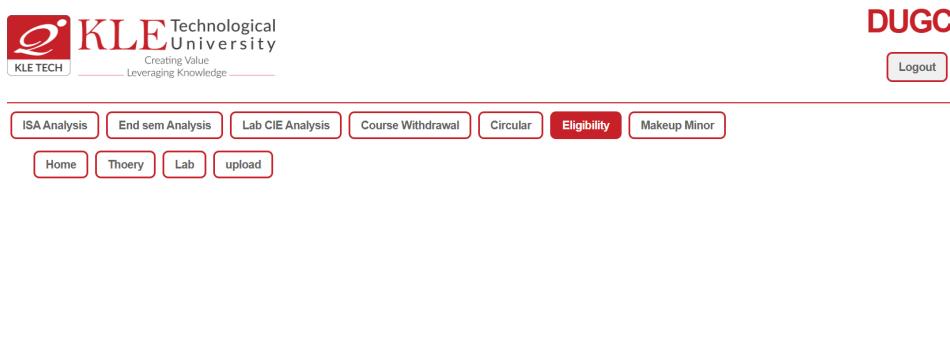


fig1: Ineligibility Home page

To view and print the consolidated ineligibility list for theory and lab, DUGC member and course coordinator should click the Eligibility button.

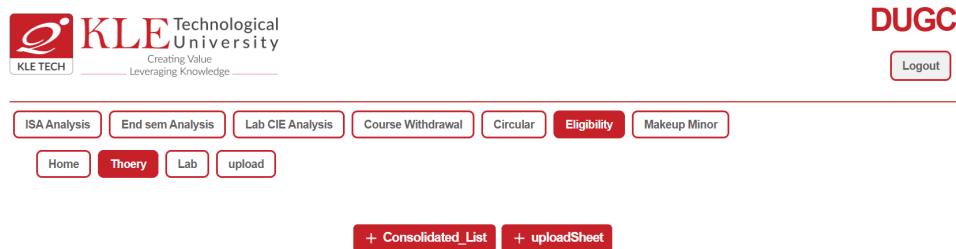


Fig 2:Select Theory ineligibility list

Sl no.	USN	Name	22ECSC301		19ECSC302		17ECSC302		22ECSC306	
			CIE	Att	CIE	Att	CIE	Att	CIE	Att
2	01fe21bcs417	jithendra	15	15						
4	01fe21bcs429	manju					18	18		

Fig 3: consolidated Theory ineligibility list

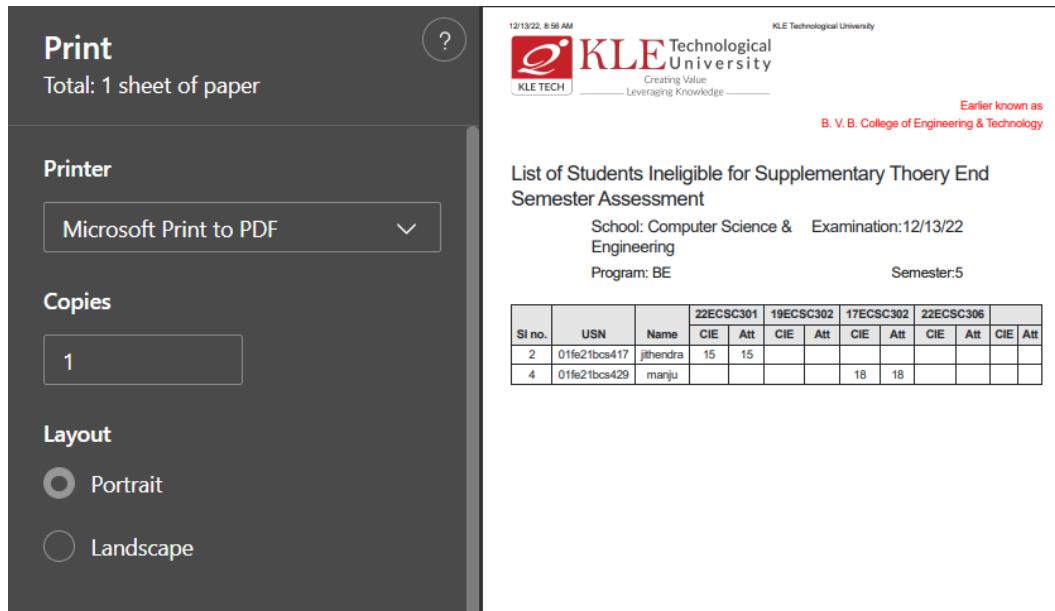


Fig 4: Print the Consolidated Theory ineligibility list as per the template

This screenshot shows a web-based application for managing student ineligibility. At the top, there is a navigation bar with buttons for 'ISA Analysis', 'End sem Analysis', 'Lab CIE Analysis', 'Course Withdrawal', 'Circular', 'Eligibility' (which is highlighted in red), and 'Makeup Minor'. Below this are buttons for 'Home', 'Theory', 'Lab', and 'upload'. Two red buttons, '+ TheorySheet' and '+ LabSheet', are positioned above a large red button labeled 'upload Ineligible student list for courses'. Below these buttons is a dropdown menu labeled 'SelectSem' with a placeholder value '5'. Underneath is a file input field with the text 'Choose File' and 'No file chosen', accompanied by a red 'upload' button. At the very bottom of the form is a table with columns for 'USN', 'Name', 'courseid', 'coursename', 'sem', 'div', 'cie', and 'attendance'.

Fig 5: Select Upload button for uploading the student ineligibility list

This screenshot shows a web-based application for managing student ineligibility. At the top, there is a navigation bar with buttons for 'ISA Analysis', 'End sem Analysis', 'Lab CIE Analysis', 'Course Withdrawal', 'Circular', 'Eligibility' (highlighted in red), and 'Makeup Minor'. Below this are buttons for 'Home', 'Theory', 'Lab', and 'upload'. Two red buttons, '+ Consolidated\_List' and '+ uploadSheet', are positioned above a red message box containing the text 'please select deatils to view Ineligible students list'. Below the message box is a dropdown menu labeled 'SelectSem' with a placeholder value '5'. Underneath is a red 'Submit' button. At the very bottom of the form is a table with columns for 'Sl no.', 'USN', 'Name', and various CIE and Att scores.

Fig 6:Lab consolidated ineligibility list

## 4.1.6 Module 6 Course Withdrawal

### 4.1.6.1 Home page

The screenshot shows the 'Course Withdrawal Approval' section of the university's website. At the top, there are navigation links for 'Minor Analysis', 'End sem Analysis', 'Lab Analysis', 'Course Withdrawal' (which is highlighted in red), 'Circular', 'Eligibility', 'Makeup Minor', 'Home', 'Application', and 'Report'. On the right, there is a 'Logout' button. Below the navigation bar, the title 'Course Withdrawal Approval' is centered. A table lists three students with their course details and withdrawal reasons:

Sl no.	Sem	USN	Name	Course	Reason	Approve/Reject
1	3	01FE21BCS419	Sandeep	Data Structure and Algorithms Attendance-80% CIE-15	Absent for IA	<input checked="" type="checkbox"/> <input type="checkbox"/>
2	4	01FE21BCS408	Shrinidhi	Object Oriented Programming Attendance-33% CIE-16	Attendance low.	<input checked="" type="checkbox"/> <input type="checkbox"/>
3	3	01FE20BCS236	Kavana	Computer Organization and Architecture Attendance-81% CIE-14	Less Marks	<input checked="" type="checkbox"/> <input type="checkbox"/>

At the bottom of the page, there is a copyright notice: '©2022 KLE Technological University. All rights reserved.' followed by social media icons for Twitter, YouTube, Facebook, and LinkedIn.

### 4.1.6.2 Report

The screenshot shows the 'Approved Students List of sem 5' report. At the top, there are navigation links for 'Minor Analysis', 'End sem Analysis', 'Lab Analysis', 'Course Withdrawal' (highlighted in red), 'Circular', 'Eligibility', 'Makeup Minor', 'Home', 'Application', and 'Report'. On the right, there is a 'Logout' button. Below the navigation bar, the title 'Approved Students List of sem 5.' is centered. A table lists three approved students with their USN and course details:

Name	USN	22ECSC306		17ECSC302		22ECSE315	
		ATT	CEI	ATT	CEI	ATT	CEI
Prasad	01FE21BCS416	92	28	-	-	-	-
Sandeep Urankar	01FE21BCS419	-	-	81	9	-	-
Pratibha	01FE20BCS237	-	-	-	-	40	8

Below the table, another table shows course names and their corresponding codes:

Course name	Code
Machine Learning	22ECSC306
System Software	17ECSC302
Natural Language Processing	22ECSE315

At the bottom of the page, there is a 'Print' button and a copyright notice: '©2022 KLE Technological University. All rights reserved.' followed by social media icons for Twitter, YouTube, Facebook, and LinkedIn.

### 4.1.6.3 Application Page

The screenshot shows the 'Application for Course Withdrawal' form on the KLE Technological University website. The user has filled in the following details:

- Name: Sandeep Urankar
- Sem: 3
- SRN: 01FE21BCS419
- Roll No: 467
- Division: D

Under 'Select the Courses to be Withdrawn.', several courses are listed with checkboxes. The course 'Graph Theory and Linear Algebra' (15EMAB204) has a checked checkbox.

Under 'Selected courses to withdraw', the course 'Graph Theory and Linear Algebra' (15EMAB204) is listed with its credits (4-0-0) and two dropdown menus for 'Attendance' and 'CIE'. Below this, the 'Credits Selected' field contains the value '4' and the 'Total Credits' field contains '23.5'.

A large text area for 'Reason:' is present, and a 'Submit' button is at the bottom.

### 4.1 Module 7 Automated Circular/Notices

The screenshot shows the 'Circular' section of the KLE Technological University website. The navigation bar includes links for Minor Analysis, End sem Analysis, Lab Analysis, Course Withdrawal, Circular (highlighted in red), Eligibility, Makeup Minor, Circular, Minutes, and Notice.

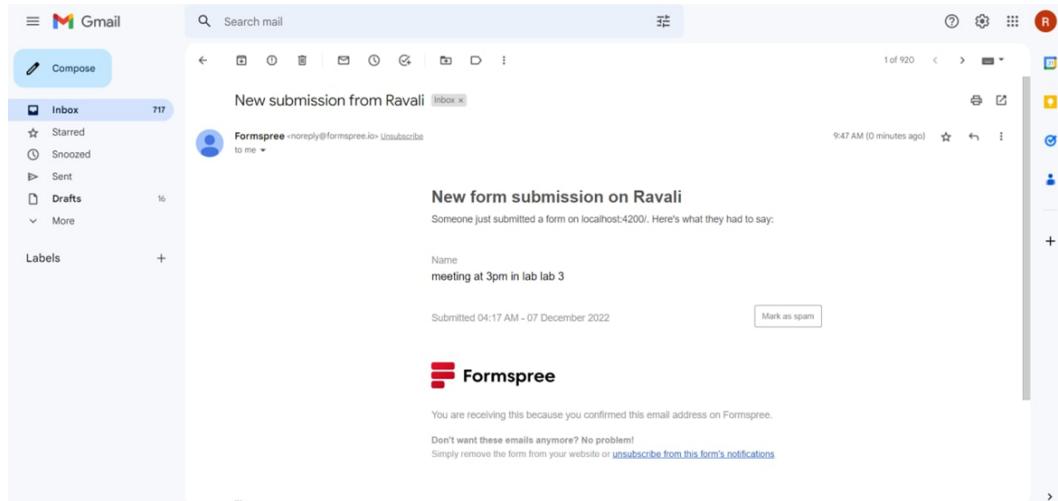
**Fig 4.1.1** This figure shows an integrated project in which our module is circular.  
Here we can see circular , minutes of meeting and notices.

The screenshot displays the DUGC integrated project interface. At the top, there is a header with the KLE Technological University logo and the text "Creating Value Leveraging Knowledge". On the right side of the header is the "Logout" button. Below the header, a navigation bar contains several buttons: Minor Analysis, End sem Analysis, Lab Analysis, Course Withdrawal, Circular (which is highlighted in red), Eligibility, Makeup Minor, Circular (highlighted in red), Minutes, and Notice. The main content area is divided into two sections: "CIRCULARS" and "REMAINDER". The "CIRCULARS" section features five red buttons labeled Makeup Minor, Marks Approval for Minor, Course Withdraw, Ineligible List, and Sem End Result, each with an "Edit" button below it. The "REMAINDER" section has a text input field labeled "MESSAGE : Type here" and a "send" button.

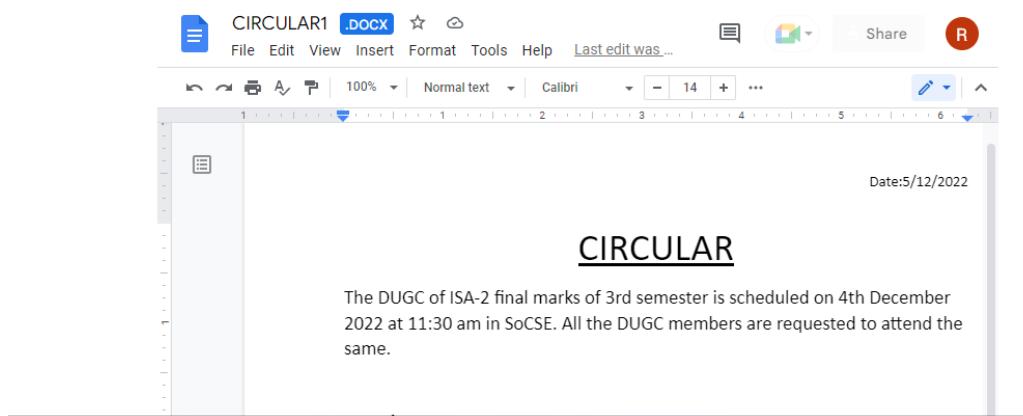
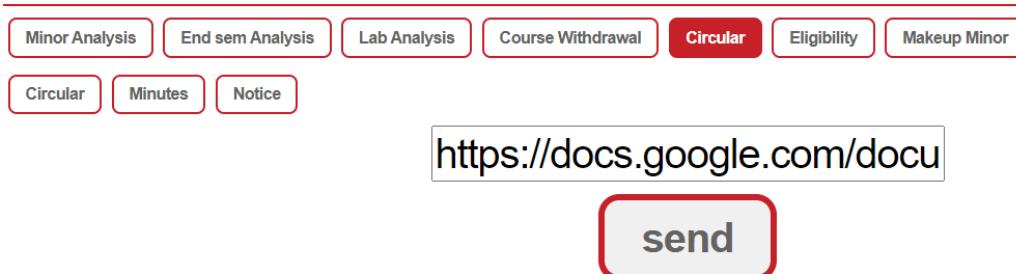
**Fig 4.1.1** Here we can see types of circular and reminder part. if we need to open the circular to edit then click on edit circular button there you can see the document. If you need to send a text message(reminder) then you can type a message in the reminder part and click on send button to send mail.

This screenshot shows the same DUGC integrated project interface as the previous one, but with a message typed into the "MESSAGE : Type here" field in the "REMAINDER" section. The message reads "meeting at 3pm in lab lab 3". The "send" button is visible below the message input field.

**Fig 4.1.1** In this figure a message is typed that meeting at 3pm in lab 3 this message is sent to DUGC members by the DUGC coordinator.



**Fig 4.1.1** Here a DUGC member received the message from the coordinator which reminded him of the meeting venue and time.



**Fig 4.1.1** This is circular which is already saved here coordinator can edit data , time and venue before sending mail to the members. If the coordinator needs to download the document then he/she should click on file in the menu bar and click on download then file should be downloaded to their system. and click on the send button to mail this document.

[Minor Analysis](#) [End sem Analysis](#) [Lab Analysis](#) [Course Withdrawal](#) [Circular](#) [Eligibility](#) [Makeup Minor](#)  
[Circular](#) [Minutes](#) [Notice](#)

Mail sent successful

This shows notification that your mail should be sent successfully

New submission from Anuradha Aptagiri [Inbox](#)

 **Formspree** <noreply@formspree.io> [Unsubscribe](#) [to me](#) Dec 6, 2022, 8:37 PM (14 hours ago) [Star](#) [Reply](#) [More](#)

**New form submission on Anuradha Aptagiri**

Someone just submitted a form on localhost:4200/. Here's what they had to say:

Name  
<https://docs.google.com/document/d/1NXycaMHSURk0ox4o4QOtFau8G0LuMbzbv/edit?>

Submitted 04:37 AM - 07 December 2022 [Mark as spam](#)



You are receiving this because you confirmed this email address on Formspree.

Don't want these emails anymore? No problem!  
 Simply remove the form from your website or [unsubscribe from this form's notifications](#).

[Message clipped] [View entire message](#)

One attachment • Scanned by Gmail [①](#)



here we can see the mail that is sent by the coordinator and also we can download the document.

## 4.2 Testing Report

### 4.2.1 Module 1 Makeup Minor Approval

Project: makeup\*

The screenshot shows a test runner interface with the following details:

- Project:** makeup\*
- Executing:** ✓ login\*
- URL:** http://localhost:4200
- Test Steps:**

Command	Target	Value
✓ open	/	
✓ set window size	521x816	
✓ click	css=.nav-op2:nth-child(1)	
✓ click	id=form3Example3	
✓ type	id=form3Example3	kletech@123
✓ click	id=form3Example4	
✓ type	id=form3Example4	kletech123
✓ click	id=card	

- Test for DUGC coordinator Login is successful.
- The input required for login are Username and Password.

Project: makeup

The screenshot shows a test runner interface with the following details:

- Tests:** ✓ login, ✓ apply for makeup minor
- Test Step 1 (apply for makeup minor):**

Command	Target	Value
✓ click	id=mo	
✓ type	id=mo	476
✓ click	id=div	
✓ select	id=div	label=B
✓ click	css=div:nth-child(1) > input	
✓ click	css=div:nth-child(1) > input	
✓ click	css=div:nth-child(1) > input	
✓ click	css=table > div:nth-child(2)	
✓ click	css=div:nth-child(2) > input	
✓ click	css=momsa	
✓ type	css=momsa	health issue
✓ click	css=kop	
✓ assert alert	Application submitted successful.	

- Coordinator adding student details for makeup minor.
- The details required in the form are student name, USN, Roll No, Division, Sem and select the course and the appropriate reason.

Project: makeup			
Tests	+	Run current test Ctrl+R	
	Command	Target	Value
✓ login	1 ✓ open	/	
✓ apply for makeup minor	2 ✓ set window size	612x816	
✓ approve student	3 ✓ click	css= nav-op:nth-child(7)	
disapprove student	4 ✓ click	css= nav-options:nth-child(1) > .nav-op:nth-child(2)	
view report	5 ✓ click	css=id > button:nth-child(1)	
	6 ✓ assert alert	Approved	

- The DUGC coordinator will approve or disapprove the student based on the reason specified.
- The reasons considered for approval must be valid reasons.

Project: makeup			
Tests	+	Run current test Ctrl+R	
	Command	Target	Value
✓ login	16 ✓ click	css=div:nth-child(3) > input	
✓ apply for makeup minor	17 ✓ click	css= momsa	
✓ approve student	18 ✓ type	css= momsa	other
✓ disapprove student	19 ✓ click	css= kop	
view report	20 ✓ assert alert	Application submitted successful.	
	21 ✓ click	css= nav-options:nth-child(1) > .nav-op:nth-child(2)	
	22 ✓ click	css=button:nth-child(2)	
	23 ✓ assert alert	Rejected	
	24 ✓ click	css= nav-options:nth-child(1) > .nav-op:nth-child(3)	
	25 ✓ click	css=select	
	26 ✓ select	css=select	label=6

- The DUGC coordinator will disapprove if the reason specified is ‘other’, This is considered as invalid reason.

Project: makeup			
Tests	+	Run current test Ctrl+R	
	Command	Target	Value
✓ login	1 ✓ open	/	
✓ apply for makeup minor	2 ✓ set window size	612x816	
✓ approve student	3 ✓ click	css= nav-op:nth-child(7)	
✓ disapprove student	4 ✓ click	css= nav-options:nth-child(1) > .nav-op:nth-child(3)	
✓ view report	5 ✓ click	css=select	*
	6 ✓ select	css=select	label=5

- Finally approved students list is displayed.

## 4.2.2 Module 2 Result Analysis(theory)

### 4.2.2.1 Adding New Course as DUGC Chairman

Project: DUGC Minor Analysis

Test	Command	Target	Value
✓ Consolidated Sheet Upload			
✓ DUGC			
✓ DUGC Chairman	4 ✓ click	id=sem_type	
	5 ✓ select	id=sem_type	label=Even
	6 ✓ click	id=semester	
	7 ✓ select	id=semester	label=IV - four
	8 ✓ click	id=course_code	
	9 ✓ type	id=course_code	22ECS210
	10 ✓ click	id=course_name	
	11 ✓ type	id=course_name	Exploratory Data Analysis
	12 ✓ click	id=submit-upload	

Command: click  
Target: id=sem\_type  
Value:  
Description:

Log Reference

- 8. click on id=course\_code OK 07:13:43
- 9. type on id=course\_code with value 22ECS210 OK 07:13:43
- 10. click on id=course\_name OK 07:13:44
- 11. type on id=course\_name with value Exploratory Data Analysis OK 07:13:44
- 12. click on id=submit-upload OK 07:13:44

'DUGC Chairman completed successfully' 07:13:44

- Test for adding new course by DUGC Chairman is completed successfully.
- On selecting semester and entering new course code and course name, a new course was added into the database.

### 4.2.2.2 Single Sheet Upload

Project: DUGC Minor Analysis

Test	Command	Target	Value
✓ Consolidated Sheet Upload			
✓ DUGC			
✓ DUGC Chairman			
✓ Delete Sheet			
✓ Single Sheet Upload	10 ✓ click	id=course	
	11 ✓ select	id=course	label=22ECS301 - Software Engineering
	12 ✓ click	id=section	
	13 ✓ select	id=section	label=A
	14 ✓ click	id=exam	
	15 ✓ select	id=exam	label=Minor 1
	16 ✓ click	id=filename	
	17 ✓ type	id=filename	C:\fakepath\SE_Marks_Minor_1.xlsx
	18 ✓ click	id=submit-upload	

Command:   
Target:   
Value:   
Description:

Log Reference

- 14. click on id=exam OK 07:16:23
- 15. select on id=exam with value label=Minor 1 OK 07:16:23
- 16. click on id=filename OK 07:16:23
- 17. type on id=filename with value C:\fakepath\SE\_Marks\_Minor\_1.xlsx OK 07:16:24
- 18. click on id=submit-upload OK 07:16:24

'Single Sheet Upload' completed successfully 07:16:24

- Test for Single sheet upload by Course coordinator is completed successfully.
- Course coordinator on selecting options and uploading single spreadsheet, the marks were stored in the database in the respective options selected.

### 4.2.2.3 Consolidated Sheet Upload

Project: DUGC Minor Analysis

The screenshot shows a test configuration interface with the following details:

- Tests:** Consolidated Sheet Upload, ✓ DUGC, ✓ DUGC Chairman, ✓ Delete Sheet, ✓ Single Sheet Upload.
- Command Table:**

Command	Target	Value
6 ✓ select	id=sem_type	label=Odd
7 ✓ click	id=semester	
8 ✓ select	id=semester	
9 ✓ click	id=course	label=V - five
10 ✓ select	id=course	
11 ✓ click	id=exam	label=22ECSC301 - Software Engineering
12 ✓ select	id=exam	
13 ✓ click	id=filename	label=Minor 1
14 ✓ type	id=filename	C:\fakepath\SE_Marks_Minor_1.xlsx
15 ✓ click	id=submit-upload	
- Log:**
  - 11. click on id=exam OK
  - 12. select on id=exam with value label=Minor 1 OK
  - 13. click on id=filename OK
  - 14. type on id=filename with value C:\fakepath\SE\_Marks\_Minor\_1.xlsx OK
  - 15. click on id=submit-upload OK

'Consolidated Sheet Upload' completed successfully

- Test for consolidated sheet by Course coordinator is completed successfully.
- Course coordinator on selecting options and uploading consolidated sheet, the marks of all the divisions got stored in the database.

### 4.2.2.4 Deleting Sheet

Project: DUGC Minor Analysis

The screenshot shows a test configuration interface with the following details:

- Tests:** Consolidated Sheet Upload, ✓ DUGC, ✓ DUGC Chairman, ✓ Delete Sheet, ✓ Single Sheet Upload.
- Command Table:**

Command	Target	Value
10 ✓ click	id=course	label=17ECSC302 - System Software
11 ✓ select	id=course	
12 ✓ click	id=section	
13 ✓ select	id=section	label=A
14 ✓ click	id=exam	
15 ✓ select	id=exam	label=Minor 2
16 ✓ click	id=submit-upload	
17 ✓ click	id=section	
18 ✓ select	id=section	label=B
19 ✓ click	id=submit-upload	
- Log:**
  - 15. select on id=exam with value label=Minor 2 OK
  - 16. click on id=submit-upload OK
  - 17. click on id=section OK
  - 18. select on id=section with value label=B OK
  - 19. click on id=submit-upload OK

'Delete Sheet' completed successfully

- Test for delete sheet by Course coordinator was successful.
- Course coordinator selects the delete option and enters the semester, course and division. The respective marks gets deleted from the database.

## 4.2.5 Viewing analysis

Project: DUGC Minor Analysis\*

Tests + > DUGC

Search tests... http://localhost:4200/Major

Command	Target	Value
4 ✓ click	id=sem_type	
5 ✓ select	id=sem_type	label=Odd
6 ✓ click	id=semester	
7 ✓ select	id=semester	label=III - three
8 ✓ click	id=exam	
9 ✓ click	id=exam	
10 ✓ select	id=exam	label=V - five
11 ✓ click	id=exam	
12 ✓ select	id=exam	label=Minor 1
13 ✓ click	css=submit-upload	

Command Target Value Description

Log Reference

- 9. click on id=semester OK 07:21:01
- 10. select on id=semester with value label=V - five OK 07:21:02
- 11. click on id=exam OK 07:21:03
- 12. select on id=exam with value label=Minor 1 OK 07:21:04
- 13. click on css=submit-upload OK 07:21:05

'DUGC' completed successfully 07:21:06

- Test for view analysis by DUGC coordinator is completed successfully.
- DUGC coordinator on selecting semester and exam type(minor1, minor2, activity) a consolidated table of marks is displayed along with graphical visualizations.

## 4.2.3 Module 3 Result Analysis(lab)

Log Reference

Running 'Selection'

1. open on http://localhost:4200/home OK
2. setWindowSize on 796x824 OK
3. click on id=year OK
4. select on id=year with value label=2020 OK
5. click on id=Sem OK
6. select on id=Sem with value label=3 OK
7. click on id=Div OK
8. select on id=Div with value label=A OK
9. click on css=button OK
10. close OK

'Selection' completed successfully

### 4.2.3.1 Selection of year, semester and division

[Log](#)[Reference](#)**Running 'Previous Year'**

1. open on /home **OK**
2. setWindowSize on 796x824 **OK**
3. click on id=year **OK**
4. select on id=year with value label=2021 **OK**
5. click on id=Sem **OK**
6. select on id=Sem with value label=5 **OK**
7. click on id=Div **OK**
8. select on id=Div with value label=A **OK**
9. click on css=button **OK**
10. click on linkText=Previous Year **OK**
  
11. selectFrame on index=0 **OK**
12. selectFrame on index=0 **OK**
13. click on css=.ewa-fo-img-div > img **OK**
14. close **OK**

**'Previous Year' completed successfully****4.2.3.2 Previous Year Comparison**[Log](#)[Reference](#)**Running 'Download excel'**

1. open on http://localhost:4200/home **OK**
2. setWindowSize on 796x824 **OK**
3. click on id=year **OK**
4. select on id=year with value label=2021 **OK**
5. click on id=Sem **OK**
6. select on id=Sem with value label=5 **OK**
7. click on id=Div **OK**
8. click on id=Div **OK**
9. click on css=.container **OK**
  
10. select on id=Div with value label=A **OK**
11. mouseDownAt on id=Div with value -0.737518310546875,-0.774993896484375 **OK**
12. mouseMoveAt on id=Div with value -0.737518310546875,-0.774993896484375 **OK**
13. mouseUpAt on id=Div with value -0.737518310546875,-0.774993896484375 **OK**
14. click on css=button **OK**
15. selectFrame on index=0 **OK**
16. selectFrame on index=0 **OK**
17. click on css=#m\_excelEmbedRenderer\_m\_downloadAnchor img **OK**
18. close **OK**

**'Download excel' completed successfully****4.2.3.3 Downloading Excel Sheets**

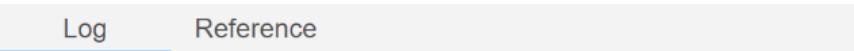


#### Running 'Course Selection'

1. open on http://localhost:4200/home OK
2. setWindowSize on 796x824 OK
3. click on id=year OK
4. select on id=year with value label=2020 OK
5. click on id=Sem OK
6. select on id=Sem with value label=3 OK
7. click on id=Div OK
8. select on id=Div with value label=B OK
9. click on css=button OK
10. Trying to find linkText=DSA... OK
  
11. selectFrame on index=0 OK
12. selectFrame on index=0 OK
13. Trying to find css=.ewr-sheetable... OK
14. close OK

**'Course Selection' completed successfully**

#### 4.2.3.4 Course Selection



#### Running 'Upload Sheet'

1. open on http://localhost:4200/home OK
2. setWindowSize on 796x824 OK
3. click on id=year OK
4. select on id=year with value label=2022 OK
5. click on id=Sem OK
6. select on id=Sem with value label=7 OK
7. click on id=Div OK
  
8. select on id=Div with value label=A OK
9. click on css=button OK
10. click on css=input OK
11. type on css=input with value C:\fakepath\2022\_DBMS.csv OK
12. close OK

**'Upload Sheet' completed successfully**

#### 4.2.3.5 Upload Excel sheet

## 4.2.4 Module 4 End-Sem Analysis

### 4.2.4.1 - Testing for any/all blank fields for passing Percentage.

Selenium IDE - dugc*				
Project: dugc*				
Tests	+	Tests	Project	
Search tests...	Q	http://localhost:4200/		
✓ Enter all fields*		Command	Target	
✓ Enter passing percentage		1 ✓ open	http://localhost:4200/	
✓ Select Semester*		2 ✓ set window size	797x816	
		3 ✓ click	css=select	
		4 ✓ select	css=select	
		5 ✓ click	css=td:nth-child(1) > .ng-untouched	
		6 ✓ type	css=ng-dirty	
		7 ✓ click	css=btn	
		8 ✓ assert alert	Please, enter passing percentage of all course.	

Test case 1: Analysis option is not permitted if no semester is selected. It is necessary to select a semester and give passing percentage for all selected courses.

Test case 2: Fields for Inputs should not be kept empty, if so analysis for the passing percentages is not shown.

Test case 3: Negative passing percentages are not allowed.

Test case 4: Percentages can be given maximum value of up to 100. Beyond this limit is not permitted.

Test case 5: Analysis is not shown with only entry of total passing percentage and no or less entry of course wise passing percentage.

## **4.2.6 Module 6 Course Withdrawal**

#### **4.2.6.1 - Testing for negative CIE and attendance,**

Project: DUGC Withdrawal

Tests + Search tests...

http://localhost:4200

Command	Target	Value
✓ <code>click</code>	<code>css=ng-untouched:nth-child(4) &gt; input</code>	
✓ <code>click</code>	<code>css=ng-untouched:nth-child(4)</code>	-10
✓ <code>type</code>	<code>css=ng-untouched:nth-child(6)</code>	-20
✓ <code>click</code>	<code>css=.momsa</code>	
✓ <code>type</code>	<code>css=.momsa</code>	Test
✓ <code>click</code>	<code>css=.kop</code>	
✓ <code>mouse over</code>	<code>css=.kop</code>	
✓ <code>mouse out</code>	<code>css=.kop</code>	

Command: open

Target: /

Value:

Description:

Log Reference

27. type on `css=ng-untouched:nth-child(6)` with value -20 OK  
28. click on `css=.momsa` OK  
29. type on `css=.momsa` with value Test OK  
30. click on `css=.kop` OK  
31. mouseOver on `css=.kop` OK  
32. mouseOut on `css=.kop` OK  
\*Negative CIE or ATT completed successfully

10:11:09  
10:11:10  
10:11:10  
10:11:11  
10:11:12  
10:11:12  
10:11:13

#### **4.2.6.2 - Empty Form Handling**

The screenshot shows the Selenium IDE interface for a project titled "DUGC Withdrawal\*". The top bar displays the date and time as "Wed Dec 7 10:36 AM". The left sidebar lists several test cases: "Courses not selected", "Empty Reason Field", "Empty form" (which is currently selected), "Negative CIE or ATT", "Reject Approval", and "Valid Form\*". The main area contains a table of commands:

Command	Target	Value
1 open	/Withdrawal/Application	
2 set window size	1208x683	
3 click	css=.kop	

Below the table, there is a detailed view of the selected command (open) with fields for Target and Value.

At the bottom, a log table shows the execution history:

Log	Reference	Date
22. click on css=ng-untouched:nth-child(4) OK		10:31:24
23. type on css=ng-untouched:nth-child(4) with value 79 OK		10:31:25
24. type on css=ng-untouched:nth-child(6) with value 18 OK		10:31:25
25. click on css=momsa OK		10:31:26
26. type on css=momsa with value Absent for IA OK		10:31:27
27. click on css=kop OK		10:31:28
<b>"Valid Form" completed successfully</b>		10:31:29

## 4.2.7 Module 7 Automated Circular/Notices

Selenium IDE - dugc1

Project: dugc1

Executing ✓ dugc http://localhost:4200

Command	Target	Value
18 ✓ click	css=.ng-untouched:nth-child(4).nav-op	
19 ✓ select frame	index=0	
20 ✓ run script	window.scrollTo(0,0)	
21 ✓ select frame	relative-parent	
22 ✓ click	css=.nav-options:nth-child(1)	
23 ✓ click	css=.nav-options:nth-child(1)>.nav-op:nth-child(1)	
24 ✓ click	css=.ng-untouched:nth-child(4).nav-op	
25 ✓ click	css=a>.nav-op	
26 ✓ close		

Runs: 1 Failures: 0

Log Reference

```

21. selectFrame on relative/parent OK
22. click on css=.nav-options:nth-child(1) OK
23. click on css=.nav-options:nth-child(1)>.nav-op:nth-child(1) OK
24. click on css=.ng-untouched:nth-child(4).nav-op OK
25. click on css=a>.nav-op OK
26. close OK
'dugc' completed successfully

```

10:58:44  
10:58:44  
10:58:45  
10:58:45  
10:58:45  
10:58:46  
10:58:46

In this figure we are showing the testing of functions like Editing and saving file and also sending mail to the DUGC members

Selenium IDE - wtse1

Project: wtse1

Executing ✓ sewf1 http://localhost:4200

Command	Target	Value
7 ✓ click	css=.nav-options:nth-child(1)>.nav-op:nth-child(1)	
8 ✓ click	css=.ng-untouched:nth-child(1)>.aaa:nth-child(4).nav-op	
9 ✓ select frame	index=0	
10 ✓ run script	window.scrollTo(0,0)	
11 ✓ click	css=.kv-approve-editor	
12 ✓ select frame	relative-parent	
13 ✓ click	css=.ng-untouched:nth-child(1)>.aaa:nth-child(4).nav-op	
14 ✓ click	css=a>.nav-op	
15 ✓ click	css=.nav-options:nth-child(1)>.nav-op:nth-child(1)	
16 ✓ click	name=name	
17 ✓ type	name=name	DUGC meeting at 12:00pm in lab 3
18 ✓ click	css=.aaa:nth-child(2).nav-op	
19 ✓ click	css=.nav-options:nth-child(1)>.nav-op:nth-child(2)	
20 ✓ click	css=.nav-options:nth-child(1)>.nav-op:nth-child(3)	
21 ✓ close		

Here we have tested the text message that is sent to the mail.

## 4.3 Testing tool

- Testing tool used is Selenium IDE
- Selenium IDE is an open source testing tool, in which we can record and playback actions performed on an application in a browser
- It is easy to install and use, we can add test cases and edit them later
- After creating a new project, we just have to enter the URL of the website and the recording begins.
- It records three type of actions of the user
  1. Command
  2. Target
  3. Value
- In the command section it records which button or key we have pressed , the target section records on which we have performed the action , the value records what was the outcome of the action
- we have the ability to automatically record the test based on the interactions of the browser
- we have the flexibility to run specific test cases or run all test cases
- we can set breakpoints , or skip some of the actions in between the tests
- Test cases can be used to test multiple time , just by using run command.

## Chapter 5

# Conclusion & Future scope

- We have designed and implemented a website for the DUGC department which manages all the modules mentioned above.
- Marks analysis of minor1, minor2 and activity makes the work of DUGC coordinator and course coordinator easy by minimizing the work of entering marks manually.
- The marks can be easily uploaded in the form of spreadsheets, fetching the marks and storing them in the database is automated by the web application.
- A neat consolidated table is displayed to the DUGC coordinator which helps them to get an overall idea of performance.
- Graphical visualizations of average marks of each division with comparison to previous marks is displayed in the form of bar graphs, hence the coordinator can easily compare the performance of each division with respect to others and also with respect to previous year marks.
- For lab CIE analysis, once the user uploads the spreadsheets, he will be able to see them in the website and compare data with previous year.
- They can also upload current year data which will display the graphical analysis for all those.
- For End-Sem Analysis, the user is able to view the semester end result analysis for various courses of various semesters and for the required academic year. The results are compared with previous year results.
- For Automated Circular/Notices, the user is able to view the documents like circular, notices and

## Appendix

### A. Roles and Responsibility within team

1. In a team two pairs will be exchanging roles and working towards tasks completion for a specific timeline.
2. Each pair will work on specific tasks like
  - a. Analyst (requirement collection)

- b. GUI designer (HTML+CSS)
  - c. Backend designer (Database)
  - d. Developer (Implementation)
  - e. Tester
3. Team leaders can assign roles and tasks after discussions.
4. Conduct meetings with the client and collect requirements.

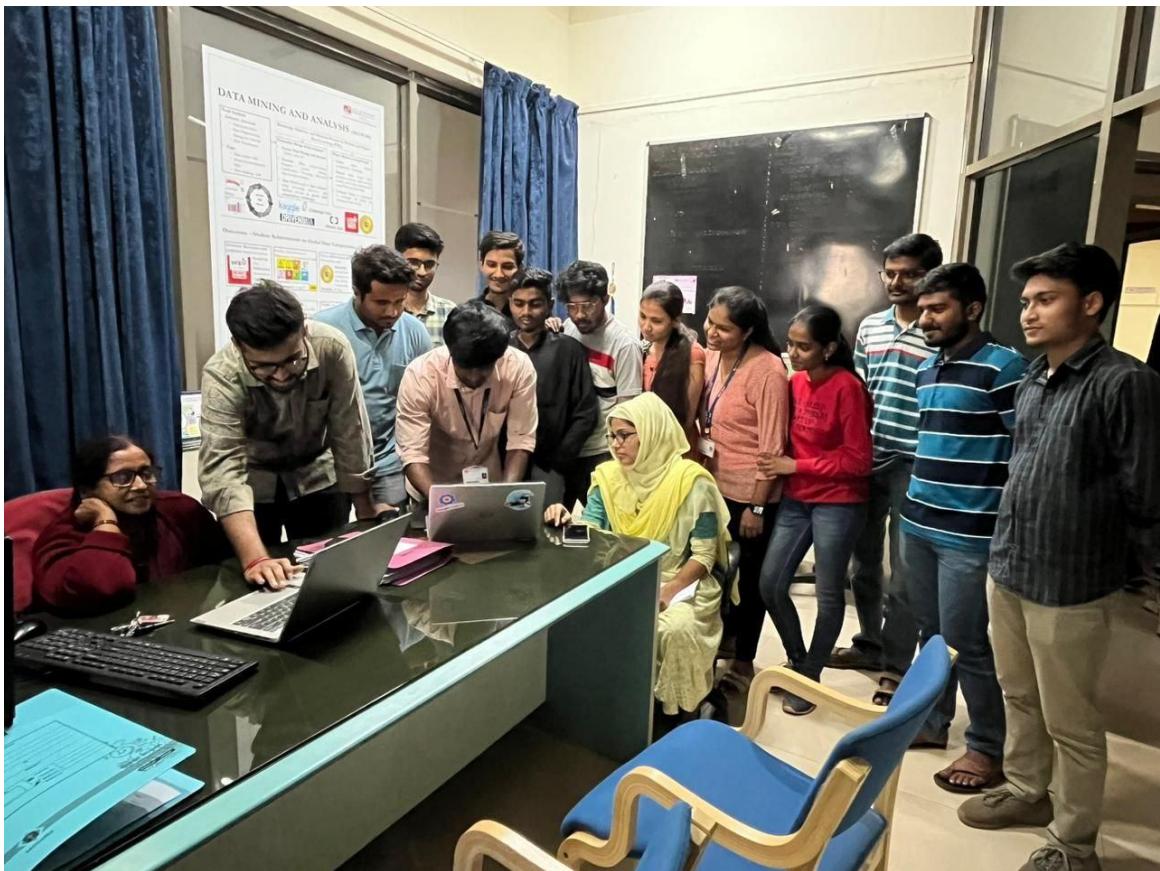
## B. Photos of meeting with client



**Image 1 : Developers collecting User requirements from client**



**Image 2 : Developers demonstrating the system developed**



**Image 3 : Client testing the system developed**