



MINISTRY OF EDUCATION AND TRAINING

TRƯỜNG ĐẠI HỌC FPT

# FPT UNIVERSITY

## Capstone Project Document

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### StudyTogether Center Management System

GFA23SE36	
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<b>Capstone Project code</b>	FA23SE083

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As we reflect on the milestones and growth achieved during this academic endeavour, we genuinely appreciate the collective contributions of those who shared their knowledge, guidance, and encouragement on our academic path, making a truly transformative impact on our work.

### **Definition and Acronyms**

Acronym	Definition
PWM	Psychology website
BA	Business Analysis
BR	Business Rule
ERD	Entity Relationship Diagram
GUI	Graphical User Interface
PM	Project Manager
SDD	Software Design Description
SPMP	Software Project Management Plan
SRS	Software Requirement Specification
UAT	User Acceptance Test
UC	Use Case
API	Application Program Interface

*Table 1 - Definition and Acronyms*

## I. Project Introduction

### 1. Overview

#### 1.1 Project Information

- Project name: StudyTogether Center Management System
- Project code: FA23SE083
- Group name: Together
- Software type: Web and mobile applications

#### 1.2 Project Team

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Table 2 - Team Members

### 2. Product Background

In today's academic landscape, students are increasingly driven to expand their knowledge and skills beyond traditional classroom settings. Many university students, alongside their regular coursework, harbor a keen desire for supplementary learning opportunities that cater to their career aspirations. Currently, the prevalent method for seeking additional instruction is through social media forums, leading to challenges in effective connection and interaction.

For those in their third and fourth years of study, the quest for part-time employment becomes crucial. However, existing part-time job options often lack flexibility in hours and fail to apply the knowledge acquired during their academic journey.

Addressing these challenges, Study Together emerges as a brick-and-mortar center strategically located in Thu Duc, serving as a nexus for connecting members and facilitating their learning journeys. The center offers a dual opportunity for its members: the choice to enroll in desired courses for personal development or the option to become instructors and share their expertise in specific subjects. This flexibility extends to the learning environment, both online and offline, all efficiently managed by the center.

Complementing the physical center, the Study Together Application takes the initiative online. Functioning as both a website and a mobile application, it acts as an information hub, fostering connections between members. Through the website, members can seamlessly enroll in courses, and the application equips the center with essential tools for effective activity management.

In essence, Study Together not only bridges the gap in supplemental education but also addresses the practical needs of students seeking part-time employment with a purpose. The dual approach of a physical center and an innovative online platform ensures a comprehensive and accessible learning experience for all members.

### **3. Existing Systems**

#### **3.1 Coursera**

Coursera is a global online learning platform that offers anyone, anywhere, access to online courses and degrees from leading universities and companies.

- Pros:
  - Coursera provides online courses, certifications, and ratings.
  - Users can access courses and learning materials from anywhere with an internet connection, making education more accessible to a broader audience.
  - Coursera can reach a global audience.
  - Coursera can offer a wide variety of courses, catering to different learning needs and interests, from academic subjects to professional development and hobbies.
- Cons:
  - Coursera also does not have instructors to answer questions.
  - “Beginner” level courses may require users to have prior knowledge of the subject.

#### **3.2 Udemy**

Udemy is an online learning and teaching marketplace with over 213000 courses and 62 million students. Learn programming, marketing, data science, and more.

- Pros:
  - Udemy courses are affordable, starting at \$11.99 and go up to \$199.99.
  - Udemy is offering close to 600 free courses on the selection of topics from WordPress to fitness.
  - Udemy accepts to refund money if the course was not what the user expected.
  - Udemy will grant access to every course the user has purchased for life.
  - Udemy offers more than 210K+ in 13 categories and dozens of sub-categories
  - All of Udemy’s courses are self-paced, so learners can start and complete courses at their own pace.
- Cons:
  - Udemy does not award learners with official certification.
  - Udemy’s discussion forums do not have much interaction with instructors for feedback and Q&As.

### **4. Business Opportunity**

Embarking on the development of an app designed to facilitate study sessions with instructors presents a host of compelling business opportunities. One notable avenue is the prospect of creating study sessions led by members who possess superior knowledge in specific subjects. This approach diversifies the learning experience, offering learners insights and perspectives beyond traditional educational resources.

Moreover, the incorporation of instructorship and personalized learning methodologies has demonstrated a significant impact on enhancing learning outcomes. By seamlessly connecting learners with experienced instructors, the app becomes a valuable tool in aiding individuals to achieve their educational goals more effectively.

A key distinguishing factor lies in the ability of the app to provide learners with real-world insights and practical knowledge. Learning from fellow members allows for the exchange of experiences that go beyond theoretical teachings, empowering learners to build practical expertise and confidence in their chosen fields.

Beyond the educational realm, the app creates a unique opportunity for members to become instructors themselves, offering certain courses within the system. This not only fosters a sense of community but also establishes a mutually beneficial ecosystem where instructors can earn income while contributing to the educational growth of their peers.

In essence, the business potential of the app rests on its capacity to transcend the conventional boundaries of education. By cultivating a dynamic community of knowledge-sharing and learning, the app has the potential to redefine the learning paradigm and establish a sustainable and thriving business model.

## **5. Software Product Vision**

Envisioning a future where education transcends traditional boundaries, our ambitious goal is to craft an innovative application that redefines the dynamics of the learner-instructor relationship.

At the core of our vision lies the commitment to empower learners, offering them a dynamic platform that seamlessly connects them with proficient instructors who are integral members of our system. This interconnectedness catalyzes fostering knowledge transfer, skill development, and propelling career advancement. Our app is not merely a tool; it is a trusted and vibrant community where learners effortlessly discover instructors who not only possess the requisite expertise but also share a profound passion for the subject matter.

But our vision goes beyond conventional boundaries. In our ecosystem, learners are not confined to the role of knowledge recipients. They have the unique opportunity to transition into instructors themselves, becoming facilitators of knowledge and contributing to the collective growth of the community. This reciprocal exchange of expertise forms the cornerstone of our approach, creating a dynamic cycle of learning and teaching.

Through this transformative learning journey, we aspire to do more than just impart knowledge; we aim to inspire and empower individuals to reach their educational and professional zenith. Our app becomes a catalyst for unlocking untapped potential, providing a gateway for learners to achieve their goals.

## **6. Project Scope & Limitations**

### **6.1 Major Features**

FE-01: Users manage account information

FE-02: Expert creates and manages template courses for members to sign up for

FE-03: Members can register for courses to become instructors

FE-04: Members can enroll in courses  
 FE-05: View Weekly Class Schedule  
 FE-06: Instructor Attendance Tracking  
 FE-07: Conduct course feedback to improve the course  
 FE-08: Register and Manage Skills  
 FE-09: Receive notifications for course registration response activities, feedback, and refunds.  
 FE-10: Members as students can receive a refund after the course if they meet the requirements.  
 FE-11: Members as instructors will be paid after the course.  
 FE-12: Certificate Issuance for Meeting Requirements.  
 FE-13: Wallet Feature for Financial Transactions.  
 FE-14: Manage systems as an admin on the web app.  
 FE-15: Report issues about transactions to the admin on the platform.

## **6.2 Limitations & Exclusions**

LI-01: The platform does not optimally support automatic classroom arrangement.  
 LI-02: The platform is not bound by legal issues when the instructor cancels the course during the course.  
 LI-03: The platform will not provide tools for an expert to verify a member to become a suitable instructor for a certain course.  
 LI-04: The platform will not support online learning by videos, or quizzes provided by the course.  
 LI-05: The platform does not manage scores for students in course.

## **II. Project Management Plan**

### **1. Overview**

#### **1.1 Scope & Estimation**

#	WBS Item	Complexity	Est. Effort (man-days)
1	<b>Initializing</b>		15
1.1	Kick-off meeting	Simple	1
1.2	Collect requirements	Complex	6
1.3	Create project introduction	Medium	4

1.4	Initialise working places and tools	Medium	4
<b>2</b>	<b>Planning</b>		<b>6</b>
2.1	Introduce team working rules	Simple	2
2.2	Create a Project Management Plan	Complex	4
<b>3</b>	<b>Executing</b>		<b>288</b>
<b>3.1</b>	<b>Analysing</b>		<b>20</b>
3.1.1	Analyse requirements	Complex	10
3.1.2	Create a Software Requirement Specification	Complex	10
<b>3.2</b>	<b>Designing</b>		<b>35</b>
3.2.1	Design Member Web Application	Complex	10
3.2.2	Design Expert Web Application	Complex	8
3.2.3	Design Admin Web Application	Medium	5
3.2.4	Design Member Mobile Application	Complex	8
3.2.4	Write Software Design Document	Medium	4
<b>3.3</b>	<b>Implementation</b>		<b>205</b>
<b>3.3.1</b>	<b>Common functions for Guest</b>		<b>3</b>
3.3.3.1	Create a member account	Simple	3
<b>3.3.2</b>	<b>Common functions for user</b>		<b>11</b>
3.3.2.1	Login	Simple	3
3.3.2.2	Logout	Simple	3
3.3.2.3	Notification	Medium	5
<b>3.3.3</b>	<b>Implement functions for member</b>		<b>79</b>
3.3.3.1	Configure accounts	Simple	3
3.3.3.2	View courses, search and filter	Complex	8
3.3.3.3	Enroll courses	Complex	5
3.3.3.4	Manage own wallet	Complex	8
3.3.3.5	Purchase for courses	Complex	8

3.3.3.6	View the weekly class schedule	Complex	7
3.3.3.7	Rate and review courses	Medium	5
3.3.3.8	Receive a course certificate	Medium	5
3.3.3.9	Register to open the course	Complex	12
3.3.3.10	Register personal skills	Medium	5
3.3.3.11	Check attendance	Complex	8
3.3.3.12	Send an application	Medium	5
<b>3.3.4</b>	<b>Implement functions for expert</b>		<b>66</b>
3.3.4.1	Configure accounts	Simple	3
3.3.4.2	Dashboard	Complex	8
3.3.4.3	Manage skill	Medium	5
3.3.4.4	Manage majors	Medium	6
3.3.4.5	Mange subjects	Medium	6
3.3.4.6	Manage course's template	Complex	12
3.3.4.7	Manage courses	Complex	10
3.3.4.8	Manage applications	Complex	8
3.3.4.9	Manage certificates	Complex	8
<b>3.3.5</b>	<b>Implement functions for admin</b>		<b>41</b>
3.3.5.1	Dashboard	Complex	8
3.3.5.2	Manage user's account	Medium	5
3.3.5.3	Manage transactions	Medium	5
3.3.5.4	Manage wallet	Medium	5
3.3.5.5	Manage applications	Medium	5
3.3.5.6	Manage slot, location for a course	Complex	8
3.3.5.7	Manage rating	Medium	5
<b>3.3.6</b>	<b>Implement functions for processing system</b>		<b>5</b>

3.3.6.1	Automatically send mail	Medium	5
<b>3.4</b>	<b>Testing</b>		<b>28</b>
3.4.1	Create test cases	Complex	8
3.4.2	Unit test	Medium	4
3.4.3	End-to-end test	Complex	8
3.4.4	Create test document	Complex	8
<b>4</b>	<b>Monitoring and controlling</b>		<b>8</b>
4.1	Track the progress of project	Medium	4
4.2	Track the document	Medium	4
<b>5</b>	<b>Closing</b>		<b>8</b>
5.1	Create the Final Project Report	Complex	8

**Total Estimated Effort (man-days)**      **325**

*Table 3 - Scope & Estimation*

### 1.2 Project Objectives

#	Testing Stage	Test Coverage	No. of Defects	% of Defect	Notes
1	Reviewing	100%	0	0	
2	Unit Test	80%	0	0	
3	Integration Test	90%	0	0	
4	System Test	90%	0	0	
5	Acceptance Test	95%	0	0	

*Table 4 - Project Objectives*

### 1.3 Project Risks

#	Risk Description	Impact	Possibility	Response Plans
1	Out-of-scope requirement: Exceeding the expected and planned scope of requirements	Critical	Medium	Consistently monitor progress and review documents in the event of unanticipated requirements

2	Requirement changes: Unforeseen alterations necessitating scope adjustments	Critical	Medium	Identify solutions to manage changes.
3	Technology risks: Uncertainty in required technologies and limited technological resources	High	Medium	Consult the supervisor regarding the choice of technology, evaluate, and test its suitability for the project
4	The server or application crashes during the demo	Medium	Low	Ensure the availability of a contingency plan for the thesis defense

Table 5 - Project Risks

## 2. Management Approach

### 2.1 Project Process

Our project utilizes the Scrum model of Agile Software Development methodologies. Because of some reasons:

- To readily accommodate any changes and continuous feedback
- To divide milestones into smaller phases
- Fast delivery and iterative improvements

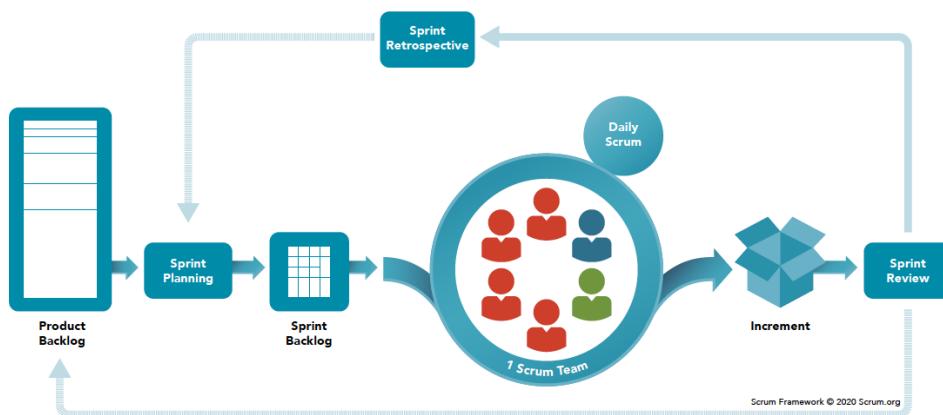


Figure 1 - Scrum Framework

### 2.2 Quality Management

To effectively manage quality objectives, our project is carried out as follows:

- Document requirements in meeting notes.

- Analyze requirements with team members and mentors.
- Continuously prioritize the tasks to commit to the deadline and to make sure everything goes well.
- Review unfinished tasks from previous sprints and plan new tasks for the upcoming sprint.
- Schedule regular meetings with all members to address issues and provide mutual support.
- Conduct code and design reviews prior to integration into the project.

### 2.3 Training Plan

Training Area	Participants	When, Duration	Waiver Criteria
NodeJS	PhaiLV, HungLV	Week 1	Mandatory
PostgreSQL	PhaiLV, HungLV	Week 1	Mandatory
ReactJS	TuanPA, DungBDU	Week 1	Mandatory
React Native	PhaiLV, HungLV, TuanPA, DungBDU	Week 1	Mandatory
Gitlab	PhaiLV, HungLV, TuanPA, DungBDD	Week 1	Mandatory

Table 6 - Training Plan

### 3. Project Deliverables

#	Deliverable	Due Date	Notes
1	Report 1 (Project Introduction Document)	24/09/2023	...
2	Report 2 (Project Management Plan)	24/09/2023	
3	Report 3 (Software Requirement Specification)	29/10/2023	
4	Report 4 (Software Design Document)	29/10/2023	
5	Report 5 (Test Documentation)	29/11/2023	
6	Report 6 (Software User Guides)	29/11/2023	
7	Report 7 (Final Project Report)	10/12/2023	

Table 7 - Project Deliverables

#### 4. Responsibility Assignments

Responsibility	N g o c T T M 4	P h a n L V S E 1 5 1 2 9 2	T u a n P A S E 1 5 1 2 3 2	D u n g B D U S E 1 5 1 1 9 9	H u n g V M S E 1 6 1 4 0 2
Project Planning & Tracking	I	D	S	S	S
Prepare Project Introduction Document	I	S	D	S	R
Prepare SRS Document (Overview Part)	I	R	D	S	S
Prepare SRS Document (User Requirements)	I	S	R	D	S
Prepare SRS Document (Functional Requirements)	I	R	S	S	D
Prepare SRS Document (Non-Functional Requirements)	I	R	S	S	D
Prepare SRS Document (Requirement Appendix)	I	S	R	D	S
Prepare Software Design Document (System Design)	I	R	D	S	S
Prepare Software Design Document (Database Design)	I	D	S	S	D
Prepare Software Design Document (Detailed Design)	I	D	S	S	R
Prepare Software Test Document (Scope of Testing)	I	S	D	R	S
Prepare Software Test Document (Test Strategy)	I	S	R	D	S
Prepare Software Test Document (Test Plan)	I	R	S	S	D
Prepare Software Test Document (Test Cases)	I	D	S	S	R
Prepare Software Test Document (Test Reports)	I	S	D	S	R
Prepare SUG Document (Deliverable Package)	I	D	S	R	S
Prepare SUG Document (Installation Guides)	I	S	R	S	D
Prepare SUG Document (User Manual)	I	R	S	D	S
Prepare Final Project Report	I	D	R	S	S
Prepare API for Admin	I	D	R	R	S
Prepare API for Expert	I	D	R	R	S

Prepare API for Members	I	S	R	R	D
Design UI/UX Figma for Member mobile application	I	R	D	S	R
Design UI/UX Figma for Admin web application	I	R	S	D	R
Design UI/UX Figma for Expert web application	I	R	S	D	R
Design UI/UX Figma for Member web application	I	R	D	S	R
Develop Admin web application	I	R	S	D	R
Develop Expert web application	I	R	S	D	R
Develop Member web application	I	R	D	S	R
Develop Member mobile application	I	R	D	S	R

Table 8 - Responsibility Assignments

## 5. Project Communications

Communication Item	Who/Target	Purpose	When, Frequency	Type, Tool, Method(s)
Working with mentor	Mentor NgocTTM4 and team members	<ul style="list-style-type: none"> <li>Advise on features, scope of work</li> <li>Review documentation</li> <li>Demonstrate features</li> <li>Evaluate progress and result</li> </ul>	Weekly	Face to face, Google Meet, Zalo
Working in team	Team members	<ul style="list-style-type: none"> <li>Team daily meeting to report tasks, what did and what will do today.</li> <li>Raise opinions, and problems</li> <li>Ask for help from other members</li> </ul>	Daily	Messenger, Google Meet

Table 9 - Project Communications

## 6. Configuration Management

### 6.1 Document Management

In terms of document management, our chosen platform is Google Drive, which serves as our repository for documents, diagrams, and related files. Additionally, we rely on Google Docs for ongoing editing and as the primary storage solution for our core documents.

### 6.2 Source Code Management

We have selected Gitlab as our preferred platform for source code management. This version control system facilitates effective and convenient collaboration among team members,

streamlining conflict resolution processes. It proves especially valuable when revisiting historical code changes, enabling quick identification of modifications made by our collaborators

### 6.3 Tools & Infrastructures

Category	Tools / Infrastructure
Technology	ReactJS (FrontEnd), React Native (App), NodeJS (BackEnd)
Database	PostgreSQL
Third-Party Services	Firebase Cloud Messaging, Firebase Auth, MoMo Integration.
IDEs/Editors	Visual Studio Code
Diagramming	StarUML, DrawIO
Documentation	Google Docs/Sheets/Slides
Version Control	GitLab (Source Codes), Google Drive (Documents)
Deployment server	Vercel, Amazon Lightsail Cloud Server
Project management	Google Drive, Jira Software, Jira Confluence Page

Table 10 - Tools & Infrastructures

## III. Software Requirement Specification

### 1. Product Overview

Study Together is a center, offline location located in Thu Duc, connecting members, and helping them throughout learning courses. Here, members have two options. That is to learn a desired course or to teach others in the assigned course. The learning process can take place at either the center itself or other places, online or offline but it will still be all managed by the center.

StudyTogether.com is a website that provides general information to form a connection between members. The center provides all course participants the privilege to become the teaching role as well for later courses.

### 2. User Requirements

#### 2.1 User role

No.	Actor	Description
1	Guest	Users who have not logged into the StudyTogether system
2	Member	Users who have logged into the StudyTogether system
3	Admin	Administrator of the system
4	Expert	The center's experts manage professional operations
5	System	The Study Together system

Table 11 - User Role

## 2.2 Diagrams

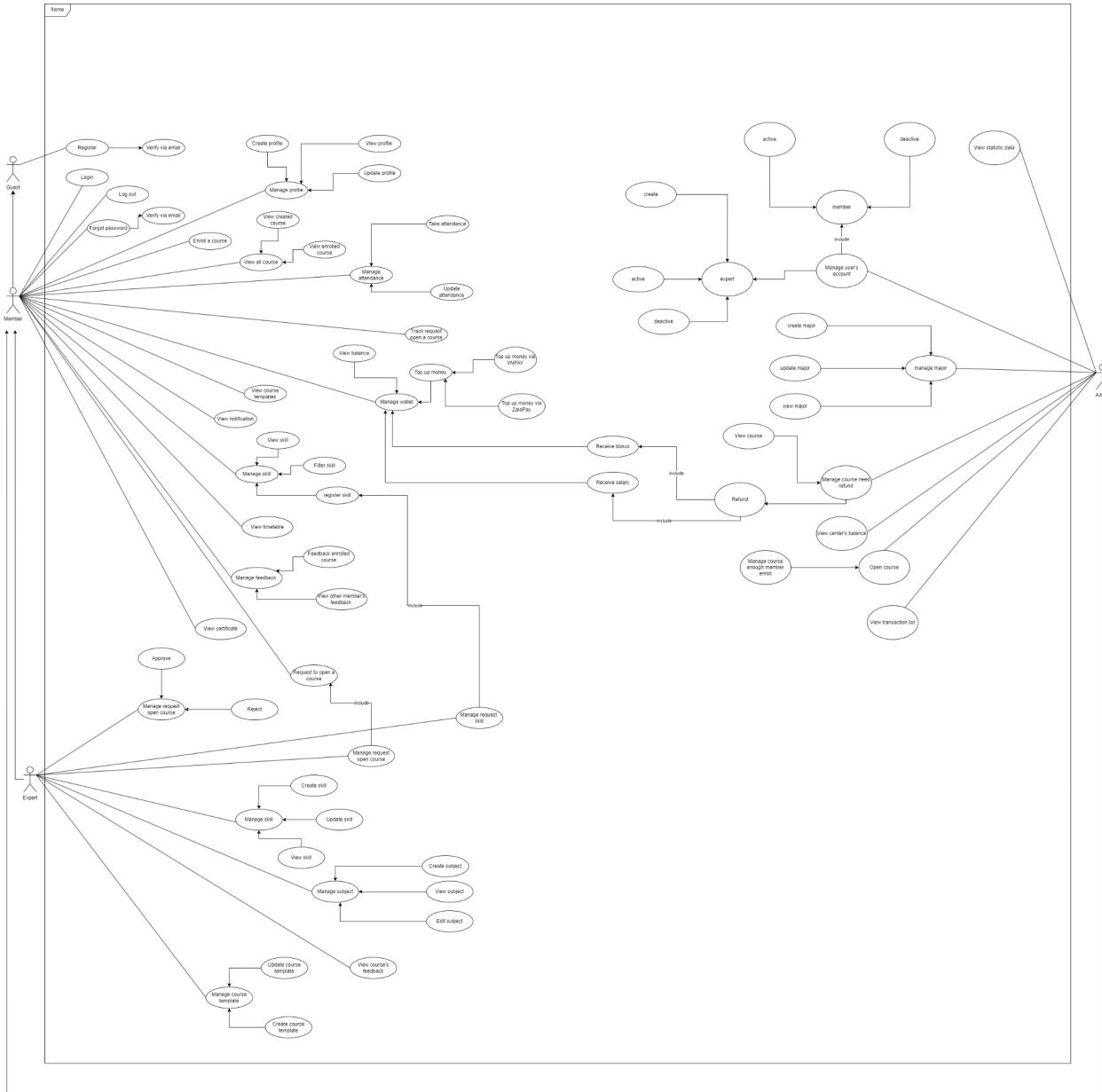


Figure 2 - Study Together Use Case Diagram

## 2.3 List of use cases with description

#	Actor	Use-case	Use-case description	Pre-condition	Post-condition
1	Guest	View courses list	Guests can view a list of the courses in the system	N/A	The system outputs a list of courses.

		Search courses	Guests can search for courses by the course name.	N/A	The system outputs courses that match the keyword.
		Filter courses	Guests can filter out the course by online or offline, major, and subjects.	N/A	The system outputs the courses that match the filter criteria.
		View course details	Guests can view the course's detailed information.	N/A	The system outputs the course's detailed information.
		Register account	Guests can register an account to become a member of the system.	N/A	The system creates an account for guests
2	Member	Authentication	User can log into the system by Google email account	Member already has an account.	The system logs into an account of the user
		Logout	Authenticated users can log out.	The user is logged in.	The system removes the sessions of users.
		Forgot password	User can tap on Forgot password	N/A	The system opens the reset password modal
		Reset password	User can reset their password	Member receives code from email	The system resets the user's password
		View Profile	Member views profile (last name, first name, phone, address, email, gender, birthday )	Member is logged in	The system outputs the member's profile
		Update Profile	Member can update profile (last name, first name, phone, address, email, gender, birthday )	Members is logged in	The system update the member's profile
		View courses list	Member can view a list of the courses in the system	N/A	The system outputs a list of courses.

	View course template list	Member can view a list of the course templates in the system	N/A	The system outputs a list of course templates.
	Search courses	Member can search for courses by the course name.	N/A	The system outputs courses that match the keyword.
	Filter courses	Member can filter out the course by online or offline, major, and subjects.	N/A	The system outputs the courses that match the filter criteria.
	View course details	Member can view the course's detailed information.	N/A	The system outputs the course's detailed information.
	View notification	Member can view notification	Member is logged in	The system outputs the notifications
	View wallet	Member can view money in wallet	Member is logged in	The system output the money in wallet
	View list transaction	Member can view list detail transaction	Member is logged in	The system output list of transaction
	Top up wallet via VNPay	Member can top up money through VNPay	Member is logged in	The system redirect to VNPay page
	Top up wallet via ZaloPay	Member can top up money through ZaloPay	Member is logged in	The system redirect to ZaloPay page
	View member's skill	Member can view their skill list	Member is logged in	The system output list of skill
	Filter skills	Member can filter out approved or rejected skills	Member is logged in	The system outputs the skill that matches the filter criteria.

	Register member's skill	Member can register new skill	Member is logged in	The system create skill's application for a member
	View's message response of skill	Member can view response of skill's application	Member is logged in	The system output response of skill
	Create a course	Member can create a course based on a course template	Member is logged in	The system registered member to open a course
	Update a create course request form	Member can update request to open a course	Member is logged in	The system update request
	Delete a create course request form	Member can delete request to open a course	Member is logged in	The system delete request
	Enroll courses	Member can enrolls a course	Member is logged in	The system enroll a member to a course
	View the list of created courses	Member can view the list of created courses	Member is logged in	The system output list of created courses
	View the list of enrolled courses	Member can view the list of enrolled courses	Member is logged in	The system output the list of enrolled course
	View timetable	Member can view timetable of its account	Member is logged in	The system output schedule of its account
	View attendance	Member can view attendance of its account	Member is logged in	The system output the attendance of the class
	Take attendance	Member can take attendance of a class	Member is logged in	The system take attendance of a class
	Update attendance	Member can update attendance of a class	Member is logged in	The system update attendance of a class

	Feedback	Member can feedback an enrolled course	Member is logged in	The system create a feedback
	View Feedback	Member can view others feedback	Member is logged in	The system output list of feedback
	Receive salary	Member can receive money of course they teach	Member is logged in	The system pay money for member
	Refund bonus	Member can receive bonus	Member is logged in	The system refund bonus to an account
	View certificates list	Member can view their certificates	Member is logged in	The system output list of certificates
Expert	Authentication	User can log into the system by Google email account	Expert already have an account.	Authentication
	Logout	Authenticated users can log out.	The user is logged in.	Logout
	View the skills list	Expert can view list skill of their major	Expert is logged in	The system output their
	Filter the skills list	Expert can filter skill list	Expert is logged in	The system outputs the skill that matches the filter criteria.
	Create a skill	Expert can create new skill	Expert is logged in	The system create a new skill
	Update a skill	Expert can update a skill	Expert is logged in	The system update a skill
	View the member's requesting skill list	Expert can view member's request skill	Expert is logged in	The system output request skill list
	Filter the member's requesting skill list	Expert can filter member's request skill list	Expert is logged in	The system outputs the skill request that matches the filter criteria.

	Download attached file from member's requesting skill	Expert can download attached file from member's requesting skill	Expert is logged in	The system output a file to download
	View the member's requesting skill detail	Expert can view detail skill request	Expert is logged in	The system output detail of skill request
	Approve member's requesting skill	Expert can approve skill request	Expert is logged in	The system approve skill request
	Reject member's requesting skill	Expert can reject skill request	Expert is logged in	The system reject skill request
	View list of feedbacked courses	Expert can view list of courses has been feedbacked	Expert is logged in	The system output list of feedbacked courses
	Filter list of feedbacked courses	Expert can filter list of courses has been feedbacked	Expert is logged in	The system outputs the feedbacked courses that match the filter criteria.
	View the feedback detail of course	Expert can view feedback detail of a course	Expert is logged in	The system output detail feedback of a course
	View the list of courses that need approval	Expert can view list of request to open course	Expert is logged in	The system output list of courses that need approval
	Search a course that needs approval	Expert can search a course that need approval	Expert is logged in	The system output course that match search
	Filter the list of courses that need approval	Expert can filter the list of requesting to open course	Expert is logged in	The system outputs the request courses that match the filter criteria.



		Dashboard	Expert can view dashboard	Expert is logged in	The system output information involve to dashboard
6	Admin	Authentication	User can log into the system by Google email account	Admin already has an account.	Authentication
		Logout	Authenticated users can log out.	The user is logged in.	Logout
		View the account's member list	Admin can view account's member list	Admin is logged in	The system output list of account
		Filter the account's member list	Admin can filter account list	Admin is logged in	The system outputs the account that match the filter criteria.
		Update member account status	Admin can update account's status	Admin is logged in	The system update account's status
		View expert accounts list	Admin can view list of expert	Admin is logged in	The system output list of expert
		Filter expert accounts list	Admin can filter expert list	Admin is logged in	The system outputs the expert list that match the filter criteria.
		Update expert account status	Admin can update expert account status	Admin is logged in	The system update status of expert account
		Create new expert account	Admin can create new expert account	Admin is logged in	The system create new expert account
		View the major list	Admin can view list of major	Admin is logged in	The system output list of major
		Filter the major list	Admin can filter list of major	Admin is logged in	The system outputs the major that match the filter criteria.

	<b>View the major detail</b>	Admin can view detail of major	Admin is logged in	The system output detail of major
	<b>Update the major</b>	Admin can update major	Admin is logged in	The system update major
	<b>Delete the major</b>	Admin can delete major	Admin is logged in	The system delete major
	<b>Create the major</b>	Admin can create major	Admin is logged in	The system create new major
	<b>View a list of refund-pending courses</b>	Admin can view list refund-pending courses	Admin is logged in	The system output list of refund-pending courses
	<b>Filter a list of refund-pending courses</b>	Admin can filter refund-pending courses	Admin is logged in	The system outputs the refund-pending course that match the filter criteria.
	<b>View a refund-pending course detail</b>	Admin can view refund-pending course detail	Admin is logged in	The system output detail of refund-pending course
	<b>Refund Course</b>	Admin can refund completed course	Admin is logged in	The system refund and create certificate to all member in course
	<b>View a list of transactions</b>	Admin can view list of transaction	Admin is logged in	The system output list of transaction
	<b>Filter a list of transaction</b>	Admin can filter list of transaction	Admin is logged in	The system outputs the transaction that match the filter criteria.
	<b>View the balance of center</b>	Admin can view the balance	Admin is logged in	The system output the balance
	<b>View the list of open courses</b>	Admin can view list of open course	Admin is logged in	The system output list of open course

		Filter the list of open courses	Admin can filter list of opening course	Admin is logged in	The system outputs the course that match the filter criteria.
		Open courses	Admin can open course	Admin is logged in	The system open a course
		Dashboard	Admin can view dashboard	Admin is logged in	The system output information involve to dashboard
7	System	Send email	The system can automatically send email to users.	- The user is not banned. - The user email storage is available to receive new emails.	The system automatically sends emails to users.
		Generate code for authentication	The system can generate code for authentication	- The user is not banned.	The system can automatically generate code for authentication
		Open courses automatically	Open courses when due and there are enough members	Course have from 10-20 member enrolled	The system automatically open courses when enough member enroll
		Automatically assign rooms	The system automatically assign room when course was opened	Course has been opened	The system automatically assign room when course was opened

Table 12 - Use Case Description

### 3. Functional Requirements

#### 3.1 System Functional Overview

##### 3.1.1 Screen Flow Diagram

###### 3.1.1.1 Member Screen Flow Diagram

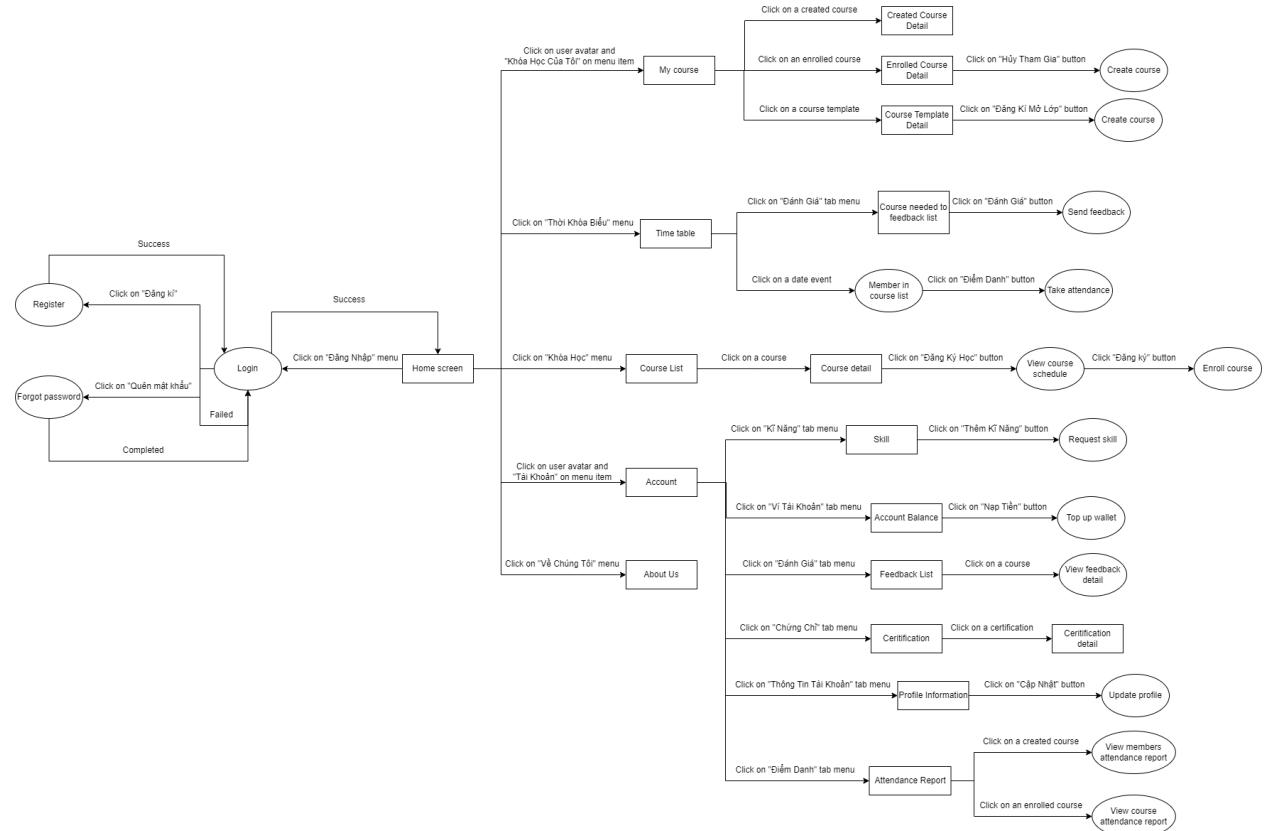


Figure 5 - Member Screen Flow

### 3.1.1.2 Expert Screen Flow Diagram

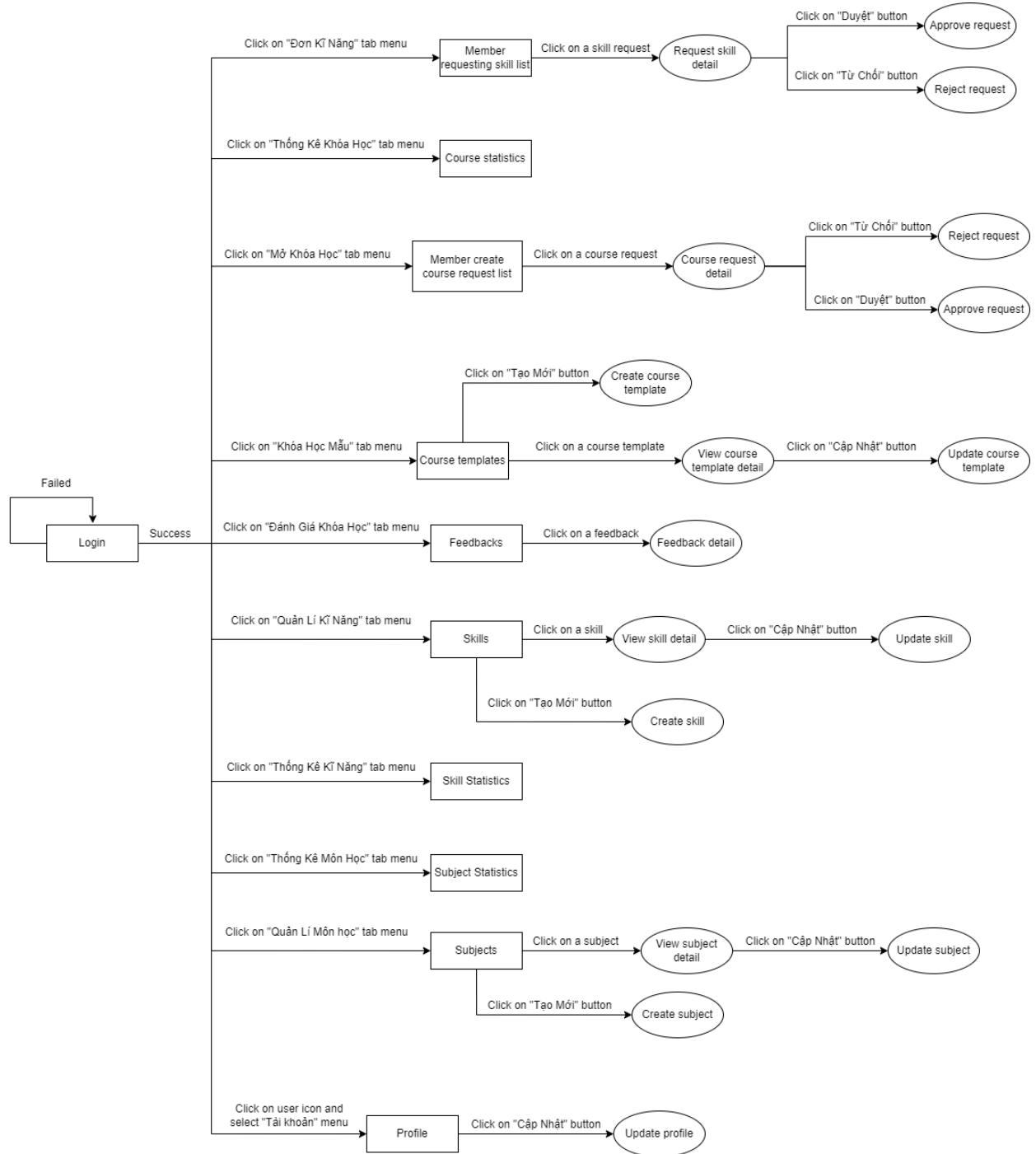
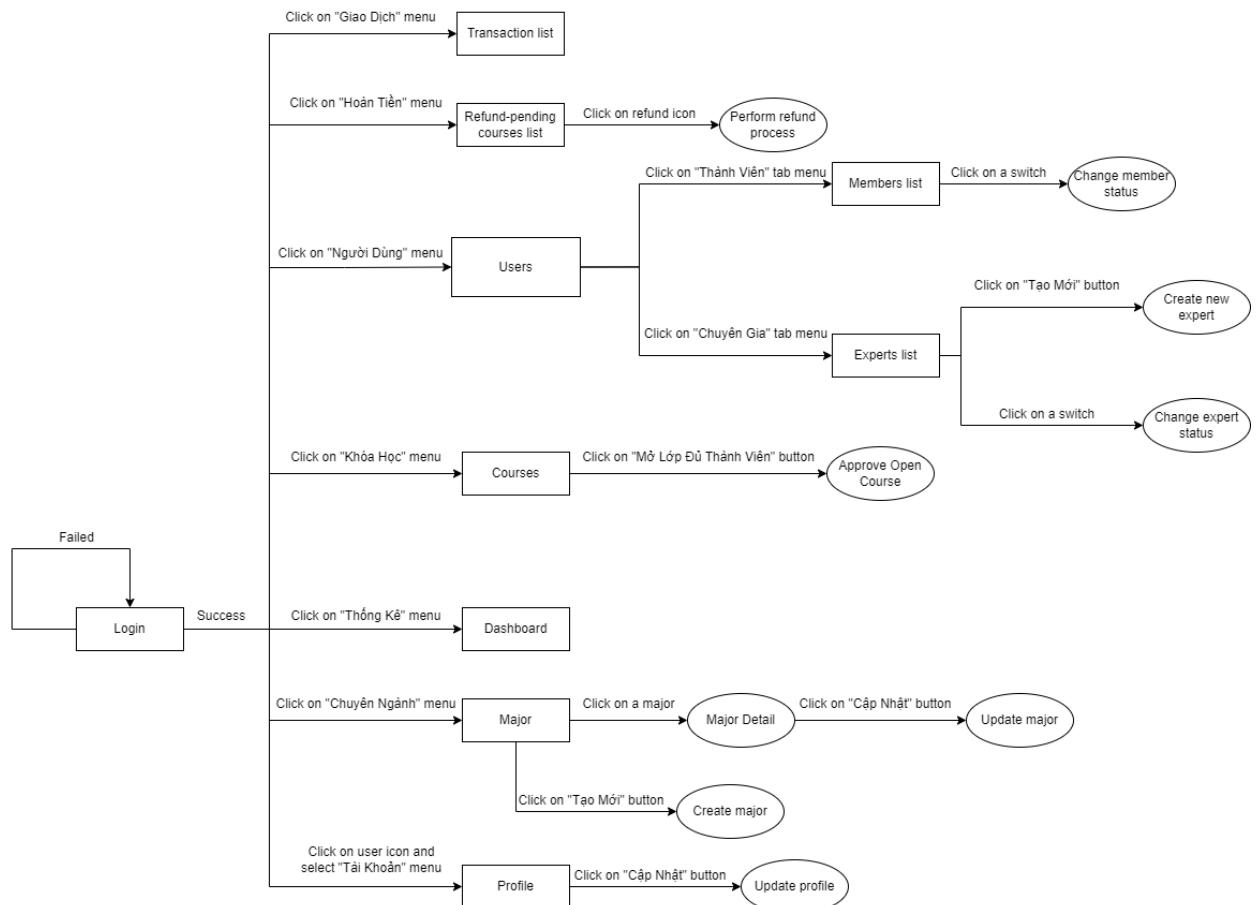


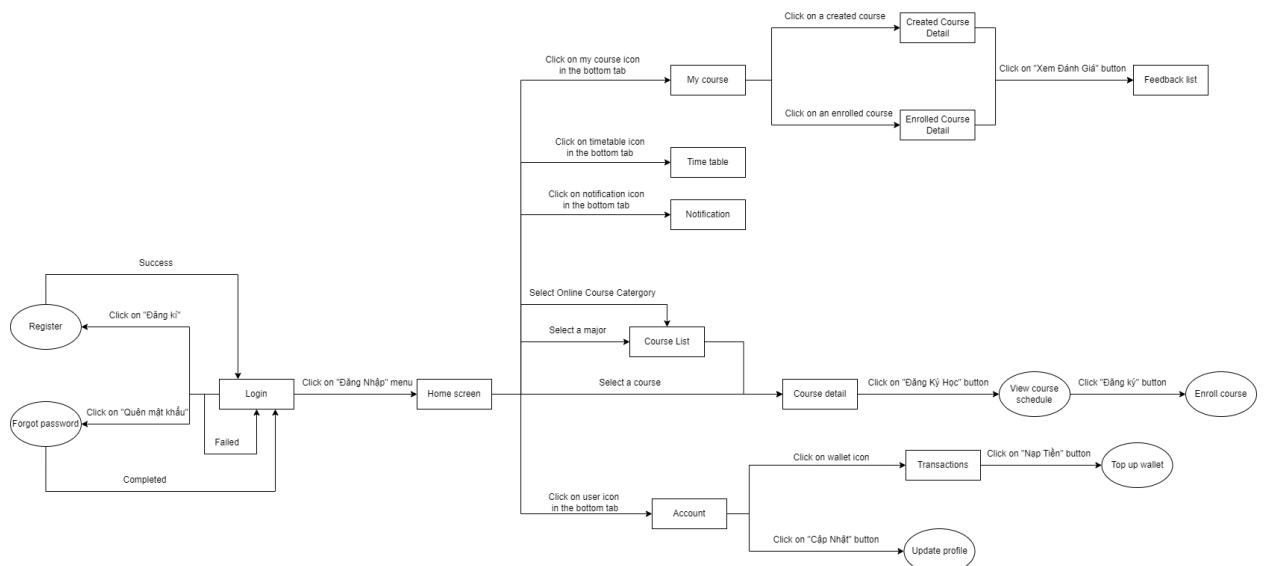
Figure 6 - [Expert Screen Flow](#)

### 3.1.1.3 Admin Screen Flow Diagram



**Figure 7 - Admin Screen Flow**

### 3.1.1.4 Mobile Screen Flow Diagram



**Figure 8 - Mobile Screen Flow**

### 3.1.2 Screen Authorization

#### 3.1.2.1 Member Web Application

Screen	Guest	Member
Home Page	x	x
Course List	x	x
Timetable		x
Login	x	
Course Detail	x	x
Course Template Detail	x	x
Account' informations		x
Account's skills		x
Account's wallet		x
Account's feedbacks		x
Account's certifications		x
Create Course		x
My Course		x
About us	x	x
Send feedback		x
Attendance		x

Table 13 - Member Web Application Authorization

#### 3.1.2.2 Expert/Admin Web Application

Screen	Expert	Admin
Login	x	x
Profile	x	x
Admin Dashboard		x
User Accounts		x
Member Accounts		x

Expert Accounts		x
Majors		x
Refunds		x
Transactions		x
Courses		x
Feedbacks	x	
Requesting Skill	x	
Skill Statistics	x	
Create Course Requests	x	
Skills	x	
Course Statistics	x	
Course Templates	x	
Subject	x	
Subject Statistics	x	

Table 14 - Expert/Admin Web Application Authorization

### 3.1.2.3 Member Mobile Application

Screen	Guest	Member
Home Page		x
Course List		x
Timetable		x
Login	x	
Course Detail		x
Account' informations		x
Account's wallet		x
My Course		x
Notification		x

Table 15 - Member Mobile Application Authorization

### 3.1.3 Screen Description

#### 3.1.3.1 Member web application

#	Feature	Screen	Description
1	View opening course	Home Page	First screen members see when opening the app, members will see all courses are opening
2	Search course	Course List	Member can search and filter course
3	Authentication	Login	Member login to the system to verify their role and get access to more features in the system.
4	Register	Register	Expose the form for users to input their email & password to create a new account.
5	Account Utility	Forgot Password	Support users to reset their password in case they have forgotten it.
6	View course templates	My Course	When member click on the “Khóa học của tôi” tab on the navigation bar
7	Create course	Course Template Detail	Member click on “Đăng ký mở lớp” button and fill a form to request open a course
8	View schedule	Timetable	When member click on the “Thời khóa biểu” tab on the navigation bar
9	Take attendance	Timetable	When member click on the session in the timetable
10	View course detail	Course Detail	When member click on an opening course
11	Enroll course	Course Detail	When member click on “Tham gia khóa học” button
12	View profile	Profile	When member click on “Hồ sơ” on the navigation bar
13	Update profile	Profile	When member click on “Cập nhật hồ sơ” button
14	View skill	Skill	When member click on “Kỹ năng” on the navigation bar
15	View balance	Wallet	When member click on “Ví” on the navigation bar
16	View transaction	Transaction	When member click on “Lịch sử giao dịch” button
17	Top up	Wallet	When member click on “Nạp tiền” button

18	Withdraw	Wallet	When member click on “Rút tiền” button
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Table 16 - Member Web Application Screen Description

### 3.1.3.2 Expert web application

#	Feature	Screen	Description
1	Authentication	Login	Expert login to the system to verify their role and get access to more features in the system.
2	Skill Management	Member's Skill	When expert click on the “Kỹ Năng” tab in the sub-menu of the dashboard’s sidebar
3	Skill Management	View Member's Skill	Expert can view the detail of a member's skill
4	Skill Management	Update Member's Skill	Expert can update any information of the member's skill
5	Skill Management	Create Member's Skill'	When expert click on “Tạo Kỹ Năng Mới” button
6	Skill Management	Add Skill To Member	Expert can add skill to a member account
7	Course Template Management	View Course Templates	When expert click on the “Khóa Học Mẫu” tab in the sub-menu of the dashboard’s sidebar
8	Course Template Management	Update Course Template	Expert can update information of a course template
9	Course Template Management	Add New Course Template	Expert can click on the “Tạo Khóa Học Mẫu” button and create a new template
10	Open Course Request Management	Open Course Request	When expert click on the “Yêu Cầu Mở Lớp” tab in the sub-menu of the dashboard’s sidebar
11	Open Course Request Management	Approve/Reject	Expert can either approve or reject the request based on the information given in the request

12	Open Course Request Management	Filter Request	Expert can filter the request list
13	Major Management	Major	When expert click on the “Chuyên Ngành” tab in the sub-menu of the dashboard’s sidebar
14	Major Management	View Major Detail	Expert can view the detail of a major
15	Major Management	Add New Major	When expert click on the “Tạo Chuyên Ngành” button and create a new major
16	Major Management	Update Major	Expert can update information of a major
17	Subject Management	Subject	When expert click on the “Môn Học” tab in the sub-menu of the dashboard’s sidebar
18	Subject Management	View Subject Detail	Expert can view all the information of a subject
19	Subject Management	Add New Subject	When expert click on “Tạo Môn Học” button and create a new subject
20	Subject Management	Update Subject	Expert can update information of a subject

Table 17 - Expert Web Application Screen Description

### 3.1.3.3 Admin web application

#	Feature	Screen	Description
1	Authentication	Login	Admin login to the system to verify their role and get access to more features in the system.
2	Expert Management	Expert	When expert click on the “Chuyên Gia” tab in the sub-menu of the dashboard’s sidebar
3	Expert Management	View Expert Detail	Admin can view all the detail of expert
4	Expert Management	Add Expert	When admin click on “Tạo Chuyên Gia” button and add a new expert to the system
5	Expert Management	Update Expert Information	Admin can update expert information

6	System Configuration	System	When admin click on “Cài Đặt” tab in the sub-menu of the dashboard’s sidebar
7	System Configuration	Configure System	Admin is allowed to configure the system for maintenance purpose
8	Report Management	Report	When admin click on “Báo Cáo” tab in the sub-menu of the dashboard’s sidebar
9	Report Management	View report detail	Admin can view full information of the report
10	User Management	User	When admin click on the “Người Dùng” tab in the sub-menu of the dashboard’s sidebar
11	User Management	User Detail	Admin can view detail of user account
12	User Management	Ban user	Admin can ban user from the system
13	User Management	Reactivate user	Admin can re-activate user account
14	Transaction Management	Transaction	When admin click on “Giao Dịch” tab in the sub-menu of the dashboard’s sidebar
15	Deposit Transaction	Deposit	When admin click on “Giao Dịch Nạp” tab in the main transaction screen to view all the list of deposit transaction
16	Deposit Transaction	View Deposit Detail	Admin can view the detail of the deposit transaction
17	Withdraw Transaction	Withdraw	When admin click on “Giao Dịch Rút” tab in the main transaction screen to view all the list of withdraw transaction
18	Withdraw Transaction	View Withdraw Detail	Admin can view the detail of the withdraw transaction
19	Failed Transaction	Failed	When admin click on “Giao Dịch Thất Bại” tab in the main transaction screen to view all the list of failed transaction
20	Failed Transaction	View Failed Detail	Admin can view the detail of the failed transaction

Table 18 - Admin Web Application Screen Description

### 3.1.3.4 Member mobile application

#	Feature	Screen	Description
1	Authentication	Login	Member must login to the system to get access to the app
2	Search Course	Home Page	Member can search course
3	Filter Course By Major	Home Page	Member can filter course by selecting a major
4	Filter Course By Class Type	Home Page	Member can filter course by selecting Online Course or Offline Course
5	View Course Detail	Home Page, Course List	Member can view detail of a course
6	View My Course List	My Course List	Member can view all the enrolled, created courses
7	View Notification List	Notification	Member can view all the notifications
8	View timetable	Timetable	Member can view own timetable and schedule
9	View profile	Profile	Member can view own profile information
10	View transaction	Balance	Member can view all past transactions
11	View wallet balance	Balance	Member can view wallet balance
12	Top up wallet	Balance	Member can top up wallet via Zalopay or VNPAY
13	Update profile	Profile	Member can update own profile

Table 19 - Member Mobile Application Screen Description

## 3.2. Functional requirements

### 3.2.1. Authenticate

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Admin, Expert, Member	Login	Login to website	Email Password	Email: + Type: text field(string) + Max Length= 200  Password: + Type: text field(string) + Max Length= 200	BR-01 BR-02 BR-03 BR-10

*Table 20 - Authenticate Functional Requirements*

### 3.2.2. Register

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member	Register	Register to website	Email Password ConfirmPassword EmailCode	Email: + Type: text field(string) + Max Length= 200 Password: + Type: text field(string) + Max Length= 200 ConfirmPassword: + Type: text field(string) + Max Length= 200 EmailCode: + Type: text field(string) + Length = 6	BR-04 BR-05 BR-09

Table 21 - Register Functional Requirements

### 3.2.3. Accounts Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Admin	View account	View accounts			BR-01
2	Admin	Ban account	Ban account	Account Id		BR-01 BR-08

3	Admin	Create account	Create account expert	Email Password	Email: + Type: text field(string) + Max Length= 200 Password: + Type: text field(string) + Max Length= 200	BR-01 BR-07 BR-34
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Table 22 - Account Management Functional Requirements

### 3.2.4. Course Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert Admin	View Course	View a Course	Course Id		BR-01 BR-02 BR-03 BR-35 BR-39
2	Member	Register Course	Register Course	Course Id		BR-03 BR-40 BR-41 BR-42 BR-49 BR-50 BR-51 BR-52

3	Expert	Approve Course	Approve Course	Course Id isApproved responseMessage	isApproved: + Type: text field(boolean) responseMessage: + Type: text field(string) + Max Length= 200	BR-02 BR-17
4	Member	Cancel Course	Cancel Course	Course Id		BR-03 BR-46
5	Member	Get member in course	Get member in course as instructor	Course Id		BR-03

6	Admin	Refund money	Admin refund money to member as instructor when course finish	Course Id		BR-01 BR-64 BR-65 BR-66 BR-67
7	Admin	Open course and set location	Automatic open course and set location			BR-01 BR-43 BR-44 BR-45 BR-48
8	Member Expert	View course template	View course template			BR-03 BR-02 BR-62
9	Expert	Create course template	Create course template	imageUrls subjectId name description minPrice maxPrice defaultPrice duration skillIds topic topic material	imageUrls: + Type: text field(string) + Max Length= 200 name: + Type: text field(string) + Max Length= 200 description: + Type: text field(string) + Max Length= 200 minPrice: + Type: text field(float) maxPrice: + Type: text field(float)	BR-02

					<p>defaultPrice: + Type: text field(float)</p> <p>duration: + Type: text field(time)</p> <p>topic: + Type: text field(string) + Max Length= 200</p> <p>topic material: + Type: text field(string) + Max Length= 200</p>	
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10	Expert	Update course template	Update course template	imageUrl subjectId name description minPrice maxPrice defaultPrice duration skillIds topic topic material	imageUrl: + Type: text field(string) + Max Length= 200 name: + Type: text field(string) + Max Length= 200 description: + Type: text field(string) + Max Length= 200 minPrice: + Type: text field(float) maxPrice: + Type: text field(float) defaultPrice: + Type: text field(float) duration: + Type: text field(time) topic: + Type: text field(string) + Max Length= 200 topic material: + Type: text field(string) + Max Length= 200	BR-02
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11	Member	Create course	Create course depend on course template	imageUrls subjectId name description minPrice maxPrice defaultPrice duration skillIds topic topic material	imageUrls: + Type: text field(string) + Max Length= 200 name: + Type: text field(string) + Max Length= 200 description: + Type: text field(string) + Max Length= 200 minPrice: + Type: text field(float) maxPrice: + Type: text field(float) defaultPrice: + Type: text field(float) duration: + Type: text field(time) topic: + Type: text field(string) + Max Length= 200 topic material: + Type: text field(string) + Max Length= 200	BR-03 BR-14 BR-18 BR-19 BR-20 BR-21 BR-22 BR-23 BR-24 BR-25 BR-26 BR-27 BR-28 BR-29 BR-30 BR-31
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Table 23 - Course Management Functional Requirements

### 3.2.5. Profile Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Admin Expert	Get profile	Get profile			BR-03 BR-02 BR-01
2	Member Admin Expert	Update profile	Update profile	firstName lastName gender phone address dob avatar	firstName: + Type: text field(string) + Max Length= 200 lastName: + Type: text field(string) + Max Length= 200 gender: + Type: text field(boolean) address: + Type: text field(string) + Length = 200 dob: + Type: text field(date) avatar: + Type: text field(string) + Length = 200	BR-03 BR-02 BR-01

3	Member Admin	Get transaction	Get transaction history and also wallet			BR-03 BR-01 BR-68 BR-69 BR-70
4	Member Expert	Get attendance	Get user attendance of a course	Course Id		BR-03 BR-02

*Table 24 - Profile Management Functional Requirements*

### 3.2.6. Subject Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Admin Expert Member	View subject	View subjects			BR-01 BR-02 BR-03 BR-36

2	Expert	Create subject	Create subject	majorId name	name: + Type: text field(string) + Max Length= 200	BR-02
3	Expert	Update subject	Update subject	Subject Id name	name: + Type: text field(string) + Max Length= 200	BR-02
4	Expert	Delete subject	Delete subject	Subject Id		BR-02

*Table 25 - Subject Management Functional Requirements*

### 3.2.7. Major Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Admin Expert Member	View Major	View Majors			BR-01 BR-02 BR-03
2	Expert	Create Major	Create Major	name	name: + Type: text field(string) + Max Length= 200	BR-02

3	Expert	Update Major	Update Major	Major Id name	name: + Type: text field(string) + Max Length= 200	BR-02
4	Expert	Delete Major	Delete Major	Major Id		BR-02

*Table 26 - Major Management Functional Requirements*

### 3.2.8. Attendance Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member	View attendance	View attendance of course			BR-03
2	Member	Take attendance of course	Take attendance of course when you member as instructor	courseld coursememberId isPresent	isPresent: + Type: text field(string) + Max Length= 200	BR-03 BR-53 BR-54 BR-55

*Table 27 - Attendance Management Functional Requirements*

### 3.2.9. Location Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert Admin	View location	View location			BR-01 BR-02 BR-03
2	Admin	Create location	Create location	location campusId isOnline	isOnline: + Type: text field(boolean) location: + Type: text field(string) + Max Length= 200	BR-01
3	Admin	Update Location	Update Location	Location Id isOnline location	isOnline: + Type: text field(boolean) location: + Type: text field(string) + Max Length= 200	BR-01
4	Admin	Delete Location	Delete Location	Location Id		BR-01

Table 28 - Location Management Functional Requirements

### 3.2.10. Feedback Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert	View feedback	View feedback of the course as instructor	Course Id		BR-02 BR-03 BR-56 BR-59 BR-60 BR-61 BR-63
2	Member	Create feedback	Create feedback of the course as student	Course Id rating feedback	rating: + Type: text field(number) feedback: + Type: text field(string) + Max Length= 200	BR-03 BR-57 BR-63

Table 29 - Feedback Management Functional Requirements

### 3.2.11. Campus Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert Admin	View campus	View campus			BR-01 BR-02 BR-03
2	Admin	Create campus	Create campus	name address	name: + Type: text field(string) + Max Length= 200 address: + Type: text field(string) + Max Length= 200	BR-01
3	Admin	Update campus	Update campus	campus Id name address	name: + Type: text field(string) + Max Length= 200 address: + Type: text field(string) + Max Length= 200	BR-01
4	Admin	Delete campus	Delete campus	Location Id		BR-01

Table 30 - Campus Management Functional Requirements

### 3.2.12. Skill Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert Admin	View skill	View skill			BR-01 BR-02 BR-03 BR-37
2	Expert	Create skill template	Create skill template	name description level	name: + Type: text field(string) + Max Length= 200 description: + Type: text field(string) + Max Length= 200 level + Type: text field(enum)	BR-02 BR-15
3	Expert	Update skill	Update skill	name description level	name: + Type: text field(string) + Max Length= 200 description: + Type: text field(string) + Max Length= 200 level + Type: text field(enum)	BR-02 BR-15

4	Member	Apply skill	Member apply skill to expert	title content attachedFile skillId	title: + Type: text field(string) + Max Length= 200 content: + Type: text field(string) + Max Length= 200 attachedFile: + Type: text field(string) + Max Length= 200	BR-03 BR-12 BR-13 BR-15
5	Expert	Approve skill	Expert approve skill request from member	memberskillId isApproved responseMessage	isApproved: + Type: text field(boolean) responseMessage: + Type: text field(string) + Max Length= 200	BR-02 BR-32

Table 31 - Skill Management Functional Requirements

### 3.2.13. Notification Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert Admin	Get notification	Get notification			BR-01 BR-02 BR-03 BR-16 BR-33 BR-47 BR-58 BR-71 BR-72

Table 32 - Notification Management Functional Requirements

### 3.2.14. Payment Management

#	Actor	Function	Purpose	Data requirements	Data validation	Business rule
1	Member Expert Admin	Create payment	Create payment via Zalopay or VNPay	amount	amount: + Type: text field(float)	BR-01 BR-02 BR-03 BR-38

Table 33 - Payment Management Functional Requirements

## **4. Non-Functional Requirements**

### **4.1 External Interfaces**

#### **4.1.1 User Interfaces**

- The UI for end users must support Vietnamese.
- Icons must be easy for users to identify what it is presenting for.
- Colors must have contrast.
- Font must be easy to read.

#### **4.1.2. Communications Interfaces**

- The system should use the HTTP method to transfer data

### **4.2 Quality Attributes**

#### **4.2.1. Usability**

- All text, labels, and alerts, for end users in the Study Together website should be written in Vietnamese.
- The web application should be friendly, self-evident, self-explanatory and easy for end users to use without training.

#### **4.2.2. Portability**

- The web applications should run well in modern browsers:
  - Chrome version 58.0 and higher
  - Firefox version 54.0 and higher
  - Edge version 16.0 and higher

#### **4.2.3. Security**

- All input data are validated before saving to the database.
- Each role of the user has specific permission to interact with the system.

## **5. Requirement Appendix**

### **5.1 Business Rules**

ID	Business rule
BR-01	Admins have to log in by admin account.
BR-02	Experts have to log in by expert account.
BR-03	Members have to login by member account
BR-04	Member must register with Google email account
BR-05	When members register for an account, they must verify their email via code sent to their email
BR-06	Member cannot update email
BR-07	Expert accounts must be created by admin

BR-08	Only the admin can ban account
BR-09	The account has two status: active and inactive
BR-10	User cannot login with account is banned
BR-11	When logged out successfully, the system will redirect to the home page.
BR-12	Members cannot request an existing skill
BR-13	Members cannot request a skill that is waiting to be approved
BR-14	Members must meet all the skills requirements of the course template to create a course
BR-15	Skills will have 3 levels: Beginner, Intermediate, Advanced
BR-16	After the skill is approved or rejected by the expert, members will receive a notification
BR-17	Expert reject a creating new course request must write the reason
BR-18	The course has at least 1 session per week
BR-19	The course has a maximum of 7 sessions per week
BR-20	The course can only be chosen online or offline
BR-21	The lesson must take place between 07:00 and 23:00
BR-22	The first session of the course must be 3 weeks from the creation date
BR-23	The first session of the course must not be more than 3 months from the creation date
BR-24	The price of the created course must be within between the course template's min price and max price
BR-25	When creating a new course, if the member does not add topic, the system will take the topics of the corresponding course template
BR-26	When creating a new course, if the member does not add topic materials, the system will take the topic materials of the corresponding course template
BR-27	Members cannot create a course that conflicting their schedules
BR-28	One course only has one instructor
BR-29	The minimum number of sessions for a course is 10
BR-30	The maximum number of sessions for a course is 25
BR-31	The course must be created from the template course
BR-32	Expert rejects skill request must write the reason
BR-33	After the create new course request is approved or rejected by the expert, members will receive a notification

BR-34	Each expert will have his or her own major
BR-35	Experts can only view and interact with courses that belong to their major
BR-36	Experts can only view and interact with subjects that belong to their major
BR-37	Experts can only view and interact with skills that belong to their major
BR-38	Members can top up their wallets via Zalopay and VNPAY
BR-39	The course will not be displayed on the home page if it has not been approved
BR-40	When a Member enroll a course, the system will automatically deduct money from the wallet
BR-41	Members cannot enroll the course which conflicting their schedules
BR-42	The course has a maximum number of students of 20
BR-43	The course must have a minimum number of students to be opened, which is 10 members
BR-44	3 days before the first session, if the course does not have enough members, it will be cancelled
BR-45	3 days before the first session, if the course has enough members between 10 and 20, it will be opened
BR-46	Once a member's created course is opened. It can't be cancelled
BR-47	After the course is opened by the admin, members will receive a notification
BR-48	The room cannot be used by 2 courses at the same time
BR-49	Members cannot enroll an opened courses
BR-50	Members cannot cancel their enrollment in a course once the course is open
BR-51	Members cannot enroll the same course twice
BR-52	Members cannot enroll courses in which they are the instructor
BR-53	When members are the instructor, they needs to take attendance for the course every day
BR-54	Attendance after 24 hours can not be updated or edited
BR-55	Member as instructor cannot take attendance of the date after the current date
BR-56	When the instructor takes attendance at the middle session of the course, the course will require feedback
BR-57	Members have to feedback to their enrolled courses in case they need to before they want to see the timetable
BR-58	Members will receive notifications when feedback is needed

BR-59	The instructor will not be able to see specifically who the feedback belonged to
BR-60	Expert will be able to see specifically who the feedback belonged to
BR-61	Feedback will be displayed in subsequent courses when members create courses with the same template
BR-62	The template will display reviews from its course
BR-63	The rating has a scale of 5
BR-64	Members absent more than 20% of the course sessions will not receive a certificate
BR-65	Members who are absent for no more than 20% of the course sessions will receive a certificate
BR-66	Members who are absent for no more than 10% of the course sessions will receive a refund of 5% of the course fee
BR-67	Members who are absent for no more than 5% of the course sessions will receive a 10% refund of the course fee
BR-68	After being refunded, the bonus will be transferred to members' wallets
BR-69	The instructor gets 30% of the total course fee
BR-70	The salary after being approved by the admin will be transferred to the instructor's wallet
BR-71	Instructors will be notified when they are paid
BR-72	Members will receive a notification when a refund is issued
BR-73	Mobile Application will only be used for Members

Table 34 - Business Rules

## 5.2 Common Requirements

No	Function Name	Purpose	Data requirements	Response
1	Auto send mail	Send email		Email

Table 35 - Common Requirements

## 5.3 Application Messages List

No	ID	Context	Type	Content
1	MSG01	Enter missing information	Toast	Nhập đầy đủ thông tin
2	MSG02	Register at account - Password and confirm password are different	Toast	Mật khẩu không trùng nhau
3	MSG03	Register at account - Enter a weak password	Toast	Yêu cầu mật khẩu mạnh hơn (eg: user12345!)

4	MSG04	Register at account - Verify the account has been verified	Toast	Tài khoản này đã được xác minh
5	MSG05	Register at account - Enter the expired code	Toast	Mã xác minh email đã hết hạn
6	MSG06	Sign Up Success	Toast	Đăng ký thành công
7	MSG07	Create Expert account - Admin successfully created an expert account	Toast	Tạo tài khoản expert thành công
8	MSG08	Successful manipulation	Toast	Thực thi thành công
9	MSG09	Cancel course - Member cancels course	Toast	Hủy khóa học thành công
10	MSG10	Feedback - When course feedback is not due	Toast	Chưa đến thời gian đánh giá.
11	MSG11	Attendance - Instructor's attendance date is invalid	Toast	Ngày điểm danh không hợp lệ
12	MSG12	Attendance - Instructor's attendance date is invalid	Toast	Đã quá thời hạn cập nhật điểm danh!
13	MSG13	Create Course - Member creates course with invalid number of sessions	Toast	Số buổi không thỏa điều kiện
14	MSG14	Create Course, Enroll Course - Member create/enroll course has schedules conflict	Toast	Trùng lịch khóa học x bạn đang dạy vào ngày dd/MM/YYYY với bắt đầu HH:mm:ss kết thúc HH:mm:ss
15	MSG15	Enroll Course - Member enrolls in a course where the member is a mentee	Toast	Thất bại! Bạn đã là học viên của khóa học.
16	MSG16	Enroll Course - Member enrolls in a course which the member is an instructor	Toast	Thất bại! Bạn đã là người hướng dẫn của khóa học.
17	MSG17	Enroll Course - Member does not have enough money in wallet to enroll in the course	Toast	Ví không đủ tiền để thực hiện giao dịch!
18	MSG18	Register Course - Members register for skills they already have	Toast	Bạn đã có kỹ năng này
19	MSG19	Register Course - Member registers skills that are in the process of being approved	Toast	Đơn kỹ năng X đang trong quá trình duyệt. Vui lòng đợi!
20	MSG20	Create subject - Create subject successfully	Toast	Bộ môn đã được tạo thành công.

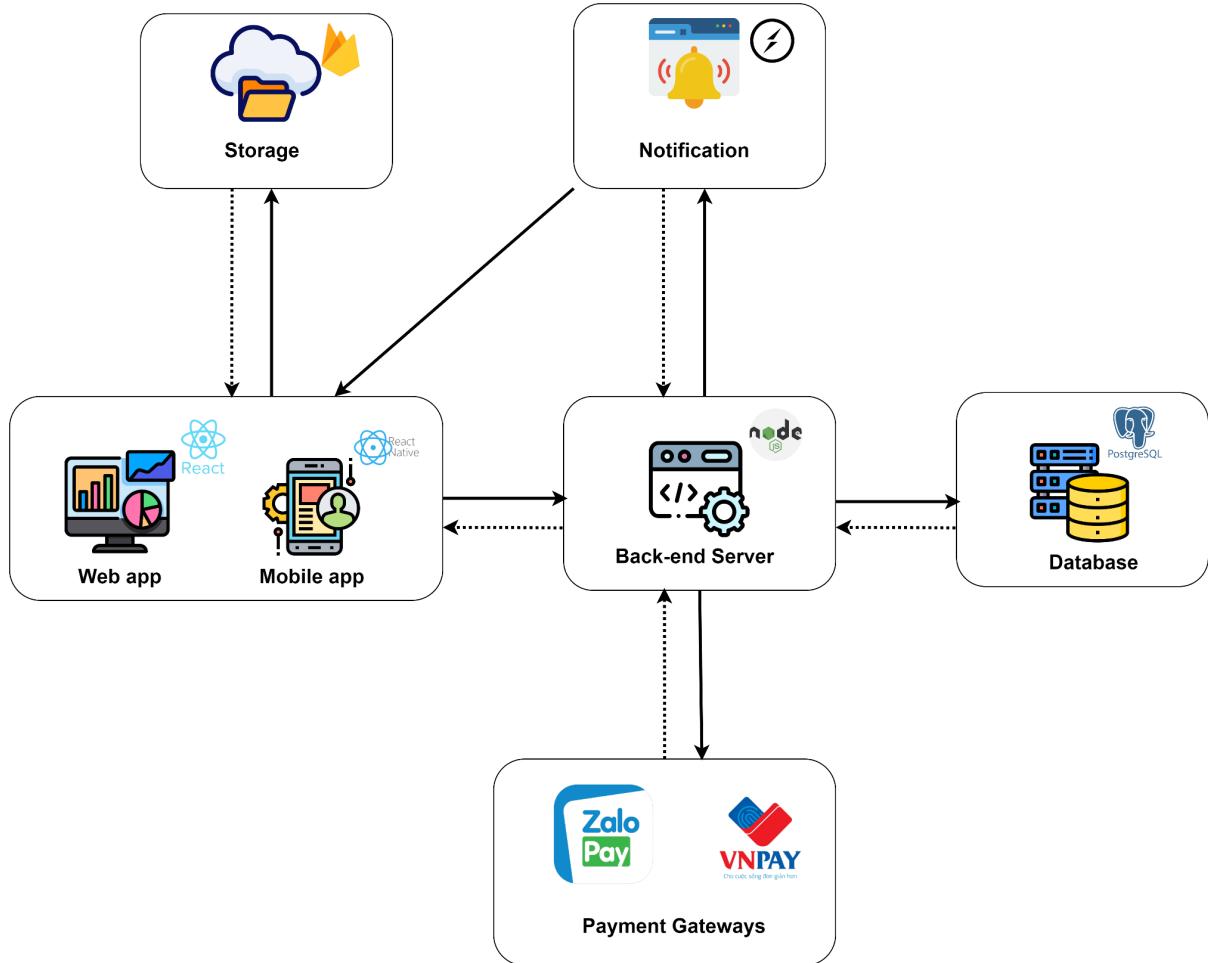
21	MSG21	Create profile- Create profile successfully	Toast	Tạo hồ sơ thành công.
22	MSG22	Successful transaction	Toast	Giao dịch thành công
23	MSG23	Use screens that require login	Toast	Vui lòng đăng nhập để truy cập
24	MSG24	Register account - Do not fill in confirm password	Inline	Vui lòng nhập confirm password
25	MSG25	Create course template - Do not select required skills	Inline	Vui lòng chọn một kỹ năng
26	MSG26	Register Skill - Do not fill in title	Inline	Vui lòng nhập tiêu đề
27	MSG27	Register Skill - Do not fill in description	Inline	Vui lòng nhập mô tả kỹ năng
28	MSG28	Create Course - Do not enter a course name	Inline	Vui lòng nhập tên khóa học
29	MSG29	Create Course - Do not enter a course description	Inline	Vui lòng mô tả khóa học!
30	MSG30	Create Course - Do not select a start week	Inline	Vui lòng chọn tuần bắt đầu dạy!
31	MSG31	Create Course - Do not choose the number of teaching sessions per week	Inline	Vui lòng chọn số buổi dạy trong tuần!
32	MSG32	Create Course - Do not select the total number of teaching sessions	Inline	Vui lòng nhập chọn tổng số buổi dạy!
33	MSG33	Create Course - Do not choose a teaching date	Inline	Vui lòng chọn ngày dạy!
34	MSG34	Create Course - Do not choose a teaching time	Inline	Vui lòng nhập chọn giờ dạy!

Table 36 - Application Messages

## IV. Software Design Description

### 1. System Design

#### 1.1 System Architecture



**Figure 9 - System Architecture**

The Study Together system consists of two components, the NodeJs web server provides APIs, and ReactJS is used for the web application. ReactNative is used for mobile applications. Web application is provided for admin, expert and member. Mobile application is provided for only members.

Study Together System uses several third-party services such as Firebase Storage to store Image and file, Socket.io for push notification and ZaloPay, VNPay for payment.

## 1.2 Package Diagram

### 1.2.1 Backend Package

#### 1.2.1.1 Backend Package Diagram

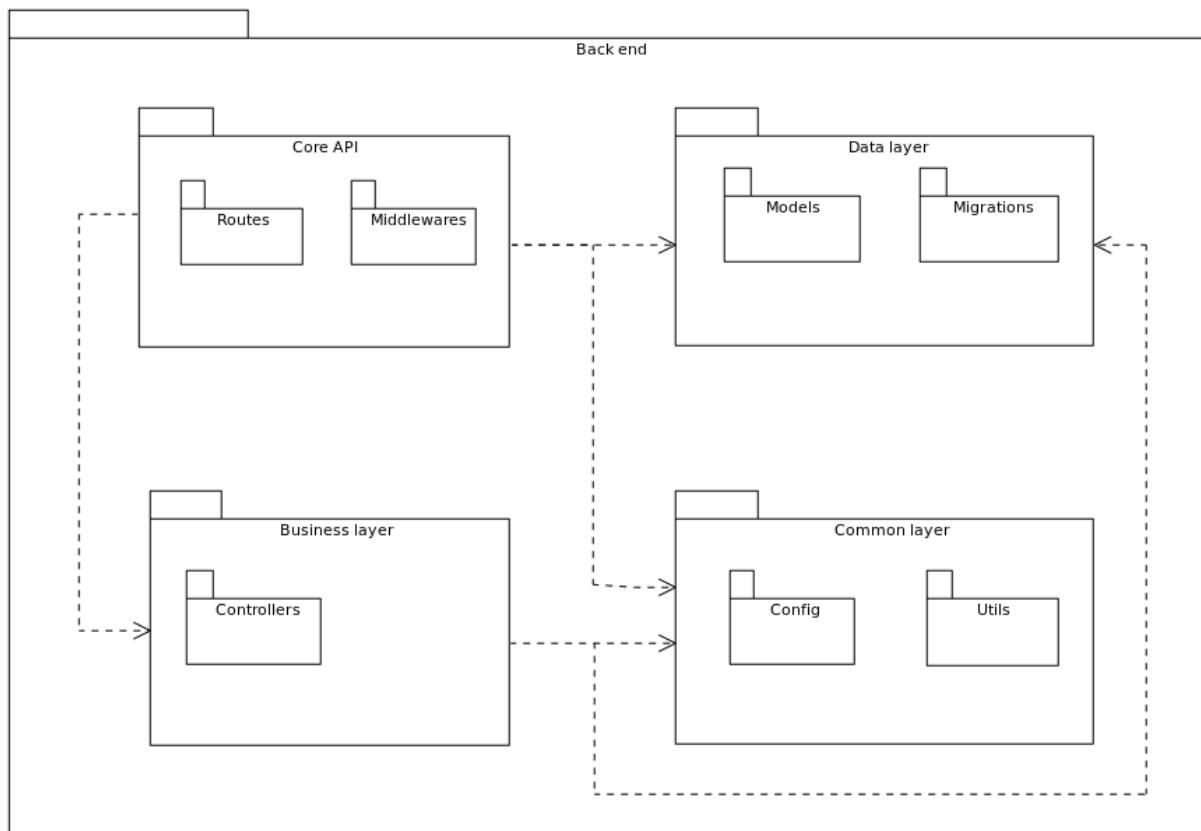


Figure 10 - Backend Package Diagram

#### 1.2.1.2 Backend Package Description

#	Package	Description
1	Routes	Contains files related to routing and defining application endpoints.
2	Middleware s	Middleware functions that process HTTP requests before reaching the controllers.
3	Controllers	Contain files or subfolders with controller logic to handle business operations
4	Models	Define data models that interact with databases to perform read and write operations.
5	Migrations	Manages and updates the database schema using migration files.
6	Config	Stores configuration files for the application.
7	Utils	Holds utility functions and shared code used throughout the application.

Table 37 - Backend Package Description

## 1.2.2 Web Package

### 1.2.2.1 Web Package Diagram

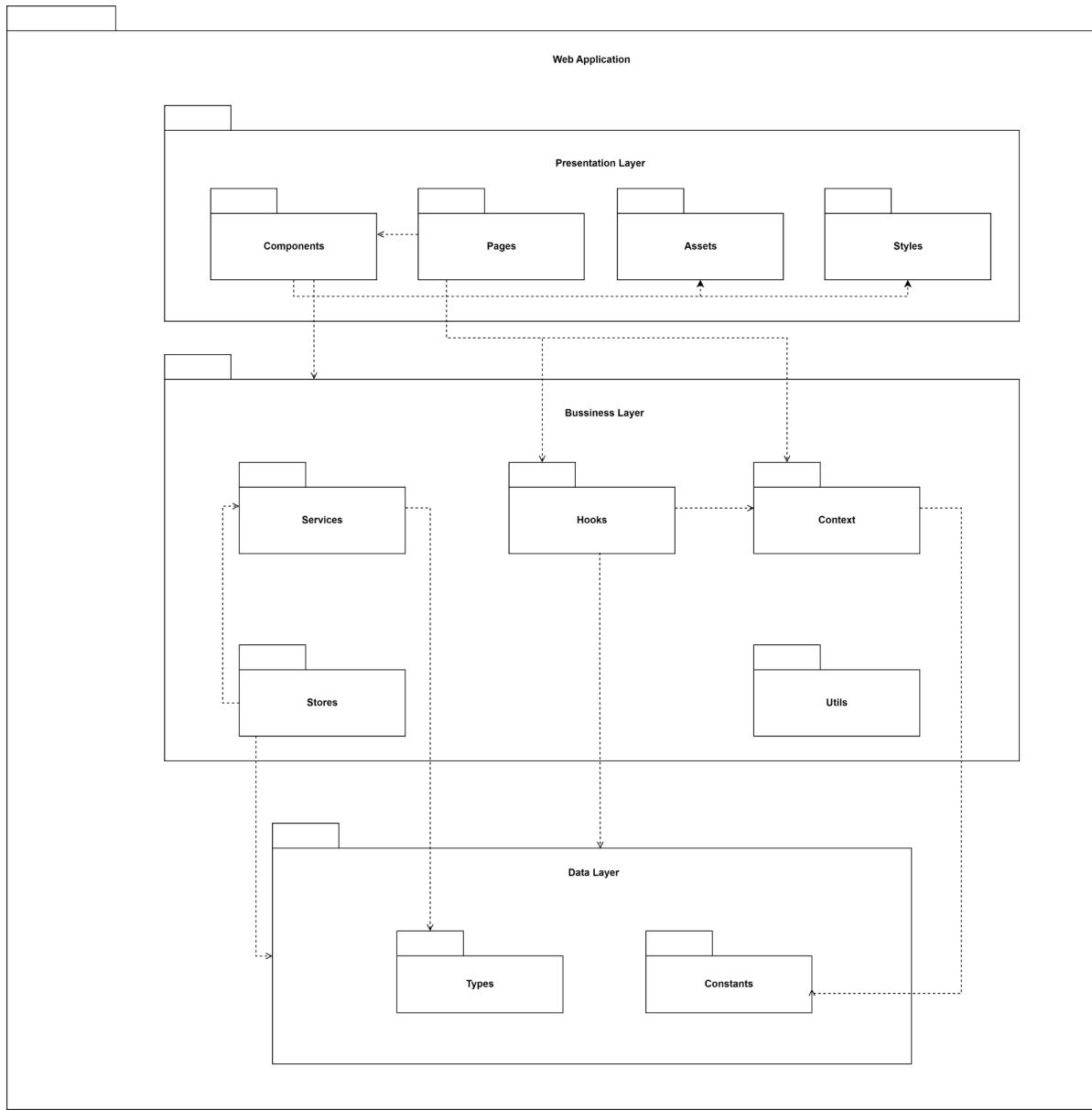


Figure 11 - Web Package Diagram

### 1.2.2.2 Web Package Description

#	Package	Description
1	src	The main source directory contains the entry point (index.js) and app configuration.
2	components	Houses reusable UI components such as buttons, cards, input fields, etc.

3	containers	Contain container components that connect Redux state to UI components.
4	reducers	Manage the state changes for different parts of the app using Redux.
5	actions	Define action creators that are dispatched to trigger state changes in the Redux store.
6	store	Set up the Redux store that holds the application's state.
7	middleware	Contains middleware components for extending Redux's capabilities, like handling asynchronous tasks.
8	api	Provides a layer for interacting with external APIs and services.
9	utils	Contains utility functions and helper classes used throughout the app.
10	styles	Defines the app's styles, including CSS or styling-related files.
11	assets	Stores static assets like images, icons, and fonts.

*Table 38 - Web Package Description*

## 2. Database Design

### 2.1. Entity Relationship Diagram

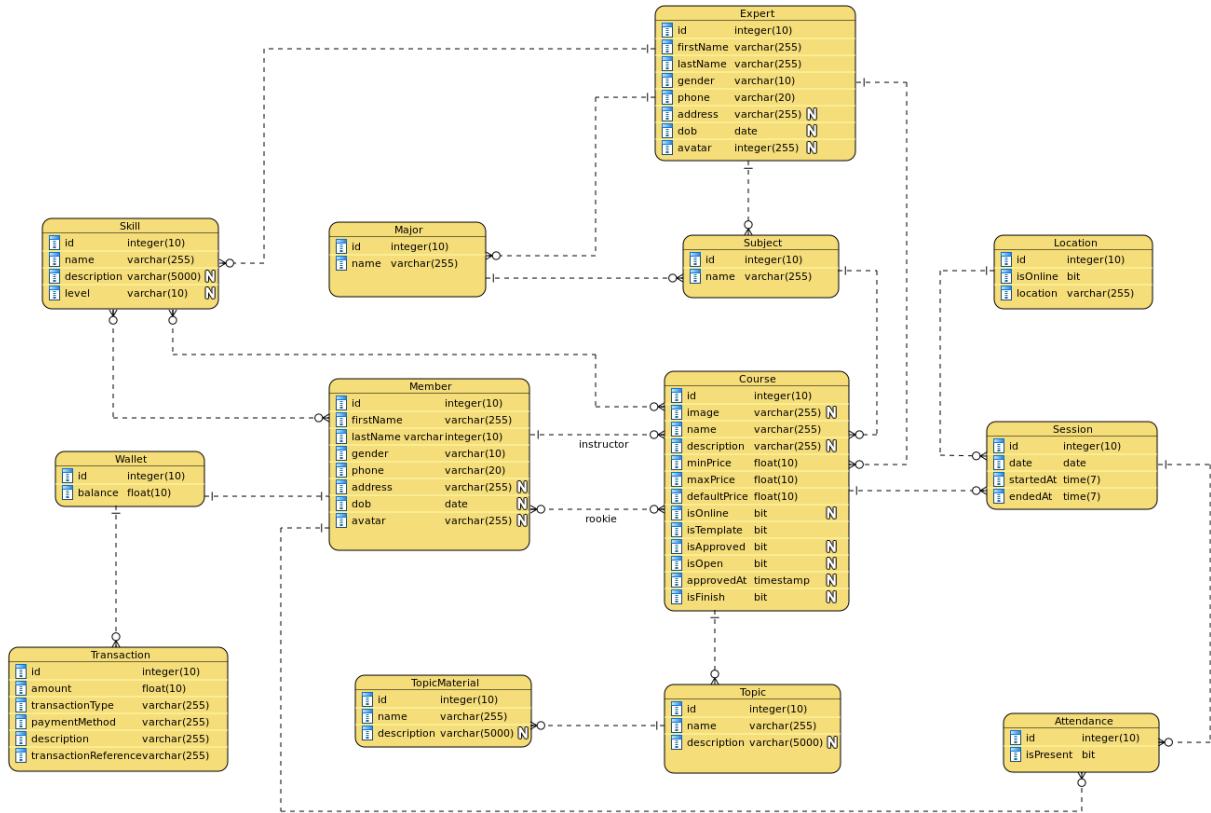


Figure 12 - Entity Relationship Diagram

## 2.2. Database Diagram

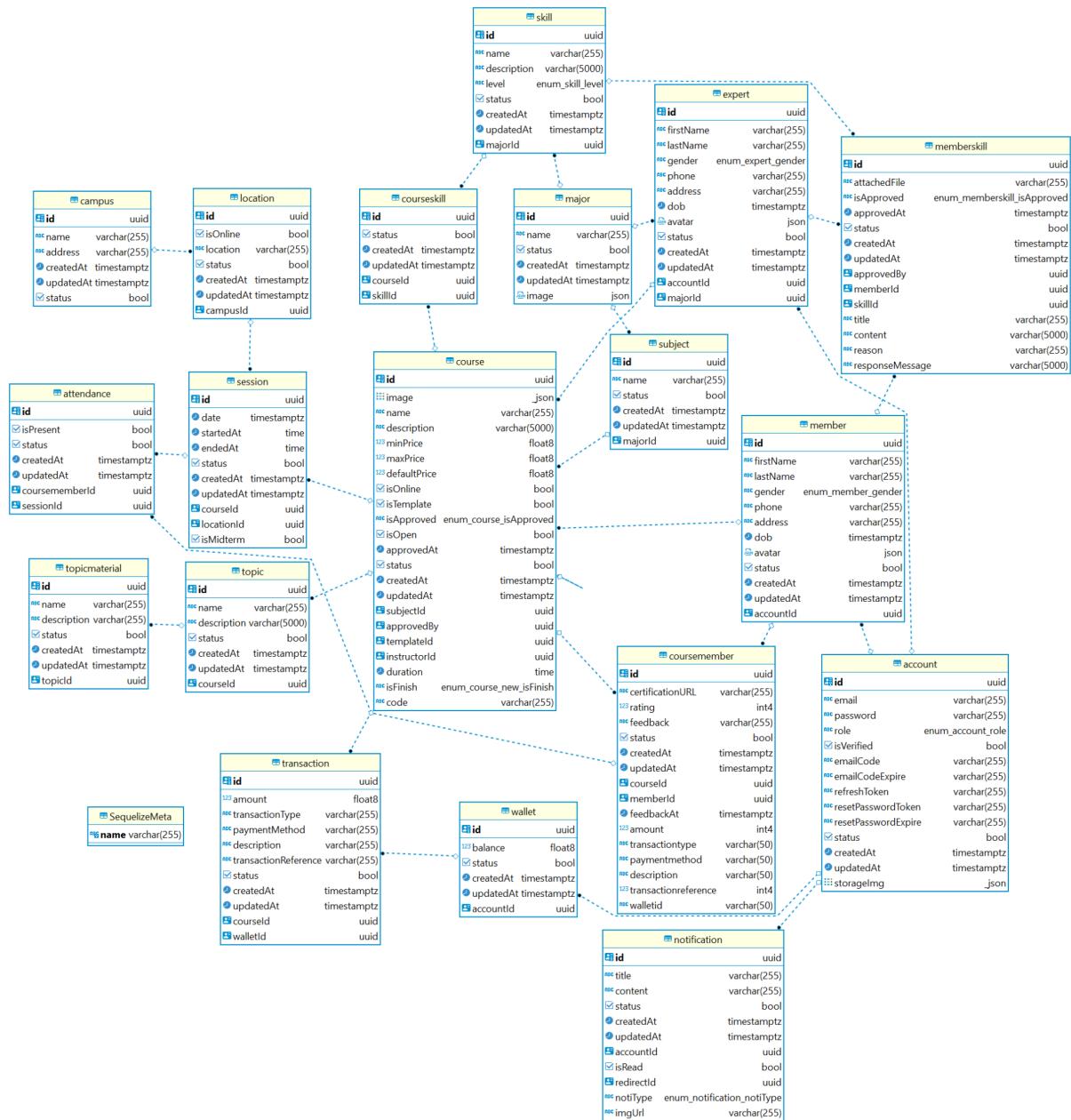


Figure 13 - Database Diagram

## 2.3. Data Dictionary

### 2.3.1 Major

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	X	X	PK	
2	name	varchar(255)		X		
3	status	boolean				
4	createdAt	timestamp				
5	updatedAt	timestamp				

*Table 39 - Major Data Dictionary*

### 2.3.2 Subject

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	name	varchar(255)		x		
3	status	boolean				
4	createdAt	timestamp				
5	updatedAt	timestamp				
6	majorId	uuid			FK	

*Table 40 - Subject Data Dictionary*

### 2.3.3 Account

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	email	varchar(255)		x		
3	password	varchar(255)		x		
4	role	varchar(10)				
5	isVerified	boolean				
6	emailCode	varchar(255)				
7	emailCodeExpire	varchar(255)				
8	refreshToken	varchar(255)				
9	resetPasswordToken	varchar(255)				
10	resetPasswordExpire	varchar(255)				
11	storageImg	json				
12	status	boolean				
13	createdAt	timestamp				
14	updatedAt	timestamp				

*Table 41 - Account Data Dictionary*

### 2.3.4 Member

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	firstName	varchar(255)		x		
3	lastName	varchar(255)		x		
4	gender	varchar(10)				
5	phone	varchar(20)		x		

6	address	varchar(255)					
7	dob	date					
8	avatar	json					
9	status	boolean					
10	createdAt	timestamp					
11	updatedAt	timestamp					
12	accountId	uuid			FK		

Table 42 - Member Data Dictionary

### 2.3.5 Expert

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	firstName	varchar(255)		x		
3	lastName	varchar(255)		x		
4	gender	varchar(10)				
5	phone	varchar(20)		x		
6	address	varchar(255)				
7	dob	date				
8	avatar	json				
9	status	boolean				
10	createdAt	timestamp				
11	updatedAt	timestamp				
12	accountId	uuid			FK	
13	majorId	uuid				

Table 43 - Expert Data Dictionary

### 2.3.6 Course

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	image	json				
3	name	varchar(255)		x		
4	description	varchar(5000)				
5	minPrice	float		x		
6	maxPrice	float		x		
7	defaultPrice	float		x		
8	duration	time				
9	isOnline	boolean				
10	isTemplate	boolean		x		
11	isApproved	varchar(10)				

12	isOpen	boolean				
13	approvedAt	timestamp			FK	
14	isFinish	boolean				
15	status	boolean				
16	createdAt	timestamp				
17	updatedAt	timestamp				
18	subjectId	uuid				
19	approvedBy	uuid				
20	templateId	uuid				
21	instructorId	uuid				

Table 44 - Course Data Dictionary

### 2.3.7 Topic

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	name	varchar(255)		x		
3	description	varchar(5000)				
4	status	varchar(10)				
5	createdAt	timestamp				
6	updatedAt	timestamp				
7	courseld	uuid			FK	

Table 45 - Topic Data Dictionary

### 2.3.8 TopicMaterial

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	name	varchar(255)		x		
3	description	varchar(5000)				
4	status	varchar(10)				
5	createdAt	timestamp				
6	updatedAt	timestamp				
7	topicId	uuid			FK	

Table 46 - TopicMaterial Data Dictionary

### 2.3.9 Location

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	isOnline	varchar(255)		x		

3	location	varchar(5000)		x		
4	status	boolean				
5	createdAt	timestamp				
6	updatedAt	timestamp				

Table 47 - Location Data Dictionary

### 2.3.10 Session

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	date	timestamp		x		
3	startedAt	time		x		
4	endedAt	time		x		
5	status	boolean				
6	createdAt	timestamp				
7	updatedAt	timestamp				
8	courseld	uuid				
9	locationId	uuid				

Table 48 - Session Data Dictionary

### 2.3.11 CourseMember

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	certificationURL	varchar(255)				
3	rating	rating				
4	feedback	varchar(255)				
5	status	boolean				
6	createdAt	timestamp				
7	updatedAt	timestamp				
8	courseld	uuid				
9	memberId	uuid				

Table 49 - CourseMember Data Dictionary

### 2.3.12 Attendance

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	isPresent	boolean		x		
3	status	boolean				
4	createdAt	timestamp				

5	updatedAt	timestamp				
6	coursememberId	uuid				
7	sessionId	uuid				

Table 50 - Attendance Data Dictionary

### 2.3.13 Skill

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	name	varchar(255)		x		
3	description	varchar(5000)				
4	level	varchar(10)		x		
5	status	boolean				
6	createdAt	timestamp				
7	updatedAt	timestamp				
8	coursememberId	uuid				

Table 51 - Skill Data Dictionary

### 2.3.14 MemberSkill

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	attachedFile	varchar(255)				
3	isApproved	varchar(10)		x		
4	approvedAt	timestamp				
5	title	varchar(255)		x		
6	content	varchar(5000)		x		
7	status	boolean				
8	createdAt	timestamp				
9	updatedAt	timestamp				
10	approvedBy	uuid				
11	memberId	uuid				
12	skillId	uuid				

Table 52 - MemberSkill Data Dictionary

### 2.3.15 CourseSkill

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	createdAt	timestamp				
3	updatedAt	timestamp				
4	approvedBy	uuid				
5	memberId	uuid				
6	skillId	uuid				

Table 53 - CourseSkill Data Dictionary

### 2.3.16 Wallet

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	balance	float		x		
3	status	boolean				
4	createdAt	timestamp				
5	updatedAt	timestamp				
6	accountId	uuid				

Table 54 - Wallet Data Dictionary

### 2.3.17 Transaction

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	amount	float		x		
3	transactionType	varchar(255)		x		
4	paymentMethod	varchar(255)		x		
5	description	varchar(255)		x		
6	transactionReference	varchar(255)		x		
7	status	boolean				
8	createdAt	timestamp				
9	updatedAt	timestamp				
10	courseld	uuid				
11	walletId	uuid				

Table 55 - Transaction Data Dictionary

### 2.3.18 Notification

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	title	varchar(255)		x		
3	content	varchar(255)		x		
4	type	varchar(255)				
5	attrachedFile	varchar(255)		x		
6	status	boolean				
7	createdAt	timestamp				
8	updatedAt	timestamp				

Table 56 - Notification Data Dictionary

### 2.3.19 Campus

No	Field name	Type	Unique	Not null	PK/FK	Reference
1	id	uuid	x	x	PK	
2	name	boolean		x		
3	address	varchar(255)				
4	createdAt	timestamp				
5	updatedAt	timestamp				

Table 57 - Campus Data Dictionary

### 3. Detailed Design

#### 3.1 Create Course

##### 3.1.1 Class Diagram

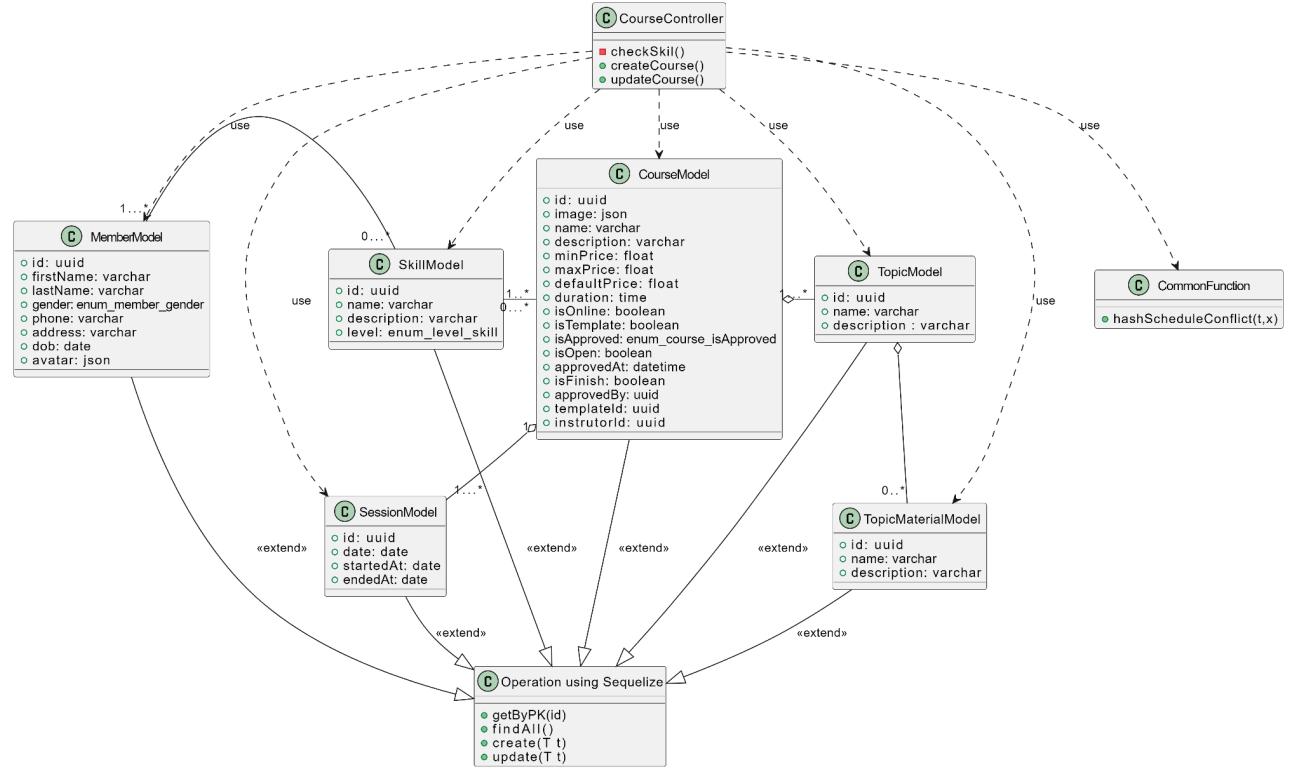


Figure 14 - Create Course Class Diagram

##### 3.1.2 Class Specification

#	Method	Description
1	checkSkill()	handles checking if the skill is valid.
2	createCourse()	handles creating a new course
3	updateCourse()	handles updating a course

Table 58 - Create Course Class Specification

### 3.1.3 Sequence Diagram

#### 3.1.3.1 Member Creates Course Sequence Diagram

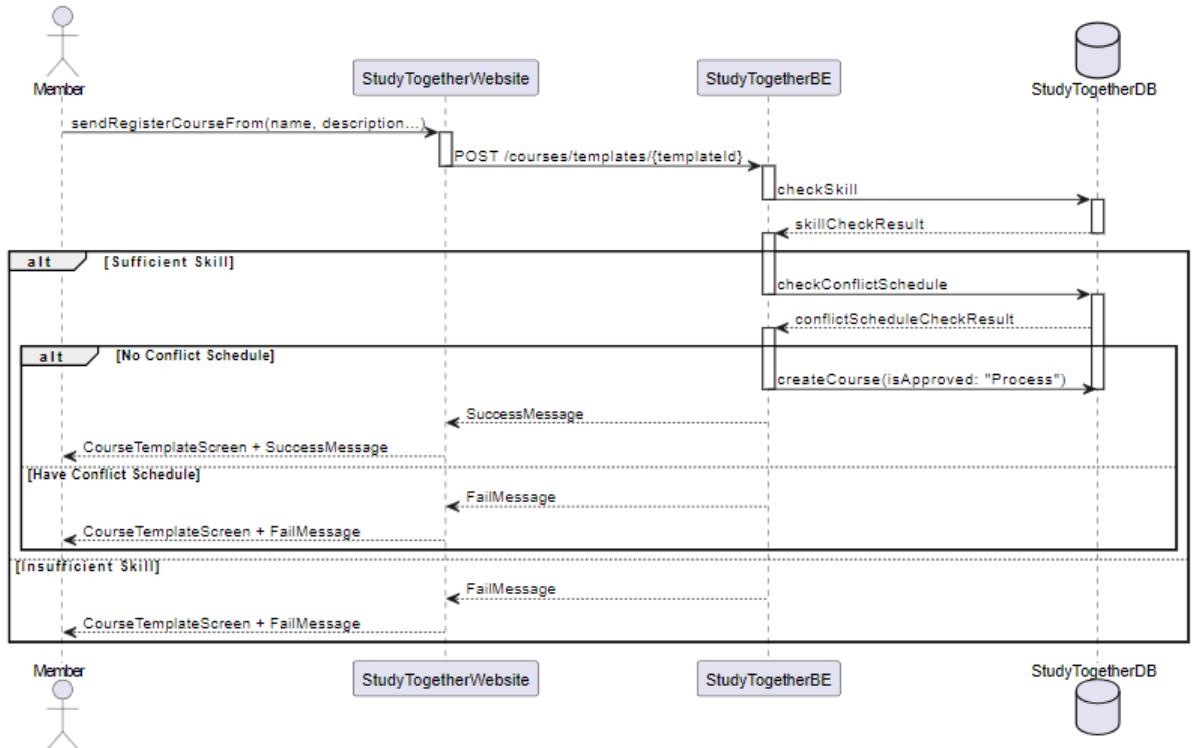
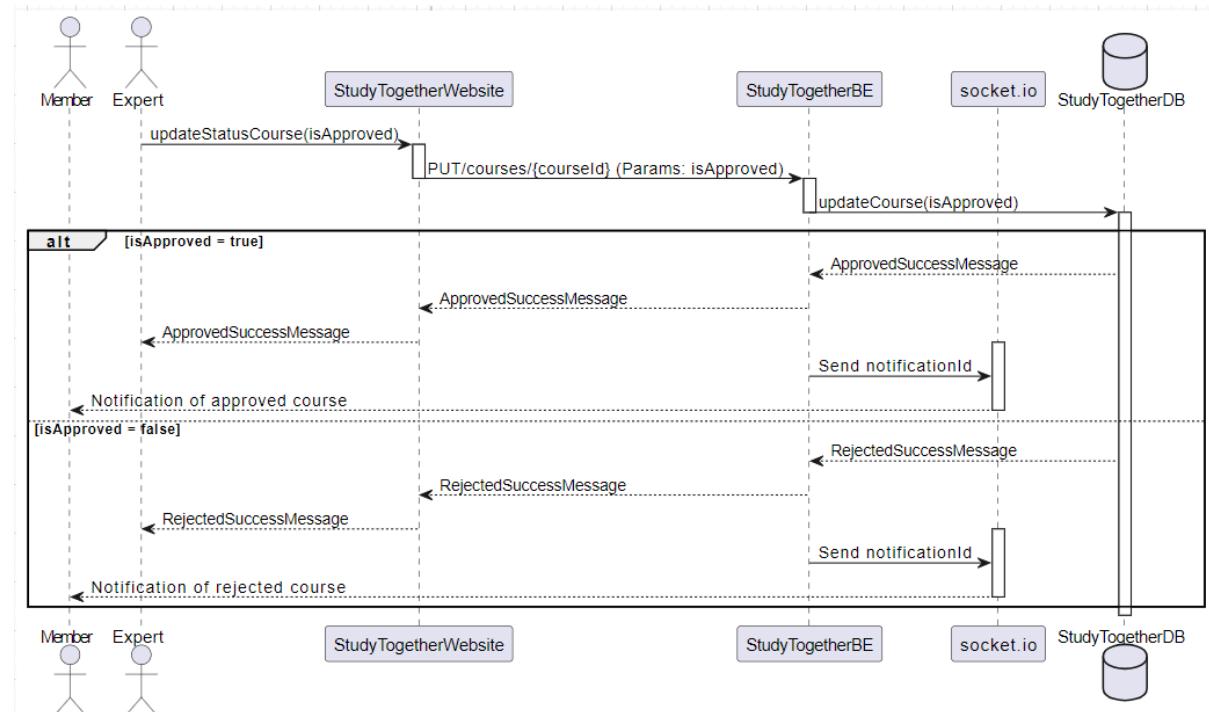


Figure 15 - Member Creates Course Sequence Diagram

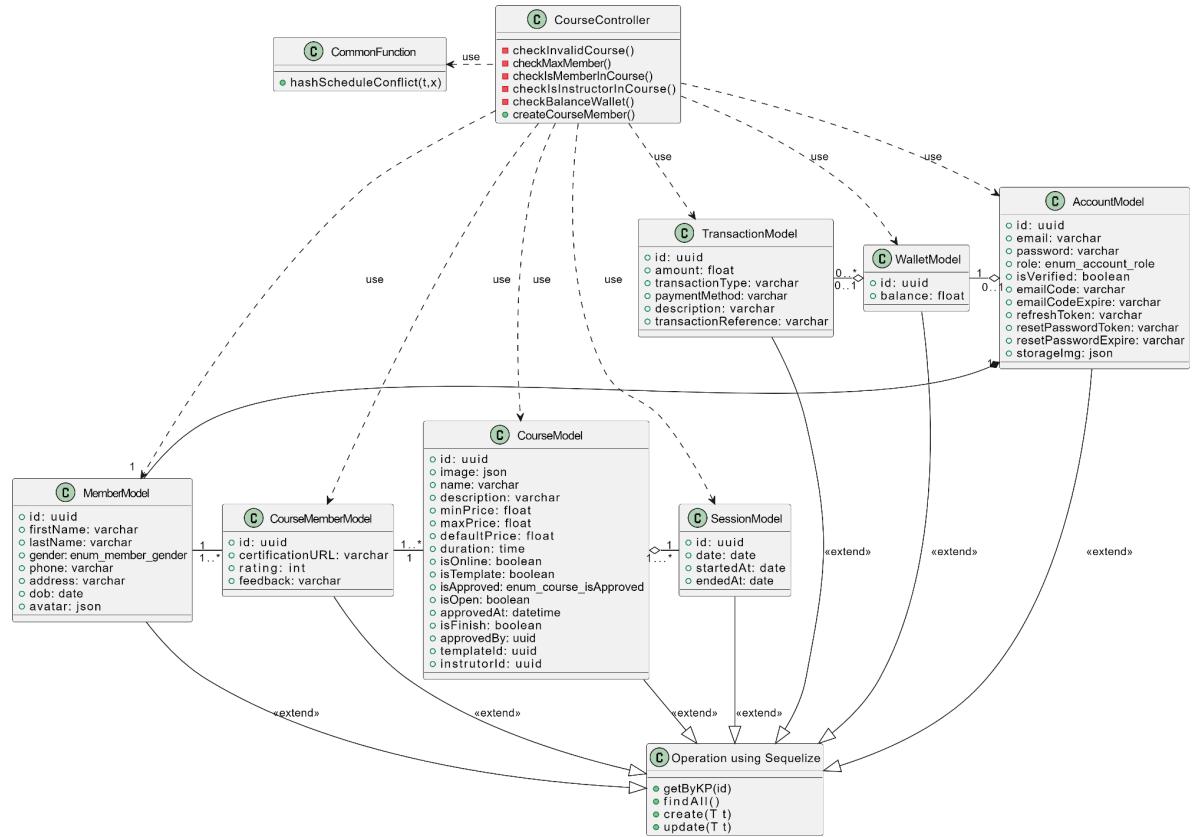
#### 3.1.3.2 Expert Approves Or Rejects Course Sequence Diagram



**Figure 16 - Expert Approves Or Rejects Course Sequence Diagram**

### 3.2 Enroll Course

#### 3.2.1 Class Diagram



**Figure 17 - Enroll Course Class Diagram**

#### 3.2.2 Class Specification

#	Method	Description
1	<code>checkValidCourse()</code>	handles checking if the course is valid.
2	<code>checkMaxMember()</code>	handles checking if the total member is max.
3	<code>checkIsMemberInCourse()</code>	handles check if the member is a student of the course
4	<code>checkIsInstructorInCourse()</code>	handles check if the member is an instructor of the course
6	<code>checkBalanceWallet()</code>	handles checking if member's wallet has enough money to pay for the course
7	<code>createCourseMember()</code>	handles create course member

*Table 59 - Enroll Course Class Specification*

### 3.2.3 Sequence Diagram

#### 3.2.3.1 Member Enroll Course Sequence Diagram

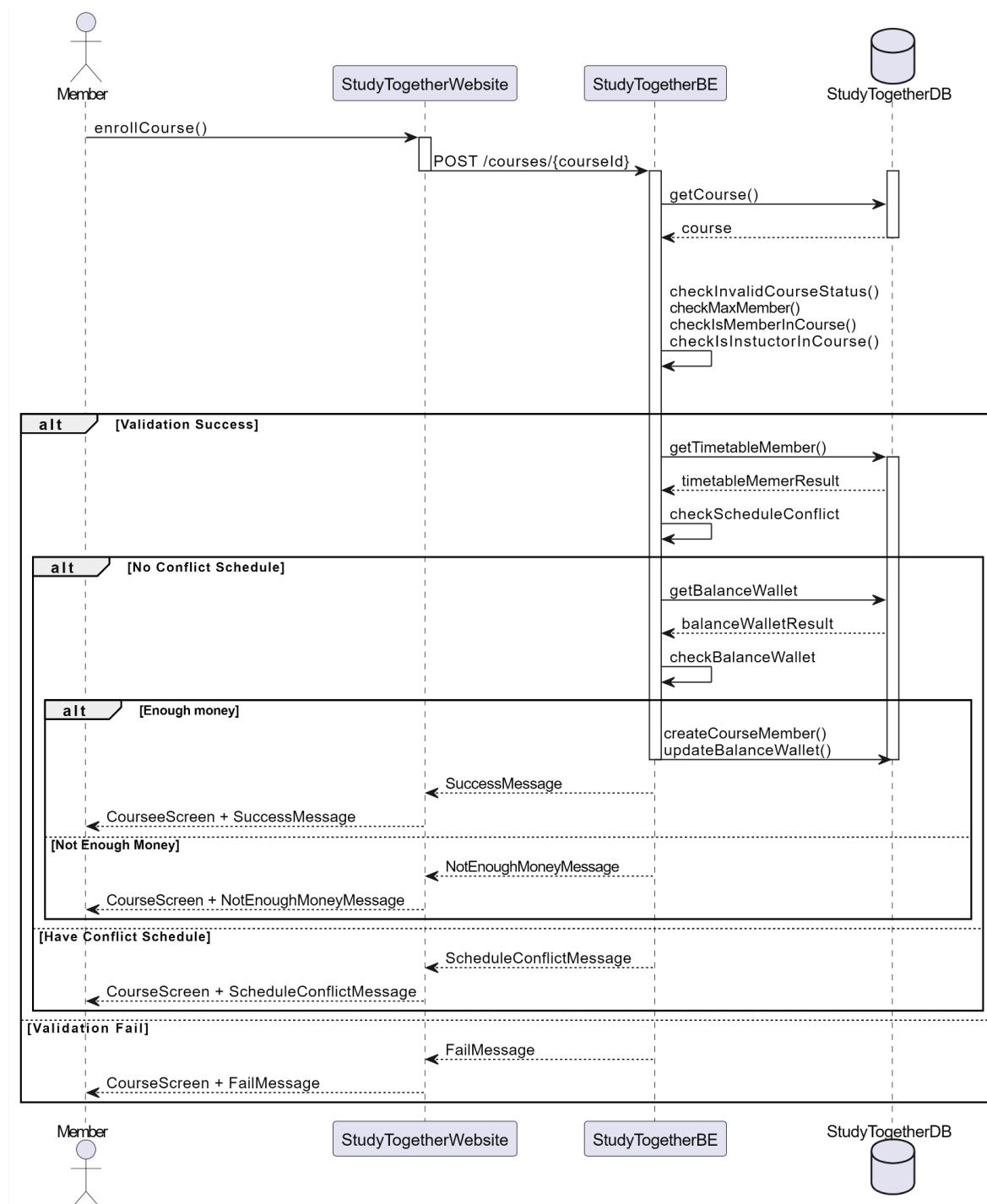


Figure 18 - Member Enroll Course Sequence Diagram

### 3.3 Attendance and refund

#### 3.3.1 Class Diagram

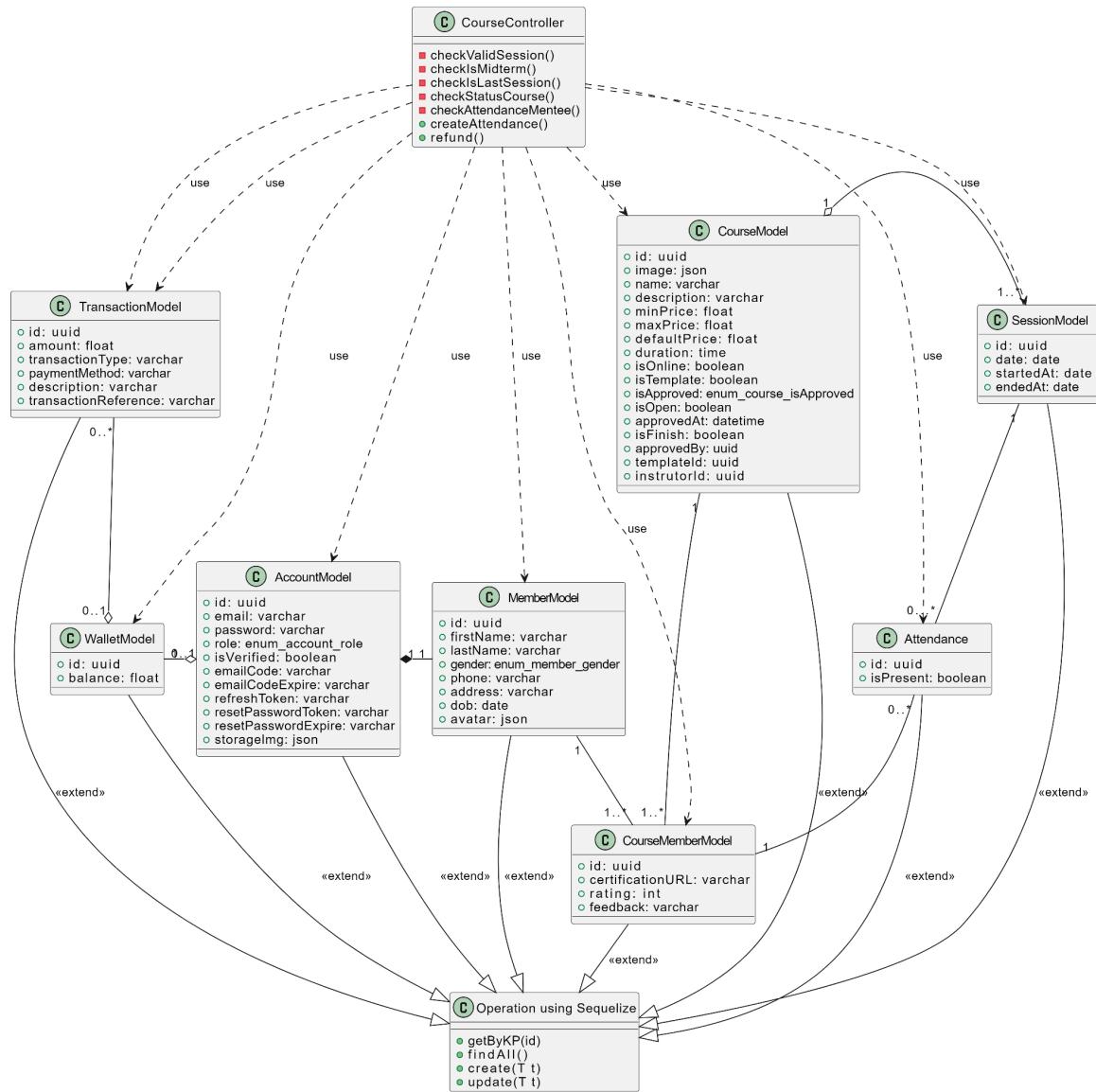


Figure 19 - Attendance & Refund Class Diagram

#### 3.3.2 Class Specification

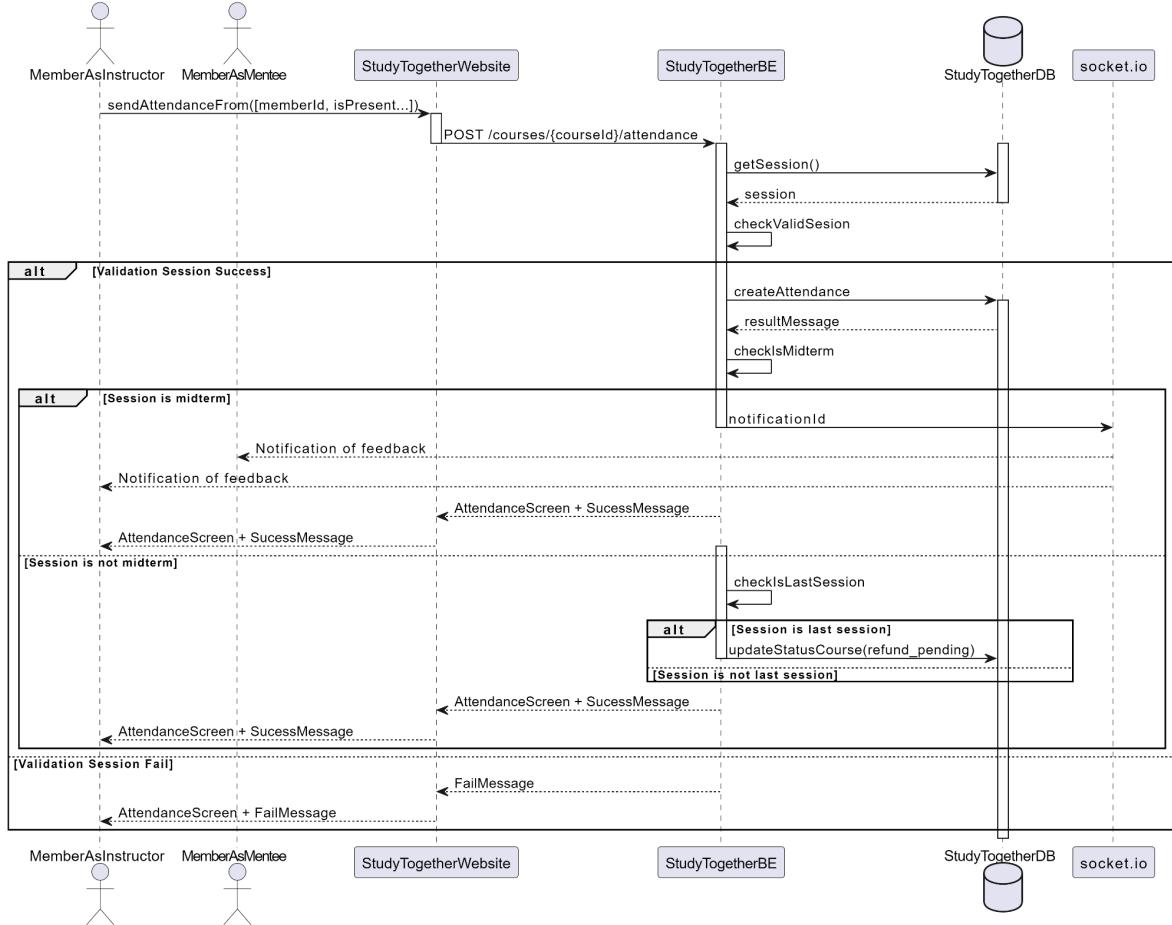
#	Method	Description
1	checkValidSession()	handles checking if the session is valid.
2	checkIsMidterm()	handles checking if the session is midterm.
3	checkIsLastSession()	handles checking if the session is the last session.
4	checkStatusCourse()	handles checking if the status course is valid.

6	createAttendance()	handles take attendance for mentee
7	refund()	handles refund money to member

*Table 60 - Attendance & Refund Class Specification*

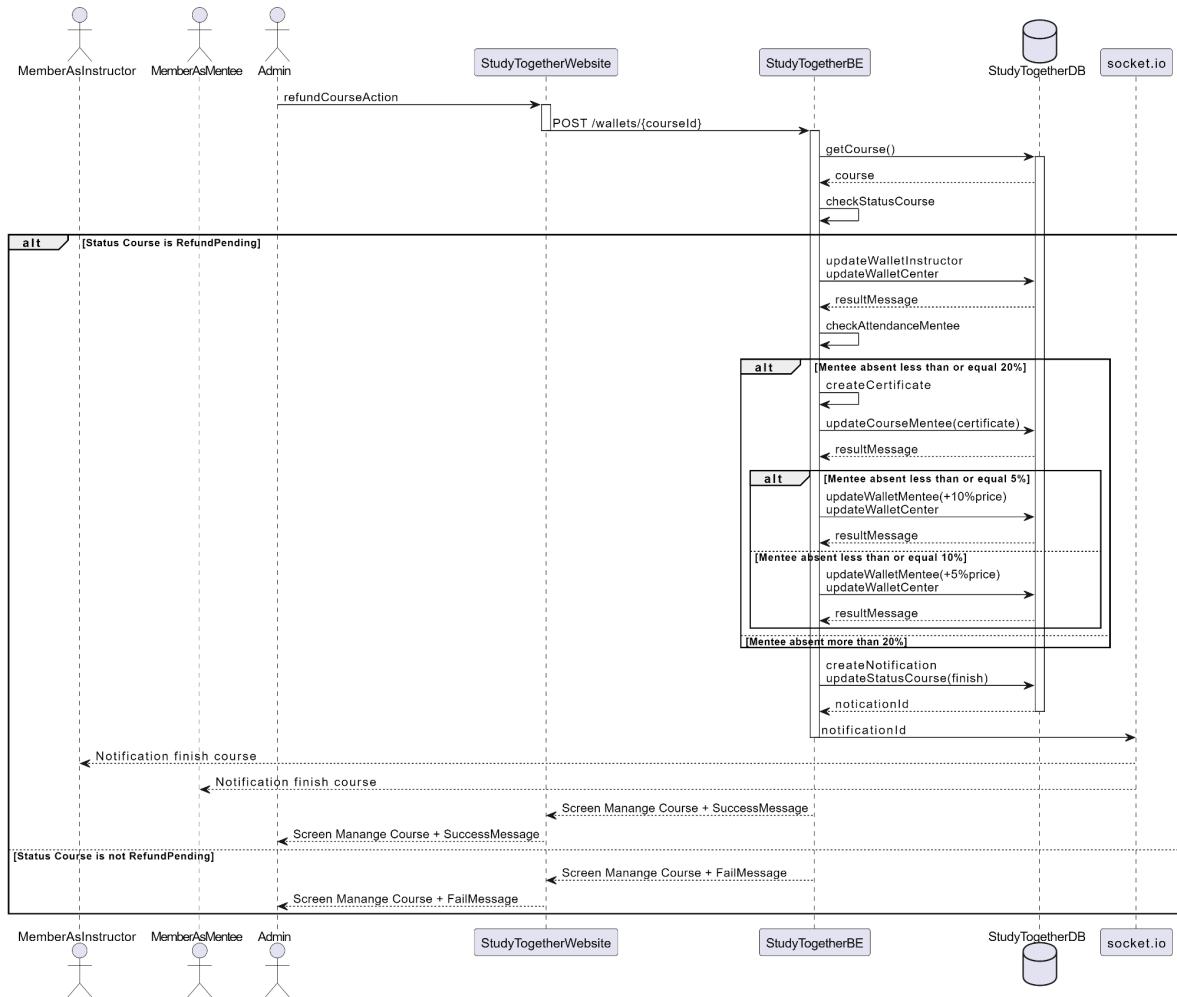
### 3.3.3 Sequence Diagram

### **3.3.3.1 Member Take Attendance Sequence Diagram**



**Figure 20 - Member Take Attendance Sequence Diagram**

### 3.3.3.2 Admin Refund Sequence Diagram



**Figure 21 - Admin Refund Sequence Diagram**

## 3.4 Register Skill

### 3.4.1 Class Diagram

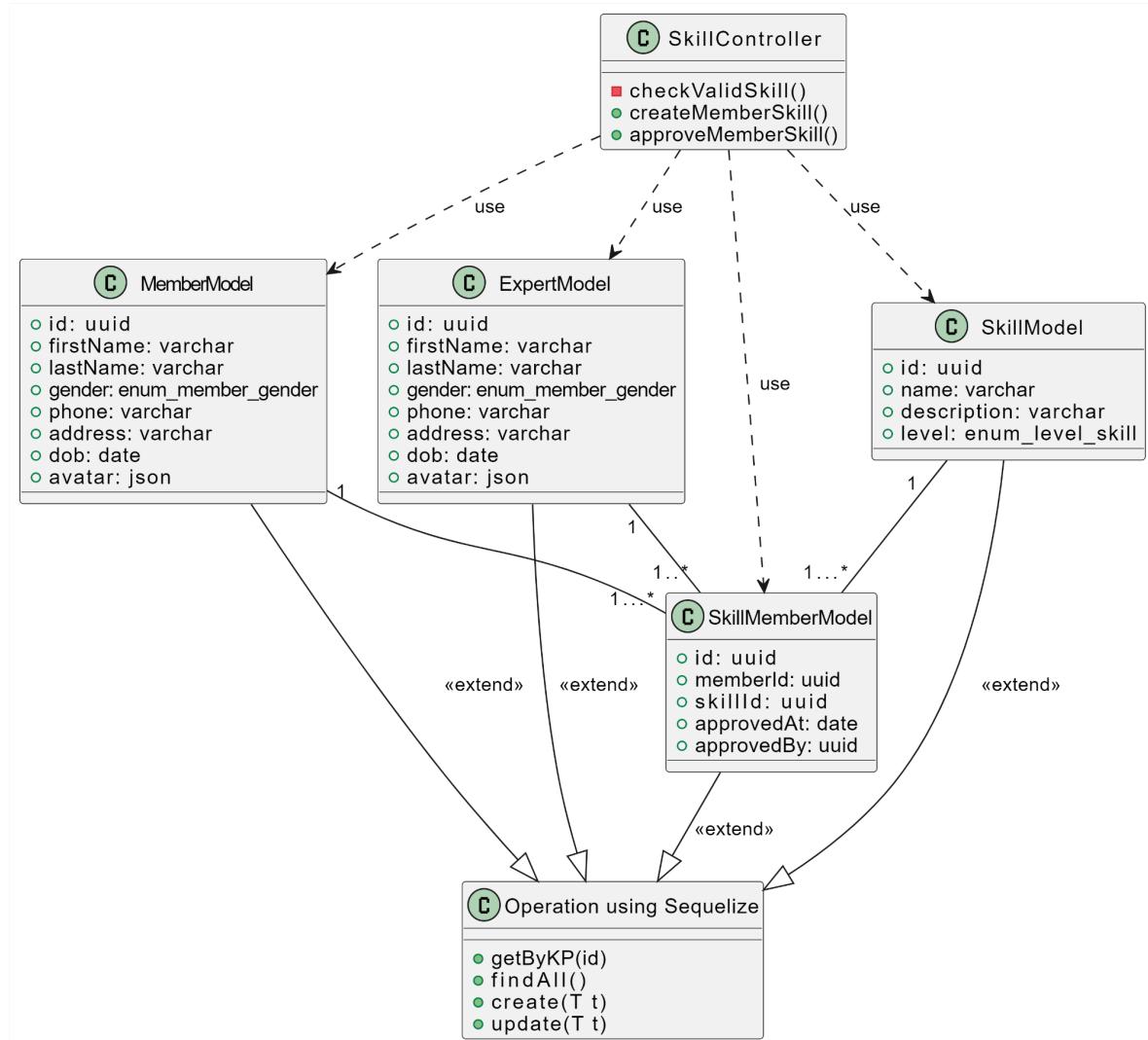


Figure 22 - Register Skill Class Diagram

### 3.4.2 Class Specification

#	Method	Description
1	checkValidSkill()	handles checking if the skills are valid.
2	createMemberSkill()	handles create skill member request
3	approvedMemberSkill()	handles approving skill for member

Table 61 - Register Skill Class Specification

### 3.4.3 Sequence Diagram

#### 3.4.3.1 Member Register Skill Sequence Diagram

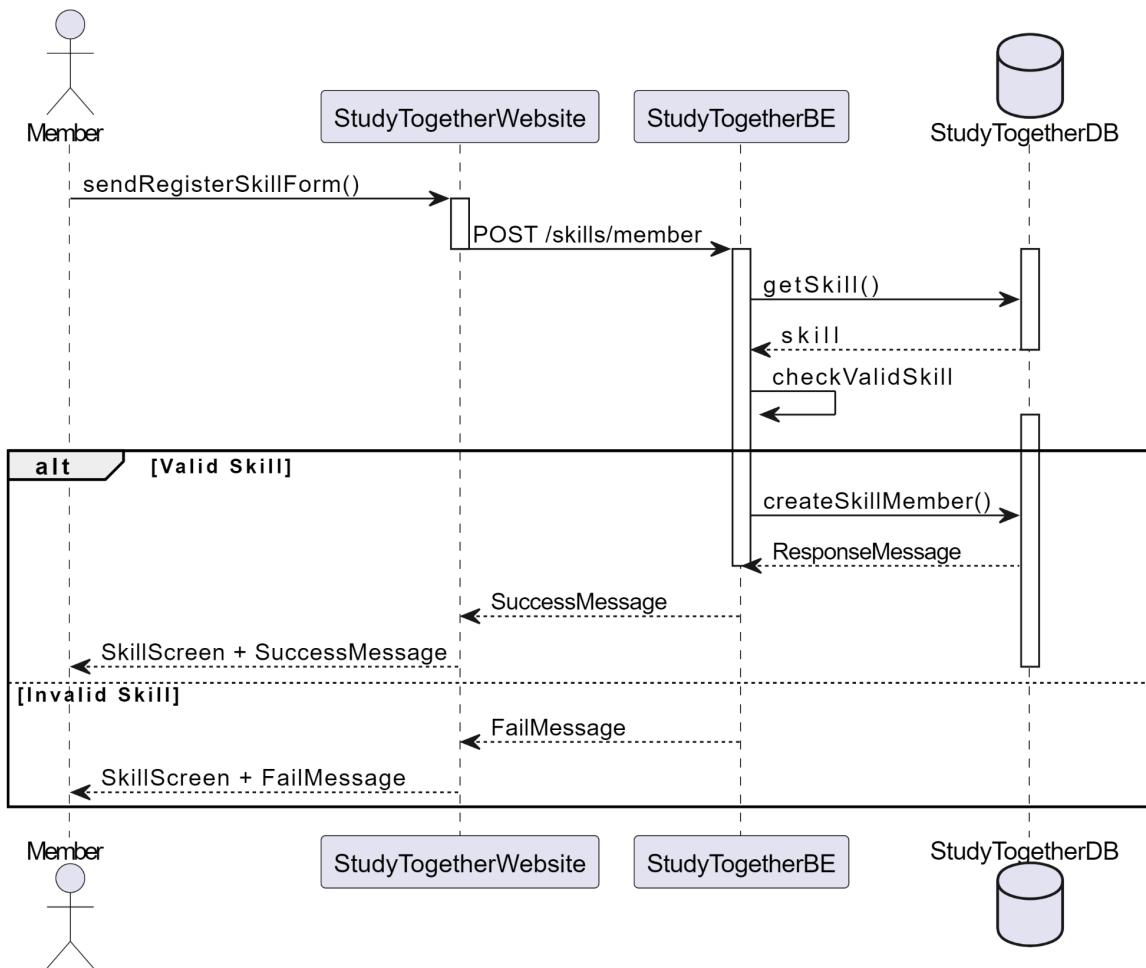
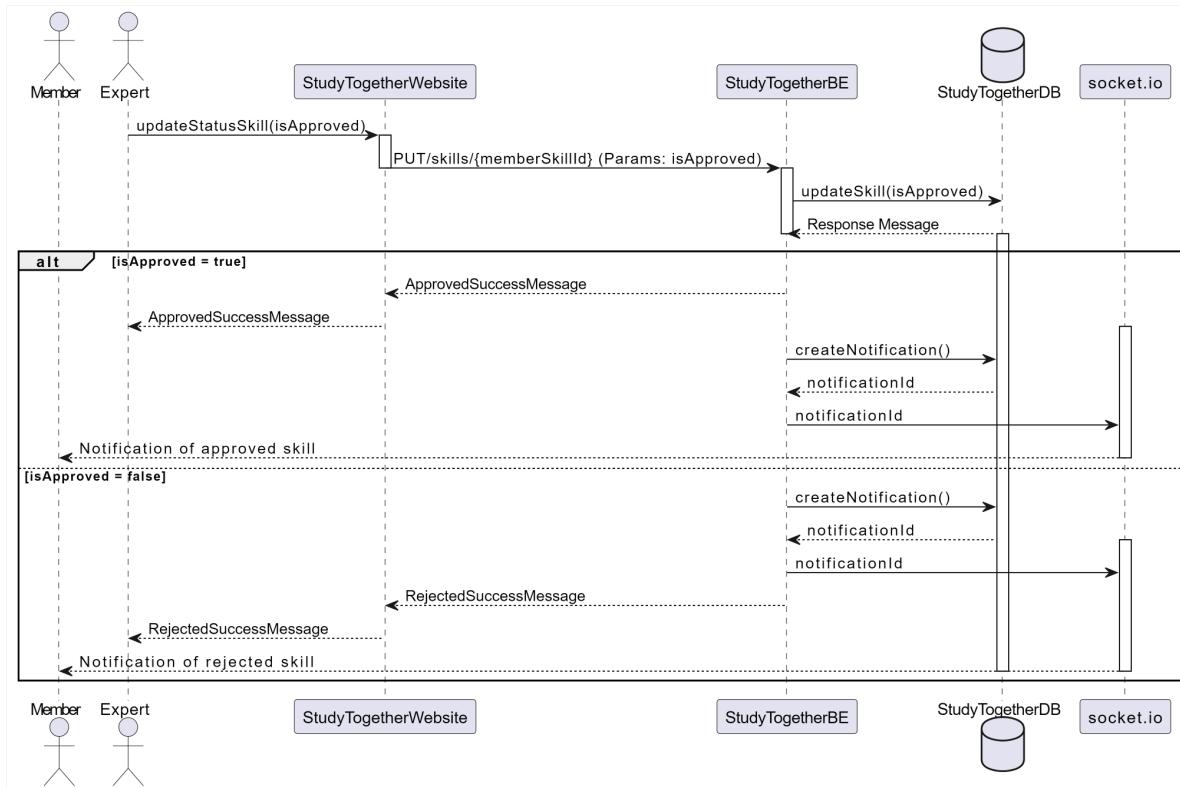


Figure 23 - Member Register Skill Sequence Diagram

#### 3.4.3.2 Expert Approve/Reject Skill Sequence Diagram



**Figure 24 - Expert Approve/Reject Requesting Skill Sequence Diagram**

## V. Software Testing Documentation

### 1. Scope of Testing

#### 1.1 In-scope

Feature	Function	Role	Description
Account	Verify Email	Guest	Guest: anonymous that do not have an account in StudyTogether. A guest can verify email to get email code
	Forgot Password	Member / Expert	This function allows users to get the password if forgot
	Reset Password	Member / Expert	This function allows users to reset a user's password where the user has forgotten their current password or desires to update it.
	Sign Up	Guest	Guest: anonymous that do not have an account in StudyTogether. A guest can sign up for an account in the system.

	Create Profile	Member	This function allows a newly registered member to create their profile.
	View Attendance		Member can view their attendance in one course
	View Profile	Member / Expert	This function allows users to view their profile
	View Transaction		This function allows users to view their transaction
	Login		This function allows users to log into the system.
	Ban account	Admin	Admin can ban account
	View and filter all users		Admin can view and filter all users
	View user details		Admin can view user details
	Create new account expert		Admin can create new account expert
Skill	Create Skill	Expert	Experts can create new skills.
	View List Skill		Experts can view list skills
	View Skill Detail		Experts can view skill detail
	Update Skill		Experts can update skills
	Approve/reject Skill		Expert approve skill that member require
	Register Skill	Member	Member register skill to open course
	View status of register skill		Member can view the response message from expert
Course	Create course template	Expert	Expert create skill template and also add skill required to course
	Update course template		Expert can update course template
	Request Open Course	Member	Member create course from course template

	View status request open course		Member can view response message from expert
	View application forms		Member can view all application forms
	Approve/reject Course	Expert	Expert approve course that member require Member that require course became instructor
	View course		After approval of expert, member can see a course and register for study
	View course detail	Member	Member can view course detail
	Select payment method ("Thông qua ví" and "Trả tiền mặt")		Member as student can choose between two payment methods when studying the course: "Thông qua ví" or cash "Trả tiền mặt".
	Set location and open course	Admin	After over 10 subscription, course are allow to open and set location if offline
	Get notification		Member as student and as instructor of this course will receive notification
	View timetable	Member	Member as student and as instructor of this course can view timetable
	Get a attendances of course		Member as student and as instructor of this course can view attendance
	Take attendance members of course	Member	Member as instructor of this course can take attendance
	View Feedback		Member as instructor of this course can view feedback
	Feedback course		Member as student of this course can take feedback after midterm
	Get notification feedback		Member as student of this course get the notification to feedback

	Refund money		Member as instructor of this course get money back after finish the course  Member as student who not absent over 10% of session can get certificate and reward
Subject	Get list of subject	Expert/ Member	User can get list of subject
	Get subject detail		User can get subject detail
	Create a new subject	Admin	Admin can create new subject
	Update subject		Admin can update subject
	Delete the subject		Admin can delete subject
Major	Get list of major	Expert/ Member	User can get list of major
	Get major detail		User can get major detail
	Create a new major	Admin	Admin can create a new major
	Update major		Admin can update a major
	Delete major		Admin can delete major
Location	Get list of location	Expert/ Member	User can get list of location
	Get location detail		User can get location detail
	Create a new location	Admin	Admin can create a new location
	Update location		Admin can update a location
	Delete location		Admin can delete location
Campus	Get list of campus	Expert/ Member	User can get list of campus
	Get campus detail		User can get campus detail
	Create a new campus	Admin	Admin can create a new campus
	Update campus		Admin can update a campus
	Delete campus		Admin can delete campus
Wallet	Payment using ZaloPay	Expert/ Member	Expert/ Member can create payment with ZaloPay

	Payment using VNPay		Expert/ Member can create payment with VNPay
	View all transactions history		Expert/ Member can view all transactions history
	View transactions history details		Expert/ Member can view all transactions history details
Expert	View and filter all wallets	Admin	Admin can view and filter all wallets
	View wallet transactions history		Admin can view wallet transactions history
Statistics	View all statistic figures	Admin	Admin can view all statistic figures
Expert	Login	Admin	Admin can log in to the system
	Add expert account		Admin can add expert account
	Update expert information		Admin can update expert information
	Update authorization for role		Admin can update authorization for role
Transaction	Update withdrawal transactions status	Admin	Admin can update withdrawal transactions status

Table 62 - In-scope Testing

### 1.2 Out-of-scope:

Functional requirements	Non-functional requirements
Hardware Testing Smoke Testing Systems Testing Regression Testing	Security Testing Performance Testing Recovery Testing Configuration Testing Logical database Load Testing Stress Testing

Table 63 - Out-of-scope Testing

### 1.3 Constraints and Assumptions

- Possible Test Scenarios or Test Cases: Not all possible test scenarios or test cases may be executed due to time or resource limitations.
- Server Failures: The occurrence of a server crash may impact the planned schedule of test execution.

- Changing Requirements: Changes to the project's requirements can have an impact on the existing test plans and may necessitate adjustments.

## 2. Test Strategy

### 2.1 Testing Types

Objective	Technique	Completion criteria
Testing the verification and validation of units of code	Unit Testing	Error Handling, Async Code, etc.
Evaluating the communication between components or systems by data and control	Interface Testing	Requests, responses, etc.
Testing the group of integration modules	Integration Testing	Modules
Testing application environment in real situations	End-to-end testing	Database, third-party payment, etc.

Table 64 - Testing Types

### 2.2 Test Levels

Type of Tests	Test Level			
	Unit	Integration	System	Acceptance
Unit Testing	X			
Interface Testing	X	X		
Integration Testing		X	X	
End-to-end testing				X

Table 65 - Test Levels

### 2.3 Supporting Tools

Purpose	Tool	Vendor/In-house	Version
API testing	Postman	Postman	10.17.1
Unit and integration testing	Mocha	Open Source	10.2.0

Table 66 - Supporting Tools

### 3. Test Plan

#### 3.1 Human Resources

Worker/Doer	Role	Specific Responsibilities/Comments
Vũ Mạnh Hùng	Member	Preparing test plans and verifying the progress of tests. Do test cases as planned.
Lâm Văn Phái	Leader	Verified the progress of Mobile testing. Do test cases as planned.
Phan Anh Tuấn	Member	Verified the progress of API testing. Do test cases as planned.
Bùi Đức Uy Dũng	Member	Do test cases as planned & write test reports.

Table 67 - Human Resources

#### 3.2 Test Environment

Purpose	Tool	Provider	Version
Testing API tools	Window/MacOS	Microsoft/Apple	10 or above/ MacOS Ventura
JavaScript runtime environment	Node.js	Node.js Foundation	18.4.0 (Web)
Web browser for manual testing	Brave browser	Brave Software, Inc.	Chromium 115.0.5790.171
Mobile for manual testing	Android emulator Physical mobile device	Google/ VinSmart/ Xiaomi	Google Resizable Api 33 (Android 13)/ VSmart VOS4.0 (Android 11)/ Xiaomi Redmi Note 9S (Android 11)

Table 68 - Test Environment

#### 3.3 Test Milestones

Milestone Task	Start Date	End Date
Test overall round 1	05/08/2023	07/08/2023
Test overall round 2	11/08/2023	13/08/2023
Final test overall	18/08/2023	20/08/2023

Table 69 - Test Milestones

## 4. Test Cases

### 4.1. Admin Web Application

#### 4.1.1. Test case list

**TEST CASE LIST**

<b>Project Name</b>	<i>STUD - Study Together Center Management System</i>
<b>Project Code</b>	FA23SE083
<b>Test Environment Setup Description</b>	1. Server 2. Database 3. API 4. Other tools (Postman)

No	Function Name	Sheet Name	Description	Pre-Condition
1	Login	<a href="#">Login</a>	Admin can log in to the system	API and design shall be available
2	Update member status	<a href="#">Staff</a>	Admin can update member status	API and design shall be available
3	View members list		Admin can view all members account	API and design shall be available
4	View experts list		Admin can view all experts account	API and design shall be available
5	Create new expert	<a href="#">Transaction</a>	Admin can create a new expert account	API and design shall be available
6	Update expert status		Admin can update expert status	API and design shall be available
7	View majors list		Admin can view all major from list	API and design shall be available
8	Create new major	<a href="#">Major</a>	Admin can create a new major	API and design shall be available
9	Update major name		Admin can update major name	API and design shall be available
9	Remove major		Admin can update major status	API and design shall be available
10	View 'refund-pending' courses list	<a href="#">Transaction</a>	Admin can view all courses that are waiting to be refunded money from list	API and design shall be available
11	Refund to 'refund-pending' course		Admin can refund money to course that meet the requirements	API and design shall be available
12	View transactions history		Admin can view all transactions from list	API and design shall be available
13	View open course requests list	<a href="#">Open Course</a>	Admin can view all courses that request to be open for members to enroll	API and design shall be available
14	Auto open course		Admin can auto approve course that meets requirements and auto arrange location and campus for course	API and design shall be available
15	View dashboard statistics	<a href="#">Dashboard</a>	Admin can view dashboard statistics	API and design shall be available
16	View feedback list	<a href="#">Login</a>	Expert can view all feedback	API and design shall be available
17	View feedback detail		Expert can view detail of feedback	API and design shall be available
18	View request/approve course list	<a href="#">Transaction</a>	Expert can view all approve.course.requests	API and design shall be available
19	View approve.course.detail		Expert can view the detail of the approve.course.request	API and design shall be available
20	Approve/Reject course		Expert can approve or reject the approve.course.request	API and design shall be available
21	View skill requests list	<a href="#">Skill Request</a>	Expert can view all skill.requests	API and design shall be available
22	View skill request detail		Expert can view detail of skill.request	API and design shall be available
23	Approve/Reject skill request		Expert can approve or reject skill.request	API and design shall be available
24	View file from skill.request		Expert can download file from skill.request	API and design shall be available
25	View course templates list	<a href="#">Course Template</a>	Expert can view all course.templates	API and design shall be available
26	Create.new.course.template		Expert can create new.course.template	API and design shall be available
27	Update course template		Expert can update course.template.information	API and design shall be available
28	View subjects list		Expert can view all.subject	API and design shall be available
29	Create.new.subject	<a href="#">Subject</a>	Expert can create new.subject	API and design shall be available
30	Update new subject		Expert can update subject.information	API and design shall be available
31	Remove subject		Expert can remove subject	API and design shall be available

**Figure 25 - Admin Web Application Test Case List**

#### 4.1.2. Test report (Statistics)

### TEST STATISTICS

Project Name	STUD - Study Together Center Management System			
Project Code	FA23SE083			
Document Code	FA23SE083 ADMIN-EXPERT v1.0	Issue Date		17/10/2023
Notes				

No	Module code	Passed	Failed	Pending	N/A	Number of test cases
1	Login	5	0	0	0	5
2	Member	7	0	0	0	7
3	Expert	8	0	0	0	8
4	Major	11	0	0	0	11
5	Transaction	10	0	0	0	10
6	Open-Course	9	0	0	0	9
7	Dashboard	2	0	0	0	2
8	Feedback	4	0	0	0	4
9	Approve-Course	12	0	0	0	12
10	Skill-Request	13	0	0	0	13
11	Course Template	9	0	0	0	9
12	Subject	11	0	0	0	11
<b>Sub total</b>		<b>101</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>101</b>

Test coverage **100.00 %**  
 Test successful coverage **100.00 %**

**Figure 26 - Admin Web Application Test Report (Statistics)**

#### 4.2. Member Web Application

##### 4.2.1. Test case list

### TEST CASE LIST

Project Name	StudyTogether Center Management System
Project Code	FA23SE083
Test Environment Setup Description	1. Server 2. Database 3. API 4. Other tools (Postman)

No	Function Name	Sheet Name	Description	Pre-Condition
1	Authentication	Authentication	Login, Sign in, Sign Up test	N/A
2	Register Course	Register Course	Test enroll course process	Account verified
3	Build Profile	Build Profile	Test update profile	Account verified
4	Take Attendance	Take Attendance	Test attendance flow	Account verified, Course Member verified
5	Feedback	Feedback	Test feedback flow	Account verified, Course Member verified
6	Register Skill	Register Skill	Test register skill	Account verified
7	Wallet	Wallet	Test using wallet, view transactions, deposit & withdraw	Account verified
8	Enroll Course	Enroll Course	Test enroll course process	Account verified

**Figure 27 - Member Web Application Test Case List**

#### **4.2.2. Test report (Statistics)**

# TEST STATISTICS

<b>Project Name</b>	<i>StudyTogether Center Management</i>	<b>Creator</b>		
<b>Project Code</b>	<i>FA23SE083</i>	<b>Reviewer / Approver</b>		
<b>Document Code</b>	<i>FA23SE083 Member Report</i>	<b>Issue Date</b>		<i>27/11/2023</i>
<b>Notes</b>				

No	Module code	Passed	Failed	Pending	N/A	Number of test cases
1	Authentication	31	0	0	0	31
2	Enroll Course	5	0	0	0	5
3	Register Course	9	0	0	0	9
4	Take Attendance	5	0	0	0	5
5	Feedback	3	0	0	0	3
6	Register Skill	9	0	0	0	9
7	Build Profile	11	0	0	0	11
8	Wallet	16	0	0	0	16
<b>Sub total</b>		<b>89</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>89</b>

**Test coverage** **100,00** %  
**Test successful coverage** **100,00** %

## **Figure 28 - Member Web Application Test Report (Statistics)**

#### **4.3. Member Mobile Application**

### 4.3.1. Test case list

## **TEST CASE LIST**

<b>Project Name</b>	StudyTogether Center Management System
<b>Project Code</b>	FA23SE083
<b>Test Environment Setup Description</b>	-Server/PROD -Database/PROD -Deploy Study Together Mobile App/device: Google Resizable Api 33 (Android 13)/ VSmart VOS4.0 (Android 11)/ Xiaomi Redmi Note 9S (Android 11)

## **Figure 29 - Member Mobile Application Test Case List**

### 4.3.2. Test report (Statistics)

TEST STATISTICS						
Project Name	StudyTogether Center Management System	Creator				
Project Code	FA23SE083	Reviewer/Approver				
Document Code	FA23SE083_STC_mobile_app_v1.0	Issue Date				25/11/2023
Notes						
No	Module code	Passed	Failed	Pending	N/A	Number of test cases
1	Study together authentication	25	0	0	0	25
2	Study together enroll course flow	5	0	0	0	5
3	Study Together - UI navigation bar	8	0	0	0	8
4	Study Together - Deposit Money	2	0	0	0	2
<b>Sub total</b>		<b>38</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>38</b>
Test coverage			<b>100,00 %</b>			
Test successful coverage			<b>100,00 %</b>			
						

Figure 30 - Member Mobile Application Test Report (Statistics)

### 4.4. Backend server unit test

#### 4.4.1. Function list

Function List						
Project Name	StudyTogether Center Management System	Sheet Name		Description	Pre-Condition	
Project Code	FA23SE083					
Normal number of Test cases/KLOC	100					
Test Environment Setup Description	.NODEJS server/LOCAL, StudyTogether database/DEV					
No.	Requirement Name	Class Name	Function Name	Function Code(Optional)	Sheet Name	
1	Authentication	account.controller.js	Login	Login	Login	
2	Authentication	account.controller.js	Register	Register	Register	
3	Course Management	course.controller.js	Get Course Detail By Id	Get Course Detail By Id	Get Course Detail By Id	
4	Course Management	course.controller.js	Create Course Template	Create Course Template	Create Course Template	
5	Course Management	course.controller.js	Create Course	Create Course	Create Course	
6	Course Management	course.controller.js	Approve Open course	Approve Open course	Approve Open course	
7	Course Management	course.controller.js	Register Course	Register Course	Register Course	
8	Course Management	course.controller.js	Feedback Course	Feedback Course	Feedback Course	
9	Skill Management	skill.controller.js	Register Skill	Register Skill	Register Skill	
10	Skill Management	skill.controller.js	Create Skill	Create Skill	Create Skill	
11	Skill Management	skill.controller.js	Associate Student Skill	Associate Student Skill	Associate Student Skill	
12	Major Management	major.controller.js	Create Major	Create Major	Create Major	
13	Subject Management	subject.controller.js	Create Subject	Create Subject	Create Subject	
14	Account Management	admin.controller.js	Manage User	Manage User	Manage User	

Figure 31 - Backend Server Function List

#### 4.4.2. Unit Test Report

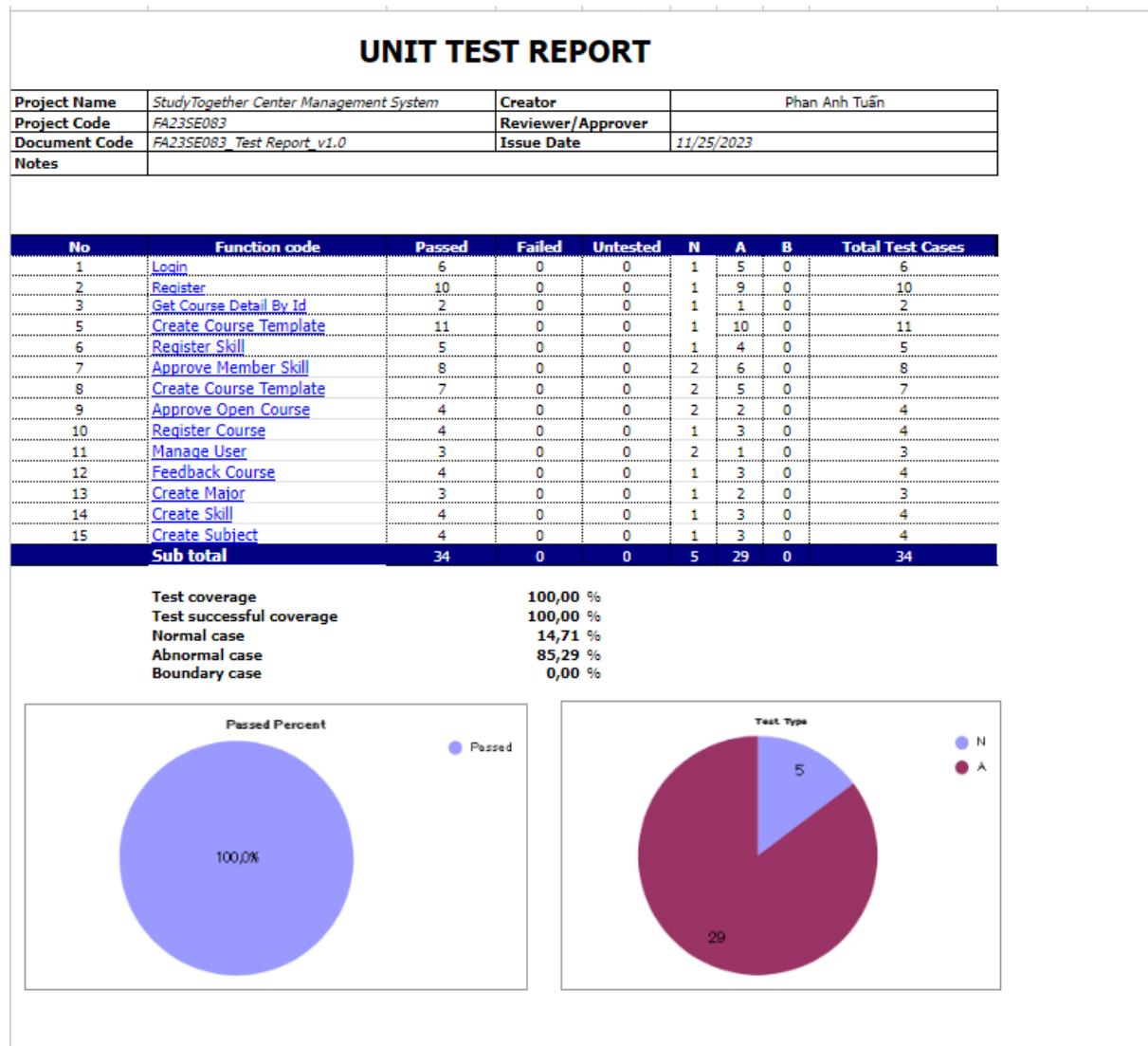


Figure 32 - Backend Server Unit Test Report

## 5. Test Reports

Document name	Link
Admin Web Application	<a href="#">Report5_Test Report_Admin Web Application.xlsx</a>
Member Web Application	<a href="#">Report5_Test Report_Member Web Application.xlsx</a>
Member Mobile Application	<a href="#">Report5_Test Report_Member Mobile Application.xlsx</a>
Backend Server Unit Test	<a href="#">Report5_Unit Tests.xlsx</a>

Table 70 - Test Reports

## VI. Release Package & User Guides

### 1. Deliverable Package

No.	Deliverable Item	Description
1	Project Schedule/Tracking	To track the progress, we use Jira for giving tasks and saving meeting notes. Using Google Drive for preparing documents. <ul style="list-style-type: none"> <li>● Google Drive: <a href="#">Link</a></li> <li>● Jira: <a href="#">Link</a></li> </ul>
2	Source Codes	We use Gitlab to store source code: <a href="#">Link</a>
3	Final Report Document	<a href="#">Final Report</a>
4	Test Cases Document	<a href="#">Test case document</a>

Table 71 - Deliverable Package

No.	Items	Sub-Items	Type	Version
Core Package				
1	STUD – Client Web Application Front-end	STUD_ClientWebApplication.zip	New	1.0.0
2	STUD – Web Application Back-end	STUD_WebApplicationAPI.zip	New	1.0.0
Database				
1	Client Application DB Script	STUD.script	New	1.0.0
Documents				
1	Project Introduction	Report1_Project Introduction.docx	New	1.0.0

2	Project Management Plan	Report2_Project Management Plan.docx	New	1.0.0
3	Software Requirement Specification	Report3_Software Requirement Specification.docx	New	1.0.0
4	Software Design Document	Report4_Software Design Document.docx	New	1.0.0
5	Test Document	Report5_Test Document.docx	New	1.0.0
6	Software User Guides	Report6_Software User Guides.docx	New	1.0.0
7	Final Project Report	Report7_Final Project Report.docx	New	1.0.0

*Table 72 - Deliverable Package*

## 2. Installation Guides

### 2.1 System Requirements

#### 2.1.1 Web Application

PC	Minimum	Recommended
Internet Connection	Cable, Wifi (4Mbps)	Cable, Wifi (8Mbps)
Processor	Intel Core i3 1.4Ghz	Intel Core i7 2.5Ghz
Memory	2GB RAM	4GB RAM up
Storage	2GB	4GB up
Web Browser	Chrome (v69 or higher)	Chrome latest stable version

*Table 73 - Web Application System Requirements*

#### 2.1.2 Mobile Application

Mobile	Minimum	Recommend
Internet connection	Wifi	LAN, Wifi (16Mbps)
Processor	Kirin 659	Snapdragon 712
Memory	2GB RAM	4GB RAM up
STORAGE	2GB	4GB up

*Table 74 - Mobile Application System Requirements*

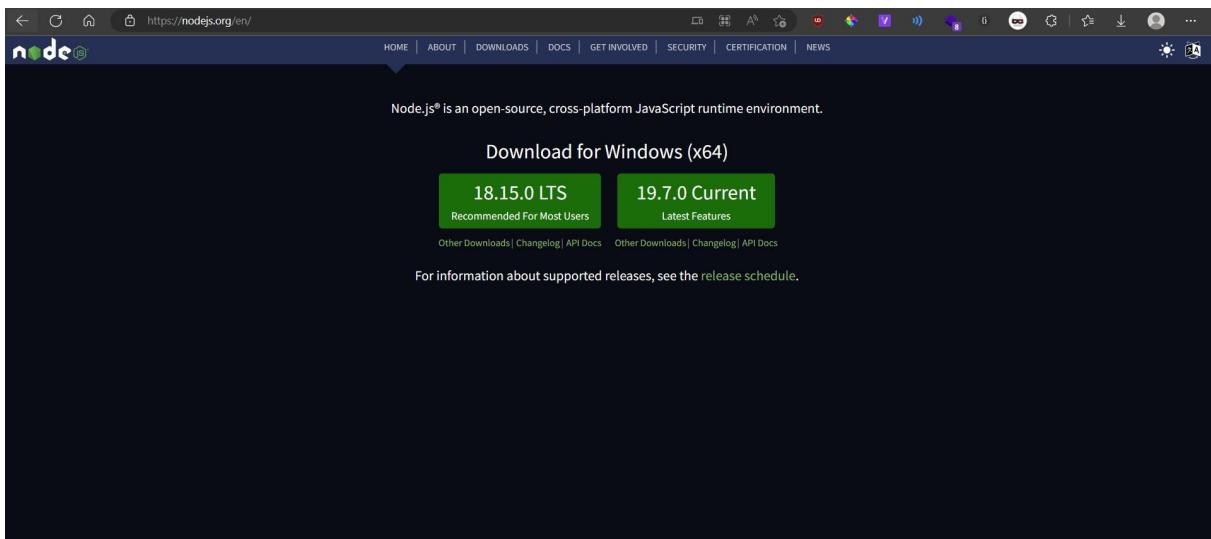
### 2.2 Installation Instruction

- Download and install Nodejs v19.5.0 or higher
- Download and install PostgreSQL 14
- Download and install Visual Studio Code
- Download and install Git
- Download and install Android Studio
- Download and install DBeaver
- Operating system: Windows 10 or higher

## 2.2.1. Web Admin application

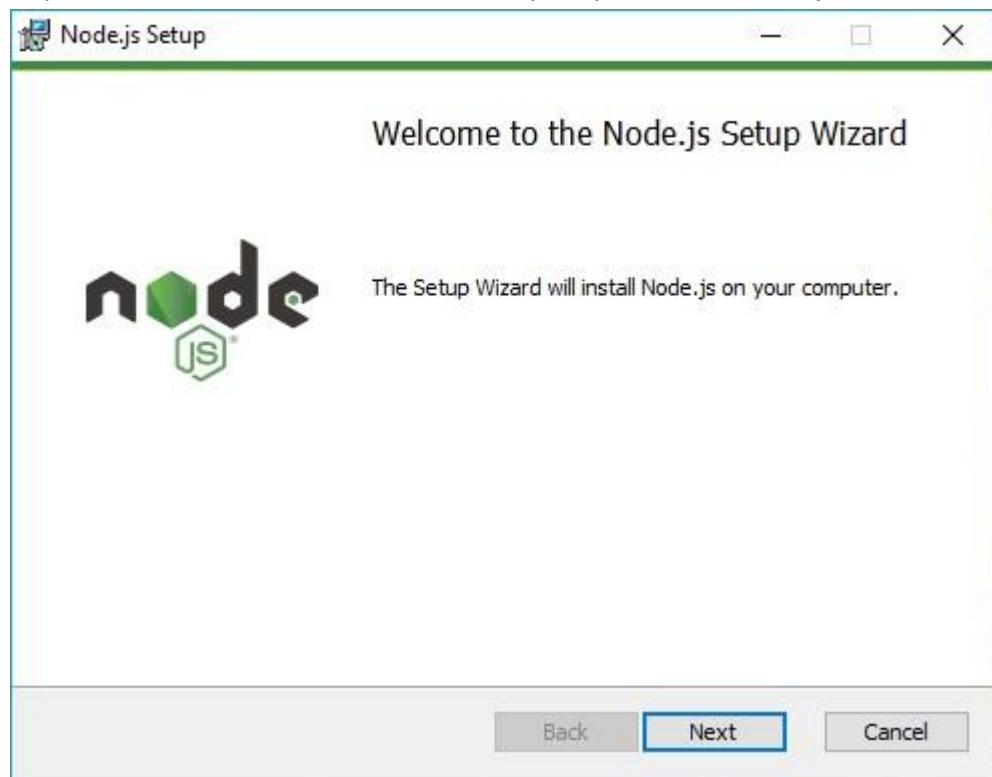
### 1. Install Node.js

Step 1: Go to the Node.js website and download the installer for your operating system. You have to download Node.js with the minimum version is 14.6.0



**Figure 33 - Node.js website**

Step 2: Run the installer and follow the prompts to install Node.js.



**Figure 34 - Node.js setup**

Step 3: To verify that Node.js is installed correctly, open your terminal or command prompt and run the following command: `node -v`. This should output the version number of Node.js that you just installed.

- **Note:** If you have an earlier version of Node.js installed, you may need to uninstall it before installing the new version.

```
| PS D:\FPT Study\Capstone Project\Code\study-together-fe> node -v  
| v18.17.1
```

**Figure 35 - Verifying Node.js Installation**

## 2. Install a package manager

There are some ways to install package managers such as npm, yarn or `yarn`. In this guide, we will use `yarn`.

Step 1: Open your terminal or command prompt.

Step 2: Run the following command to install `yarn`: `npm i -g yarn`. This will install the latest version of `yarn` globally on your system.

```
| PS D:\FPT Study\Capstone Project\Code\study-together-fe> npm install -g yarn  
| changed 1 package in 696ms
```

**Figure 36 - Yarn Installation**

Step 3: To verify that `yarn` is installed correctly, run the following command: `yarn --version`. This should output the version number of `yarn` that you just installed.

```
| PS D:\FPT Study\Capstone Project\Code\study-together-fe> yarn --version  
| 1.22.21
```

**Figure 37 - Verifying Yarn Installation**

## 3. User Manual

### 3.1 Overview

The Study Together Center Management System web application serves as a platform for all university students to efficiently find various ranges of courses or create their own courses in order to make income. Members can seamlessly explore available courses and refine their search by applying filters. They can also access detailed information about courses and its instructor, aiding their decision-making process. The web application enables members to study what they want to as well as giving others lessons about specific fields of study, manage their own courses, organise their time with timetable, take attendance if they are an instructor of a course, feedback as a member of the course, rate courses. Additionally, the web application provides identity verification, profile management and transactions like deposits, withdrawals and viewing history transactions, notification, management skills, request skills, view certifications.

The Mobile App provides the same features as the web app for members only to easily manage their learning process, schedule. All the actions include exploring courses, finding courses using search engines and filter systems, organising timetables, enroll courses. Additionally, the mobile app provides identity verification, profile management, transactions, and notification. However, some features from the web app will not be included in the mobile app such as creating a new course for instructing, requesting skills.

The Web App for Expert and Admin provides administrators and experts with comprehensive control over the entire Study Together platform. This app serves as a central hub for managing user accounts, courses, skills, majors, subjects. The financial data and statistics are readily accessible. It offers a platform for experts to participate in the process of approving member requests such as skills, opening new courses, creating new skills, and subjects. For Admin, the web app reflects all the statistics data in the most accurate way and is easy to analyze. Additionally, Admin at the same time can manage user accounts, in this case it will be Members and Experts, majors, transactions. Admin have privileges of refunding money to all members in the course that has finished its progress.

### 3.2 Workflow 1: Authentication Workflow

- **Purpose:** This workflow ensures that members can seamlessly register and login into the STUD platform.
- **Steps**

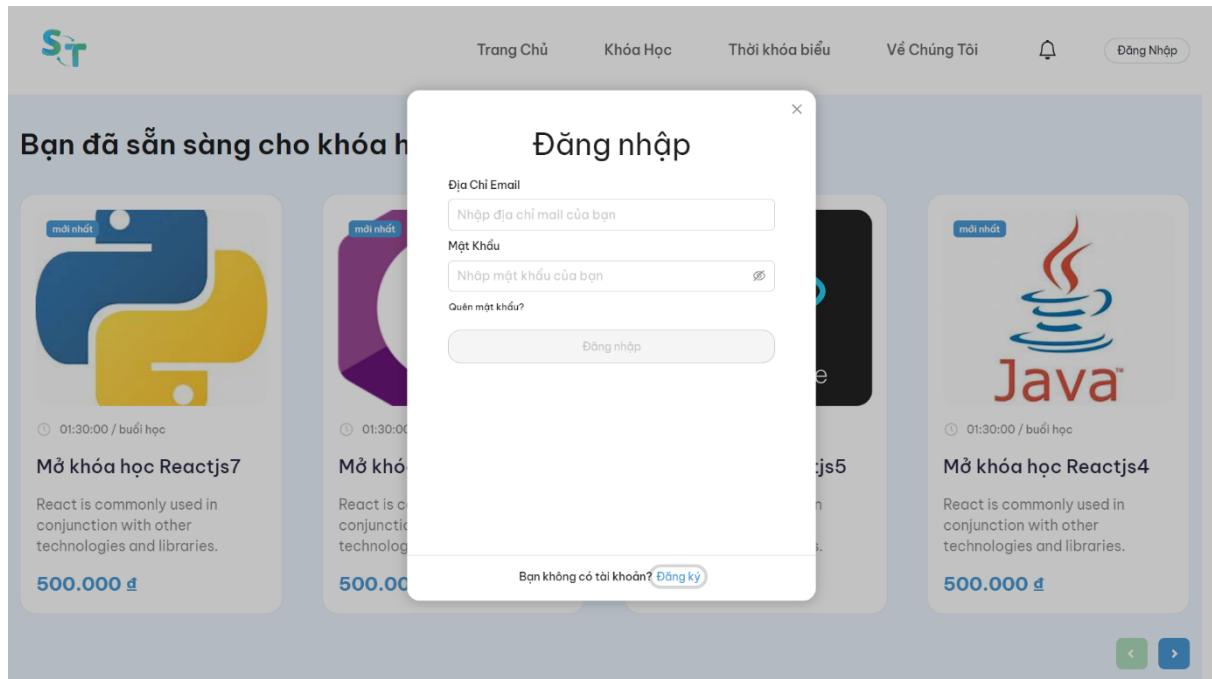
#### 1. Member Registration

- Open STUD application (Web/Mobile) through url <https://studytogetherfe.vercel.app/> then press “Đăng Nhập”

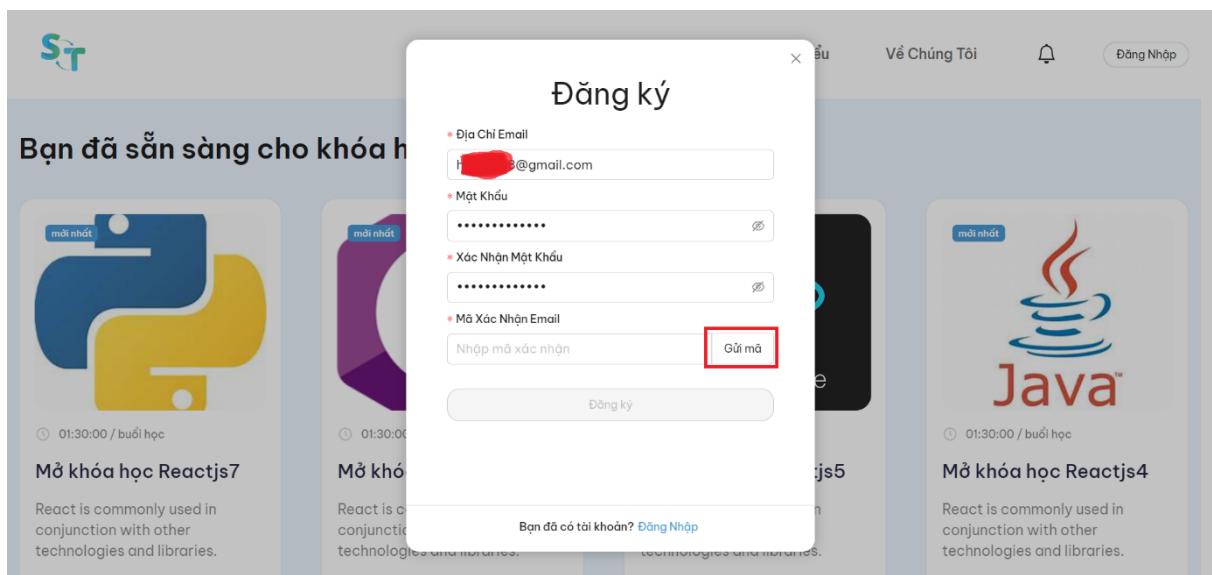
The screenshot shows the STUD web application's login interface. At the top, there is a navigation bar with the logo 'STUD', followed by links for 'Trang Chủ', 'Khóa Học', 'Thời khóa biểu', 'Về Chúng Tôi', a bell icon, and a red-bordered 'Đăng Nhập' (Login) button. Below the navigation bar, a message in Vietnamese reads 'Bạn đã sẵn sàng cho khóa học tiếp theo chưa?'. Four course cards are displayed below this message, each featuring a technology logo and a 'mới nhất' (newest) badge. The courses are: 'Mở khóa học Reactjs7' (Reactjs7), 'Mở khóa học Reactjs6' (Reactjs6), 'Mở khóa học Reactjs5' (Reactjs5), and 'Mở khóa học Reactjs4' (Reactjs4). Each card also includes a duration indicator (e.g., 01:30:00 / buổi học) and a descriptive text about React's common usage.

Mô hình	Tên khóa học	Độ dài	Mô tả
mới nhất	Mở khóa học Reactjs7	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.
mới nhất	Mở khóa học Reactjs6	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.
mới nhất	Mở khóa học Reactjs5	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.
mới nhất	Mở khóa học Reactjs4	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.

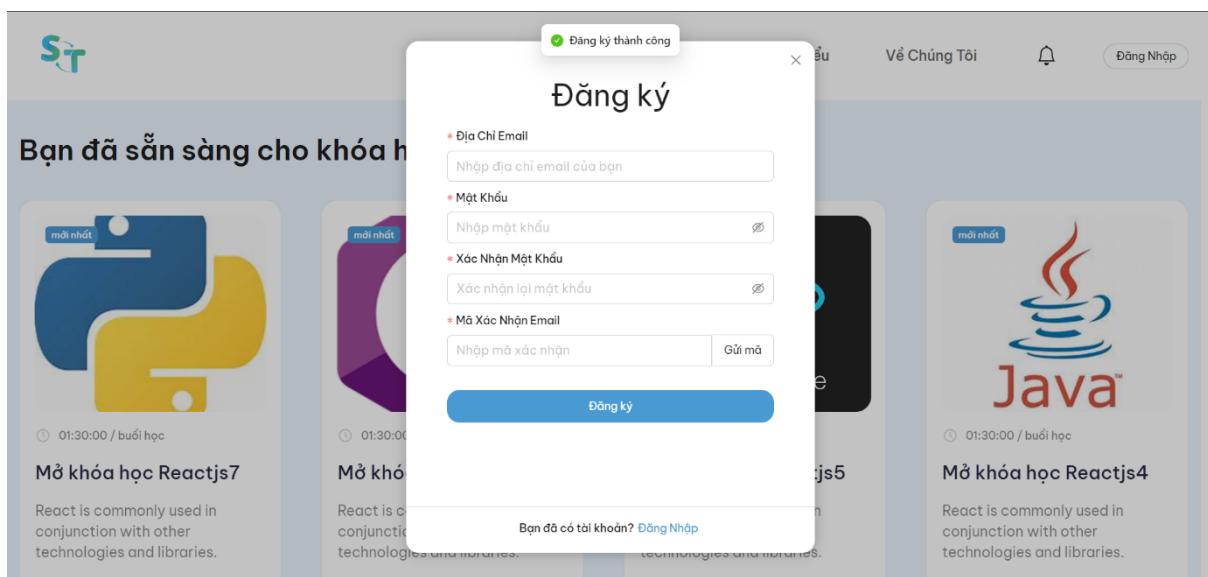
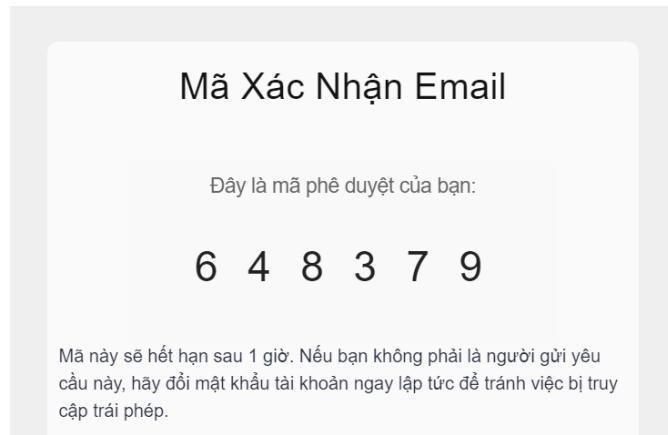
- Click on "Đăng ký"



- Input account information such as Email Address, Password, Confirm Password and press “Gửi mã”:

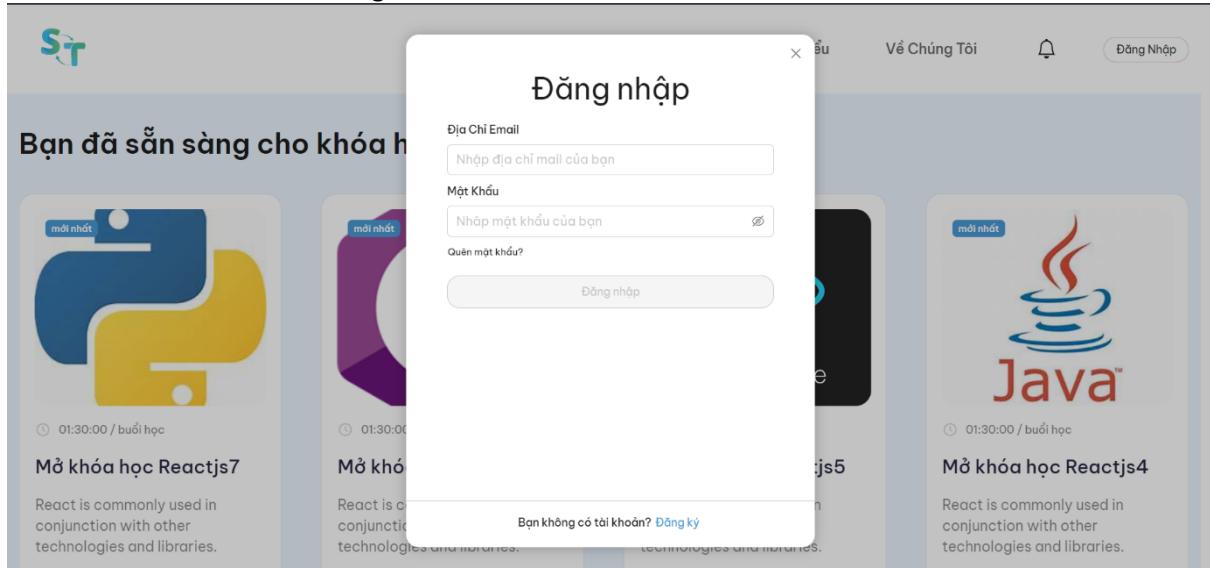


- Check email for verification code, enter verification code and press “Đăng Ký”:

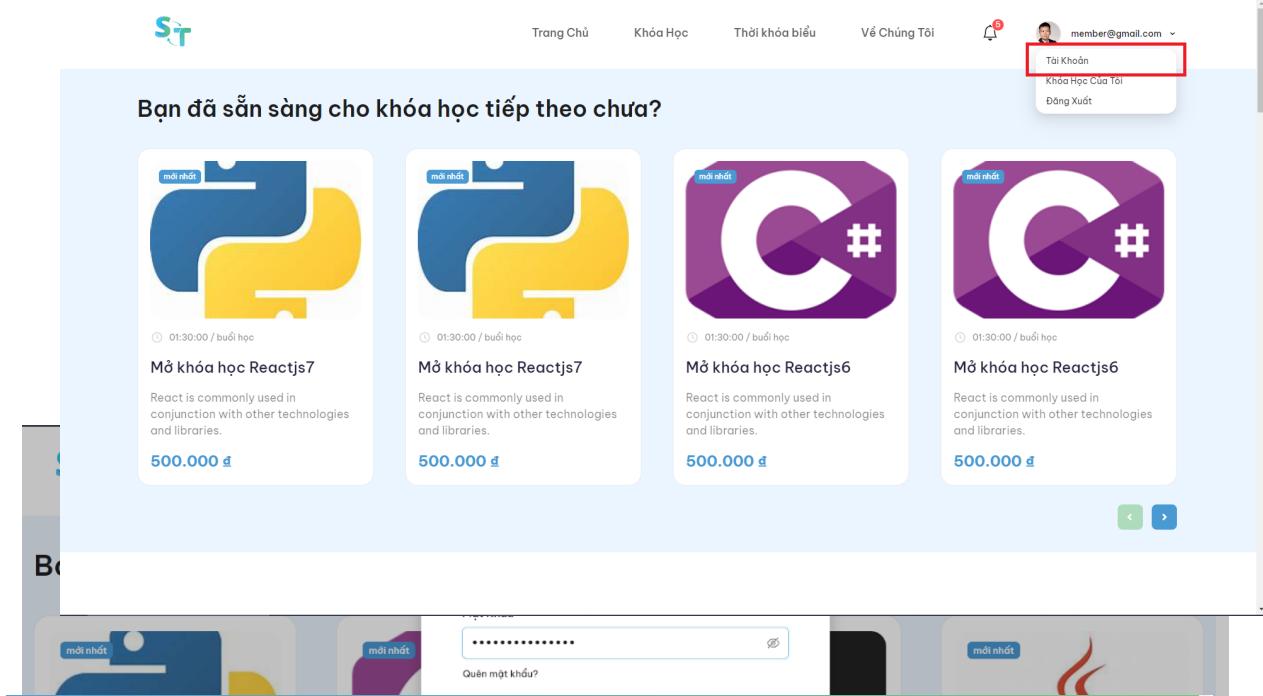


## 2. Member login

- Switch back to login from:



- Input email address, password and press “Đăng Nhập”:
- Hover to profile avatar or email address in the header, click on “Tài Khoản” menu in the dropdown menu:



The screenshot shows the 'Thông Tin Tài Khoản' (Account Information) page. On the left, there's a sidebar with navigation links: 'Thông Tin Tài Khoản' (selected), 'Vi Tài Khoản', 'Kỹ Năng', 'Đánh Giá', and 'Chứng Chỉ'. The main area displays a user profile for 'Nhiên Trung' (Female). The profile includes:
 

- Họ Võ Tên: Nhiên Trung
- Giới Tính:  Nữ
- Số Điện Thoại: 123000000
- Địa Chỉ: 72C khu dân cư 19/8, KP tay B, Dĩ An, Bình Dương, Việt Nam
- Ngày Sinh: 1960-03-16
- Ảnh Đại Diện: [BROWSE](#) [UPLOAD](#)

 A red box highlights the 'Cập Nhật' (Update) button at the bottom right of the form.

- Enter profile information including name, gender, phone number, address, date of birth, avatar image then click “Cập Nhật”:
- After completely initializing the account profile, members can use its account to perform most of the system features.

### 3.3 Workflow 2: Become an instructor of a course workflow.

- Purpose: This workflow ensures that members can create their own course for instructing.
- Steps:

#### 1. Requesting skill

- Hover to account's avatar or email address, select “Tài Khoản” menu from the dropdown:



Trang Chủ

Khóa Học

Thời khóa biểu

Về Chúng Tôi



member@gmail.com

Tài Khoản

Khóa Học Của Tôi

Đăng Xuất

**Bạn đã sẵn sàng cho khóa học tiếp theo chưa?**

01:30:00 / buổi học

**Mở khóa học Reactjs7**

React is commonly used in conjunction with other technologies and libraries.



01:30:00 / buổi học

**Mở khóa học Reactjs6**

React is commonly used in conjunction with other technologies and libraries.



01:30:00 / buổi học

**Mở khóa học Reactjs5**

React is commonly used in conjunction with other technologies and libraries.



01:30:00 / buổi học

**Mở khóa học Reactjs4**

React is commonly used in conjunction with other technologies and libraries.

- Select “Kĩ Năng” tab menu:

## Hồ Sơ Tài Khoản

Thông Tin Tài Khoản

### Thông Tin Tài Khoản

Vì Tài Khoản

Kĩ Năng

Đánh Giá

Chứng Chỉ

**Nhiên Trung**Họ và Tên:  TrungGiới Tính:  Nam  NữSố Điện Thoại: 

- Click on “Thêm Kĩ Năng” button:

Thông Tin Tài Khoản

Vì Tài Khoản

Kĩ Năng

Đánh Giá

Chứng Chỉ

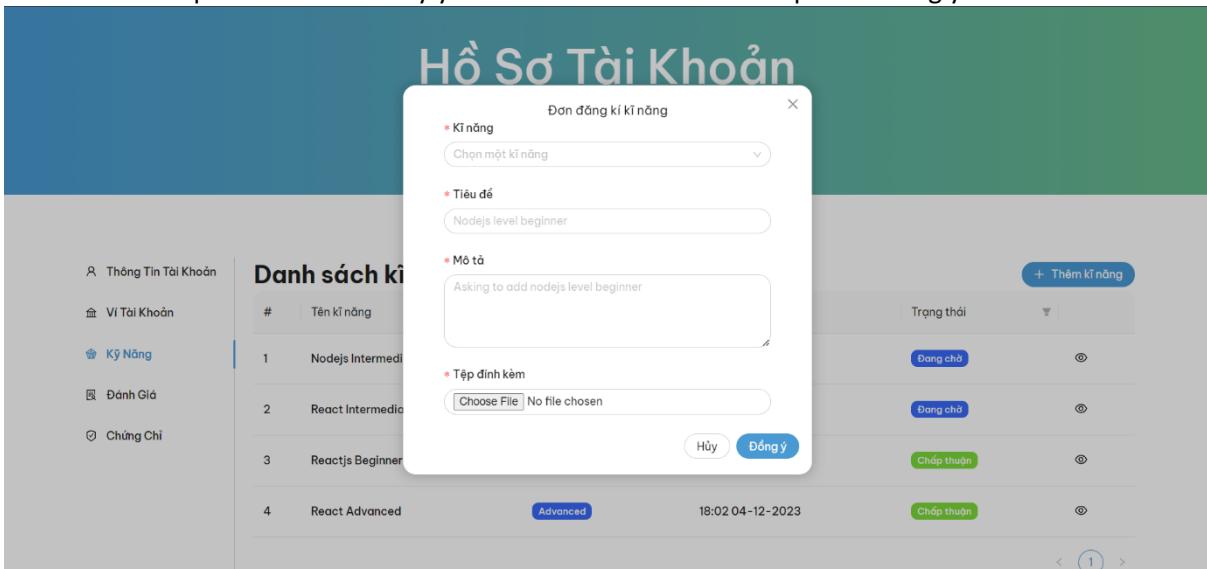
### Danh sách kĩ năng của người dùng

**+ Thêm kĩ năng**

#	Tên kĩ năng	Trình độ	Ngày duyệt	Trạng thái	
1	Nodejs Intermediate	Intermediate		Đang chờ	
2	React Intermediate	Intermediate		Đang chờ	
3	Reactjs Beginner	Beginner	22:25 04-12-2023	Chấp thuận	
4	React Advanced	Advanced	18:02 04-12-2023	Chấp thuận	

&lt; 1 &gt;

- Select the skill that require for creating a new course, type in title, description and upload a file to verify your abilities in that skill then press “Đồng ý”:



After requesting a skill successfully, members will have to wait for the expert of that skill to approve the request.

## 2. Create a course:

- Hover to profile avatar or email address and select “Khóa Học Của Tôi” menu in the dropdown:

Bạn đã sẵn sàng cho khóa học tiếp theo chưa?

mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs7

React is commonly used in conjunction with other technologies and libraries.

mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs6

React is commonly used in conjunction with other technologies and libraries.

mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs5

React is commonly used in conjunction with other technologies and libraries.

mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs4

React is commonly used in conjunction with other technologies and libraries.

- Scroll down to the “Các Khóa Học Mẫu” section then choose a desired course

## Các Khóa Học Mẫu

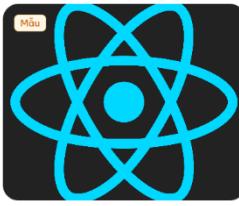


01:30:00 / buổi học

Template dạy Nodejs  
level beginner

Nodejs is commonly used in conjunction with other technologies and libraries.

400.000 ₫~600.000 ₫



01:30:00 / buổi học

Template dạy ReactJS  
level beginner

React is commonly used in conjunction with other technologies and libraries.

400.000 ₫~600.000 ₫

template:

- Click on “Đăng Kí Mở Khóa Học” Button:



### Template dạy Nodejs level beginner

Nodejs is commonly used in conjunction with other technologies and libraries.

400.000 ₫ ~  
600.000 ₫

Đăng Kí Mở Khóa Học

- Enter all the necessary informations of a course then press “Đăng Kí” button:

**Đơn Đăng Kí Mở Lớp**

\* Tên Khóa Học: Khóa Học Nodejs bởi Dũng

\* Mô Tả Khóa Học: Đây là lớp học Nodejs cơ bản dành cho người muốn học về Nodejs

\* Tuần Bắt Đầu Dạy: 24/12/2023 ~ 30/12/2023

Giá Tiền: 500000

Học Trực Tuyến:

\* Buổi Trong Tuần: 2

\* Tổng Số Buổi: 20

\* Ngày 1: Monday 25/12

\* Giờ Bắt Đầu 1: 07:30

\* Ngày 2: Thursday 28/12

\* Giờ Bắt Đầu 2: 08:30

**Chuyên Đề 1**

Tên Chuyên Đề: Chuyên Đề Đầu Tiên

Mô Tả: Tìm hiểu về Nodejs

**Chủ Đề 1**

Tên Chủ Đề: Chủ Đề Đầu Tiên

Mô Tả: Hướng dẫn cài đặt môi trường Nodejs

+ Thêm Chủ Đề

BROWSE UPLOAD

Kéo thả (các) tệp vào đây hoặc nhập để chọn (các) tệp

After creating a course successfully, members will have to wait for the expert to approve the request of creating a new course.

### 3.4 Workflow 3: Course Enrollment

- Purpose: This workflow ensures that members can complete the process of finding a desired course and enroll in it.
- Steps:

#### 1. Adding money to wallet:

- Hover to profile's avatar or email address then select “Tài Khoản” menu in the dropdown menu:

The screenshot shows a web-based learning platform. At the top, there is a navigation bar with links: Trang Chủ, Khóa Học, Thời khóa biểu, Về Chúng Tôi, and a user profile icon labeled "member@gmail.com". A red box highlights the "Tài Khoản" option in the dropdown menu that appears when hovering over the user icon. Below the navigation, a message says "Bạn đã sẵn sàng cho khóa học tiếp theo chưa?". There are four course cards displayed:

- Mở khóa học Reactjs7: Python logo, 01:30:00 / buổi học. Description: React is commonly used in conjunction with other technologies and libraries.
- Mở khóa học Reactjs6: C# logo, 01:30:00 / buổi học. Description: React is commonly used in conjunction with other technologies and libraries.
- Mở khóa học Reactjs5: React Native logo, 01:30:00 / buổi học. Description: React is commonly used in conjunction with other technologies and libraries.
- Mở khóa học Reactjs4: Java logo, 01:30:00 / buổi học. Description: React is commonly used in conjunction with other technologies and libraries.

- Select “Ví Tài Khoản” tab menu:

The screenshot shows the "Hồ Sơ Tài Khoản" (Account Profile) page. The title "Hồ Sơ Tài Khoản" is prominently displayed at the top. Below the title, there is a sidebar with navigation links: Thông Tin Tài Khoản (selected), Ví Tài Khoản (highlighted with a red box), Kỹ Năng, Đánh Giá, and Chứng Chỉ. The main content area displays a placeholder image of a person and the name "Nhiên Trung". Form fields include: Họ và Tên: Nhiên Trung, Giới Tính: Nam (radio button), Số Điện Thoại: 123000000.

The screenshot shows the "Thông Tin Tài Khoản" (Account Information) form. The left sidebar has a red box around the "Ví Tài Khoản" link. The main form fields are:

- Họ và Tên: Nhiên Trung
- Giới Tính:  Nam  Nữ
- Số Điện Thoại: 123000000

- Click on “Nạp Tiền” button to add money to account wallet:

The screenshot shows the 'Số Dư Tài Khoản' (Account Balance) page. At the top right, the balance is displayed as 2.500.000đ. Below it is a blue button labeled 'Nạp Tiền'. A red rectangular box highlights this button. To the left of the balance, there is a table showing transaction history:

Ngày Giao Dịch	Số Tiền Giao Dịch	Nội Dung Giao Dịch	Ngân Hàng Thanh Toán	Mã Giao Dịch
07-12-2023 03:12:04	-500.000đ	Thanh toán cho mã GD:07081204. Số tiền 500000VND.	Wallet	07081204
04-12-2023 11:30:43	-500.000đ	Thanh toán cho mã GD:04233043. Số tiền 500000VND.	Wallet	04233043
04-12-2023 10:43:34	-500.000đ	Thanh toán cho mã GD:04224334. Số tiền 500000VND.	Wallet	04224334
04-12-2023 10:35:38	+4.000.000đ	Nhận lương từ khóa học Mô khóa học Reactjs6	Wallet	04223536

- Choose a payment method and enter amount of money wanted to add:

A modal dialog box titled 'Chọn phương thức thanh toán' (Select payment method) is overlaid on the account balance page. It contains two buttons: 'VNPay' and 'ZALOPAY'. Below these buttons is a text input field labeled 'Số Tiền Giao Dịch:' containing '100.000đ'. The background of the dialog box is white, while the rest of the page has a light gray overlay. The payment method 'Cổng thanh toán VNPayQR' is selected. The rest of the page shows the same transaction history as the previous screenshot.

After completing the payment process, the system will redirect to the Successful Screen to confirm that the adding money process is completed.

## 2. Enroll a course:

- Go to “Khóa Học” tab in the header menu:

The screenshot shows a website interface with a navigation bar at the top. The 'Khóa Học' tab is highlighted with a red box. Other tabs include 'Trang Chủ', 'Thời khóa biểu', 'Về Chúng Tôi', and a user profile with a notification count of 5.

**Bạn đã sẵn sàng cho khóa học tiếp theo chưa?**

Four course cards are displayed:

- Mở khóa học Reactjs1**  
React is commonly used in conjunction with other technologies and libraries.
- Mở khóa học Reactjs6**  
React is commonly used in conjunction with other technologies and libraries.
- Mở khóa học Reactjs5**  
React is commonly used in conjunction with other technologies and libraries.
- Mở khóa học Reactjs4**  
React is commonly used in conjunction with other technologies and libraries.

- Select a desired course from the list:

The screenshot shows a list of courses under the heading 'Các Khóa Học'. The first course is selected:

**Mở khóa học Reactjs1**  
React is commonly used in conjunction with other

Filtering options are visible at the top: 'Hình Thức', 'Ngành', and 'Môn'.

- Click on “Đăng Ký Học” to see the schedule of that course:

The image shows a course landing page. At the top, there's a large blue 'React' logo with a smaller atom icon to its right. Below the logo, the course title 'Mở khóa học Reactjs2' is displayed in large blue text. To the right of the title is a blue button labeled 'Đăng Ký Học'. Below the title, it says 'React is commonly used in conjunction with other technologies and libraries.' On the left, there's a small profile picture and the name 'Liên Nguyễn'. The price '500.000 ₫' is shown in bold black text at the bottom right.

- Click “Đăng Ký Học” button to enroll the course:

The image shows a weekly calendar from Monday to Sunday. Several days have blue boxes indicating course sessions. A red box highlights the 'Đăng Ký Học' button on the Wednesday session. Below the calendar, the text 'React is commonly used in conjunction with other technologies and libraries.' is visible.

06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	01	02	03
Mở khóa học Reactjs2 [09:00:00 - 10:30:00] Offline						
04	05	06	07	08	09	10

After successfully enrolled in a course, the system will automatically pay for the course with the account wallet and the schedule will be added to the account timetable.

### 3.5 Workflow 4: Attendance

- Purpose: this workflow ensures that members can review its timetable and for being instructor is to take attendance of their classes.
- Steps:

## 1. Take attendance:

- Click on “Thời Khóa Biểu” tab menu:

[Trang Chủ](#) [Khóa Học](#) [Thời khóa biểu](#) [Về Chúng Tôi](#) [!\[\]\(cbb06433b823732c4c5fa2558990b4d0\_img.jpg\) member@gmail.com](#)

## Bạn đã sẵn sàng cho khóa học tiếp theo chưa?



🕒 01:30:00 / buổi học

**Mở khóa học Reactjs7**

React is commonly used in conjunction with other technologies and libraries.

**500.000 ₫**



🕒 01:30:00 / buổi học

**Mở khóa học Reactjs7**

React is commonly used in conjunction with other technologies and libraries.

**500.000 ₫**



🕒 01:30:00 / buổi học

**Mở khóa học Reactjs6**

React is commonly used in conjunction with other technologies and libraries.

**500.000 ₫**



🕒 01:30:00 / buổi học

**Mở khóa học Reactjs6**

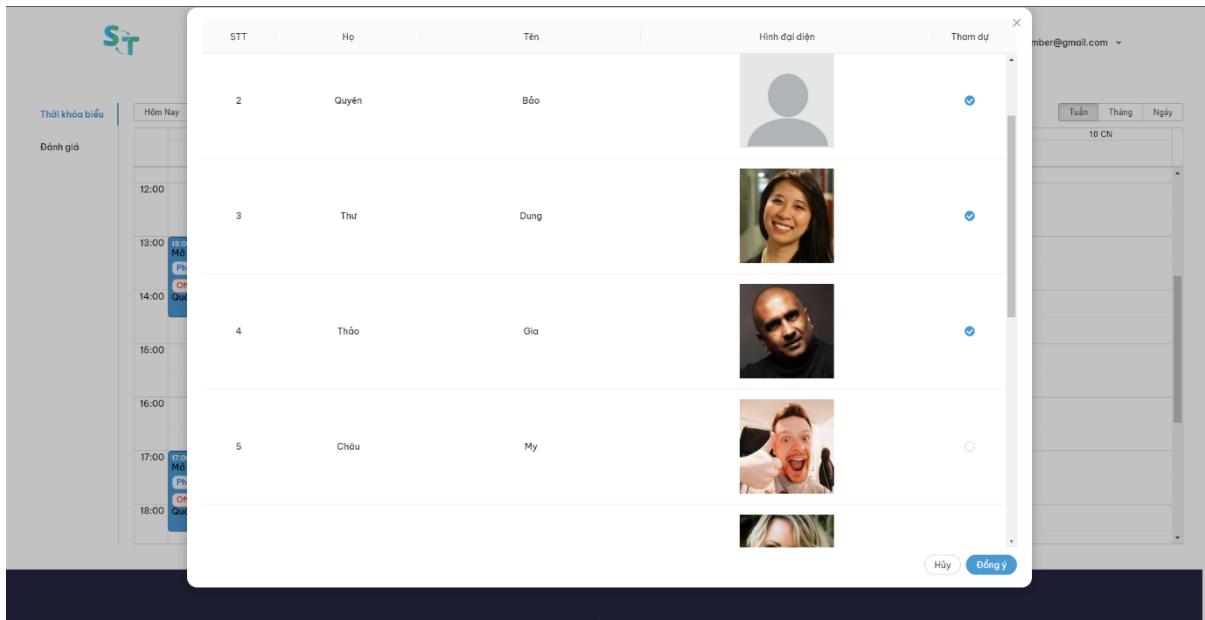
React is commonly used in conjunction with other technologies and libraries.

**500.000 ₫**

- Click on event that has “Nhấn để điểm danh” label to open attendance table form:

- Check on member that attend that course that day and click “Đồng Ý”:



## 2. View Attendance

- Hover to profile avatar or email address then choose “Tài Khoản” menu in the dropdown menu:

member@gmail.com
 

- [Tài Khoản](#)
- [Khóa Học Của Tôi](#)
- [Đăng Xuất](#)

Bạn đã sẵn sàng cho khóa học tiếp theo chưa?



mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs7

React is commonly used in conjunction with other technologies and libraries.



mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs6

React is commonly used in conjunction with other technologies and libraries.



mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs5

React is commonly used in conjunction with other technologies and libraries.



mới nhất

01:30:00 / buổi học

Mở khóa học Reactjs4

React is commonly used in conjunction with other technologies and libraries.

- Select “Điểm Danh” tab menu:

# Hồ Sơ Tài Khoản

Danh Sách Các Khoa Học					
Khoa đang học		#	Ngày học	Thời gian	Phòng
Mở khóa học Reactjs1		1	Ngày bắt đầu 10-12-2023	07:00:00-08:30:00	Trống
Mở khóa học Reactjs2		2	Ngày bắt đầu 10-12-2023	07:00:00-08:30:00	Trống
Khoa đang dạy		#	Ngày học	Thời gian	Trạng thái điểm danh

- Click on an enrolled course to view course attendance report:

Khoa đang học					
Mở khóa học React123adsf		#	Ngày học	Thời gian	Phòng
Mở khóa học Reactjs7		1	Ngày bắt đầu 10-12-2023	17:00:00-18:30:00	102
Mở khóa học Reactjs6		2	Ngày bắt đầu 10-12-2023	17:00:00-18:30:00	102
Mở khóa học Reactjs5		3	Ngày bắt đầu 10-12-2023	17:00:00-18:30:00	102
Khoa đang dạy		#	Ngày học	Thời gian	Trạng thái điểm danh
		5	04-12-2022	17:00:00-18:30:00	Trống
		6	05-12-2022	17:00:00-18:30:00	102

- Click on a created course to view member in course attendance report:

Khoa đang học						
Mở khóa học Reactjs1		#	Học sinh	30-11-22	01-12-22	02-12-22
Mở khóa học Reactjs2		1	An Ánh	OK	OK	OK
Mở khóa học Reactjs2		2	Anh Diễm	OK	OK	OK
Mở khóa học Reactjs2		3	Bảo Quyên	OK	OK	OK
Mở khóa học Reactjs2		4	Chi Kiều	OK	OK	OK
Mở khóa học Reactjs2		5	Chi Châu	OK	OK	OK
Mở khóa học Reactjs2		6	Dung Thư	OK	OK	OK
Mở khóa học Reactjs2		7	Gia Thảo	OK	OK	OK
Mở khóa học Reactjs2		8	Hoa Duyên	OK	OK	OK
Mở khóa học Reactjs2		9	Kim Huyền	OK	OK	OK
Mở khóa học Reactjs2		10	Kim Thảo	OK	OK	OK

### 3.6 Workflow 5: Feedback

- Purpose: this workflow ensures that members can give feedback to their learning courses and view feedback as an instructor.
- Steps:

#### 1. Feedback course:

- Click on “Thời Khóa Biểu” tab menu:

The screenshot shows a user interface for a learning platform. At the top, there is a navigation bar with links: Trang Chủ, Khóa Học, Thời khóa biểu (highlighted with a red box), Về Chúng Tôi, and a user profile icon labeled member@gmail.com. Below the navigation bar, a message reads: "Bạn đã sẵn sàng cho khóa học tiếp theo chưa?". There are four course cards displayed, each with a "mới nhất" badge, a thumbnail, a title, a brief description, and a price of 500.000 ₫. The courses are: Mở khóa học Reactjs7, Mở khóa học Reactjs7, Mở khóa học Reactjs6, and Mở khóa học Reactjs6. Each card also includes a "React is commonly used in conjunction with other technologies and libraries." note. At the bottom right of the main content area, there are navigation arrows for the slide.

- Select “Đánh Giá” tab in the left sidebar:

The screenshot shows a software interface for managing course schedules. At the top, there are tabs for 'Trang Chủ', 'Khóa Học', 'Thời khóa biểu', 'Về Chúng Tôi', and a user profile with the email 'member@gmail.com'. Below the tabs is a navigation bar with 'Hôm Nay', 'Trước', 'Sau', and a date range 'thứ hai 04/12 - chủ nhật 10/12'. To the right of the date range are buttons for 'Tuần', 'Tháng', and 'Ngày'. The main area displays a grid of course slots. A red box highlights the 'Đánh giá' tab in the left sidebar. The grid shows various courses like 'Mô khai học Reactjs1' through 'Reactjs4' with details such as time (e.g., 07:00 - 08:30), room (e.g., Phòng 765 - TP HCM), and status (e.g., Offline). The grid has columns for 04 T2, 05 T3, 06 T4, 07 T5, 08 T6, 09 T7, and 10 CN.

- Select a course to give feedback:
- Fill in feedback response and click “Đánh Giá”:

## 2. View Feedback:

- Hover to profile avatar or email address then choose “Tài Khoản” menu in the dropdown menu:

The screenshot shows the software interface with the 'Tài Khoản' menu open. The menu includes options 'Khóa Học Của Tôi' and 'Đăng Xuất'. Below the menu, a section titled 'Bạn đã sẵn sàng cho khóa học tiếp theo chưa?' lists four course cards. Each card features a logo, the course name, a duration, and a brief description. A red box highlights the 'Tài Khoản' button in the top right corner of the menu.

Mô khai học	Thời gian	Mô tả
Reactjs7	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.
Reactjs6	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.
Reactjs5	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.
Reactjs4	01:30:00 / buổi học	React is commonly used in conjunction with other technologies and libraries.

- Select tab “Đánh Giá” on the left sidebar:

The screenshot shows the 'Hồ Sơ Tài Khoản' (Account Profile) page. On the left, there is a sidebar with several tabs: 'Thông Tin Tài Khoản', 'Ví Tài Khoản', 'Kỹ Năng', 'Đánh Giá' (which is highlighted with a red box), and 'Chứng Chỉ'. The main content area is titled 'Đánh giá của người học' (Reviews from learners). It displays three course reviews:

- Mô khóa học Reactjs6 ★★★★☆ (2)  
React is commonly used in conjunction with other technologies and libraries.  
[Xem đánh giá](#)
- Mô khóa học Reactjs5 ★★★★☆ (1)  
React is commonly used in conjunction with other technologies and libraries.  
[Xem đánh giá](#)
- Mô khóa học Reactjs4 ★★★★★ (0)  
React is commonly used in conjunction with other technologies and libraries.  
[Xem đánh giá](#)

A navigation bar at the bottom indicates page 1 of 1.

- Click on “Xem Đánh Giá” button to view feedback of that course:

This screenshot is similar to the one above, showing the 'Hồ Sơ Tài Khoản' page with the 'Đánh Giá' tab selected. The 'Xem đánh giá' button for the first review (Reactjs6) is highlighted with a red box. The review content is identical to the previous screenshot.

This screenshot shows the 'Hồ Sơ Tài Khoản' page with the 'Đánh Giá' tab selected. A modal window titled 'Đánh giá của học viên' (Student review) is open, showing two reviews for the 'Reactjs6' course:

Học viên	Đánh giá	Thời gian
Học viên 1	★★★★☆	22/34/04/2023
123 ok	tuyệt	
Học viên 2	★★★★★	14/33/06/2023
tuyệt		

The main content area below the modal shows the 'Đánh giá của người học' section with the same three course reviews as the previous screenshots. The 'Xem đánh giá' button for the first review is visible.

### 3.7 Workflow 6: Expert & Admin Web Application Authorization

- Purpose: This workflow ensures that authorized users can access Expert & Admin Web App.
- Steps

#### 1. Login

- Access Expert & Admin Web App through url:  
<https://studytogetherfeadmin.vercel.app/>

Địa Chỉ Email

Mật Khẩu

Đăng nhập

- Enter Expert or Admin Account and press “Đăng Nhập”:

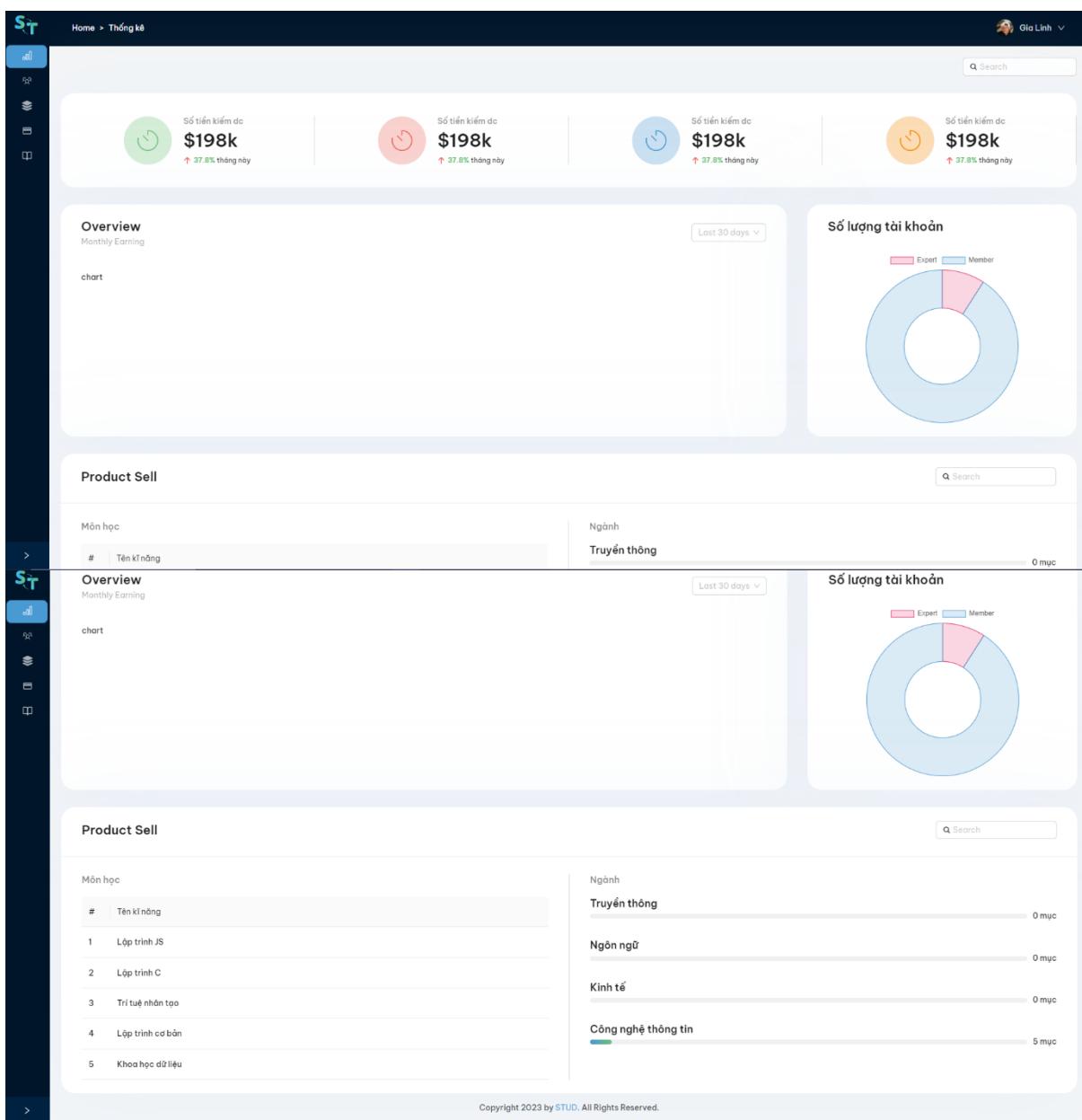
<p>Địa Chỉ Email</p> <input type="text" value="expert@gmail.com"/> <p>Mật Khẩu</p> <input type="password" value="*****"/>  <p>Đăng nhập</p>	<p>Địa Chỉ Email</p> <input type="text" value="admin@gmail.com"/> <p>Mật Khẩu</p> <input type="password" value="*****"/>  <p>Đăng nhập</p>
--	---

### 3.8 Workflow 7: Admin Web Application Dashboard

- Purpose: This workflow ensures that admin can view all the statistics and perform certain functions to adjust the system.
- Steps:

#### 1. View Dashboard:

- Select “Thống Kê” menu in the left sidebar:



#### 2. Manage user account:

- Select “Người Dùng” menu in the left sidebar:

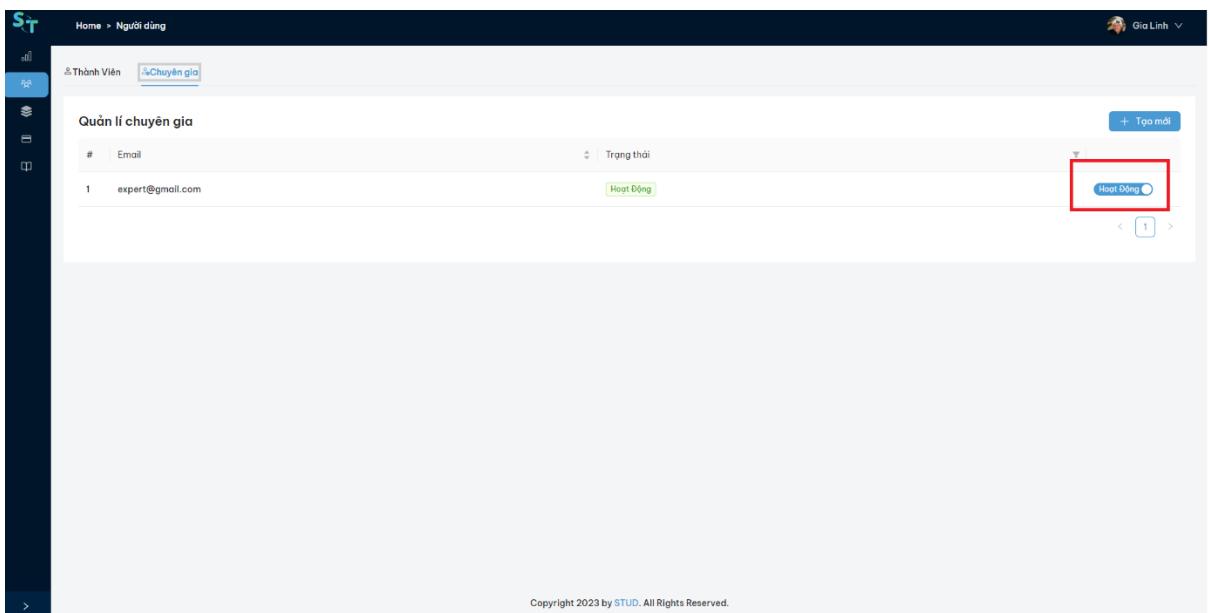
The screenshot shows a user management interface with a sidebar on the left containing icons for Home, User Management, and other sections. The main area is titled "Quản lý học viên" and lists 10 users with their email addresses. Each user entry includes a "Trạng thái" (Status) column with a green button labeled "Hoạt Động". A red box highlights the status button for the first user, hyst0608@gmail.com.

#	Email	Trạng thái
1	hyst0608@gmail.com	<span>Hoạt Động</span>
2	member20@gmail.com	<span>Hoạt Động</span>
3	member19@gmail.com	<span>Hoạt Động</span>
4	member18@gmail.com	<span>Hoạt Động</span>
5	member17@gmail.com	<span>Hoạt Động</span>
6	member16@gmail.com	<span>Hoạt Động</span>
7	member15@gmail.com	<span>Hoạt Động</span>
8	member14@gmail.com	<span>Hoạt Động</span>
9	member13@gmail.com	<span>Hoạt Động</span>
10	member12@gmail.com	<span>Hoạt Động</span>

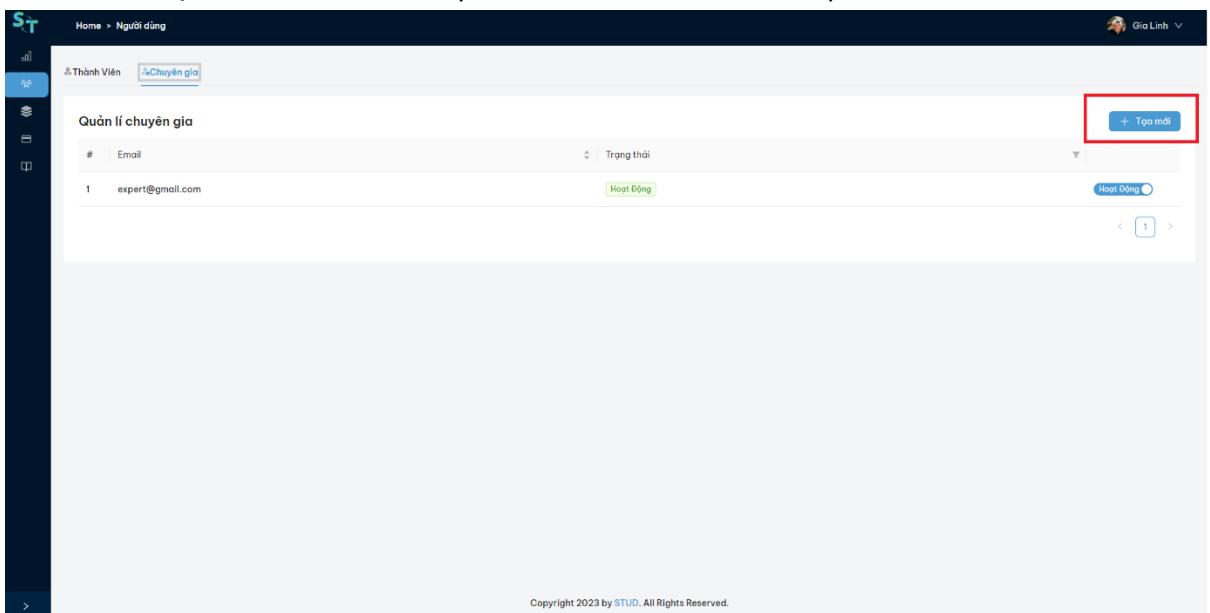
- Click on the switch to enable/disable user account:

This screenshot shows the same user management interface after the "Active" switch for user 1 has been clicked. The status button for user 1 now displays a blue color, indicating the account has been disabled. A red box highlights this changed status button.

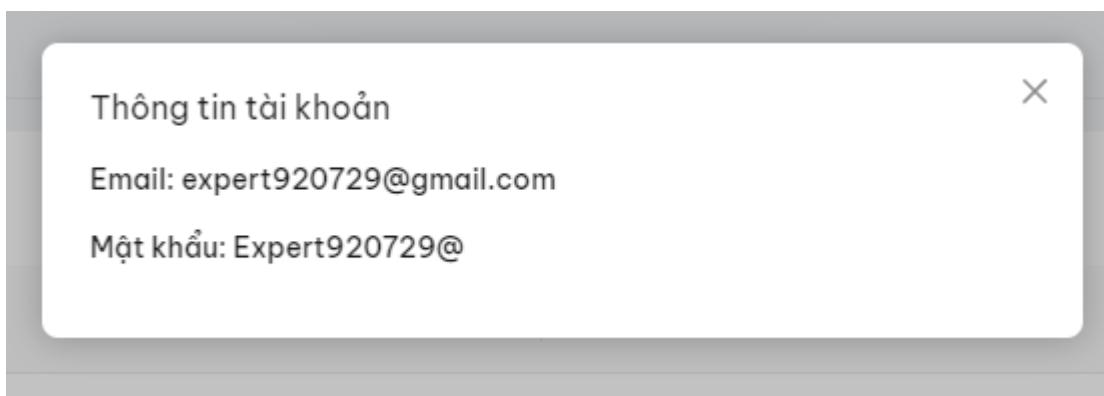
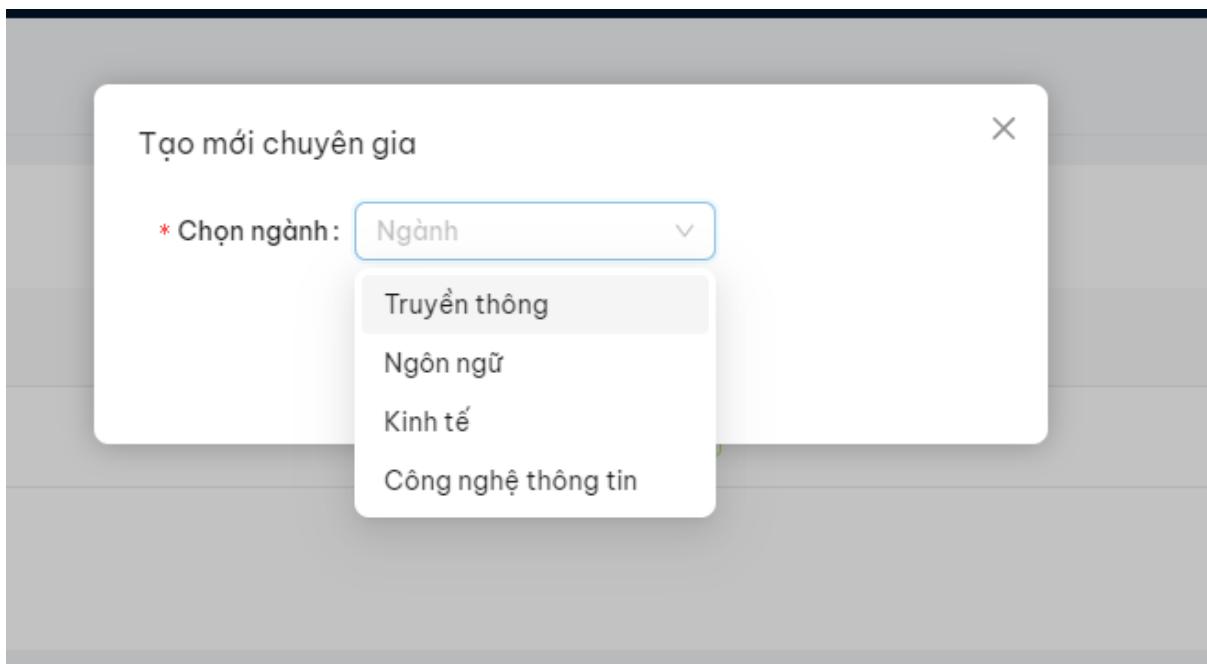
#	Email	Trạng thái
1	hyst0608@gmail.com	<span>Inactive</span>
2	member20@gmail.com	<span>Hoạt Động</span>
3	member19@gmail.com	<span>Hoạt Động</span>
4	member18@gmail.com	<span>Hoạt Động</span>
5	member17@gmail.com	<span>Hoạt Động</span>
6	member16@gmail.com	<span>Hoạt Động</span>
7	member15@gmail.com	<span>Hoạt Động</span>
8	member14@gmail.com	<span>Hoạt Động</span>
9	member13@gmail.com	<span>Hoạt Động</span>
10	member12@gmail.com	<span>Hoạt Động</span>



- Click on the “Tạo mới” button in “Chuyên Gia” tab to create a new expert:



- Select major for the new expert account and press “Lưu”:



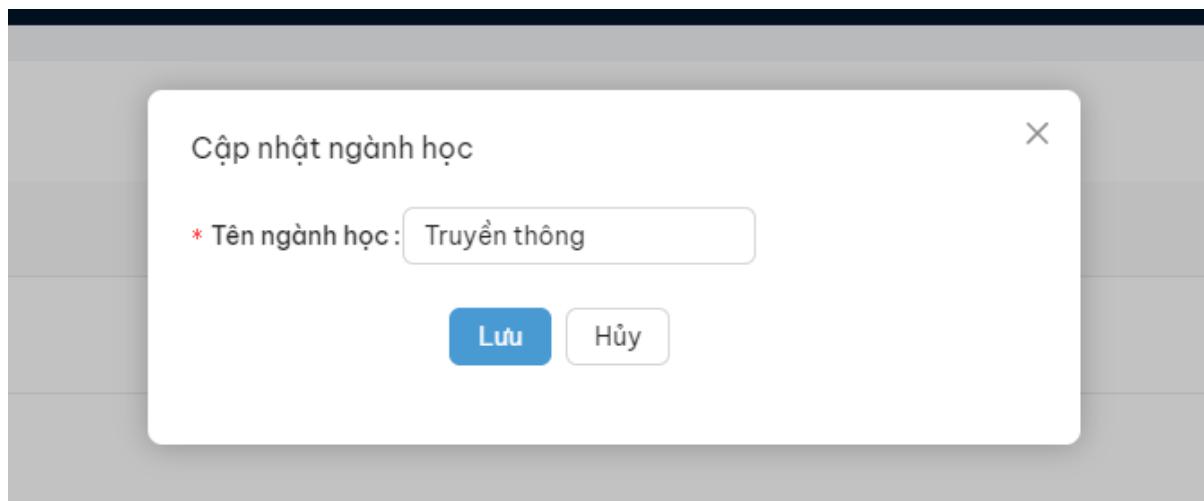
### 3. Manage Major:

- Select “Chuyên Ngành” Menu in the left sidebar:

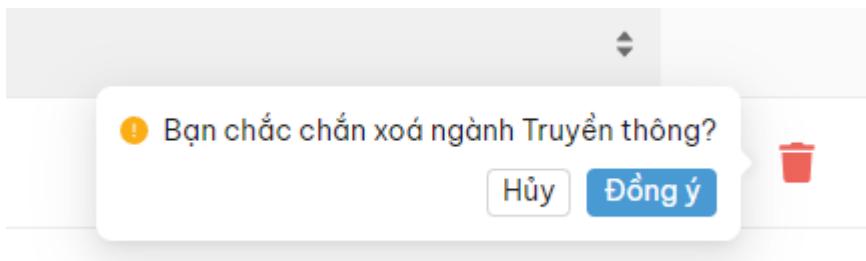
#	Tên ngành học	EDIT	DELETE
1	Truyền thông		
2	Ngôn ngữ		
3	Kinh tế		
4	Công nghệ thông tin		

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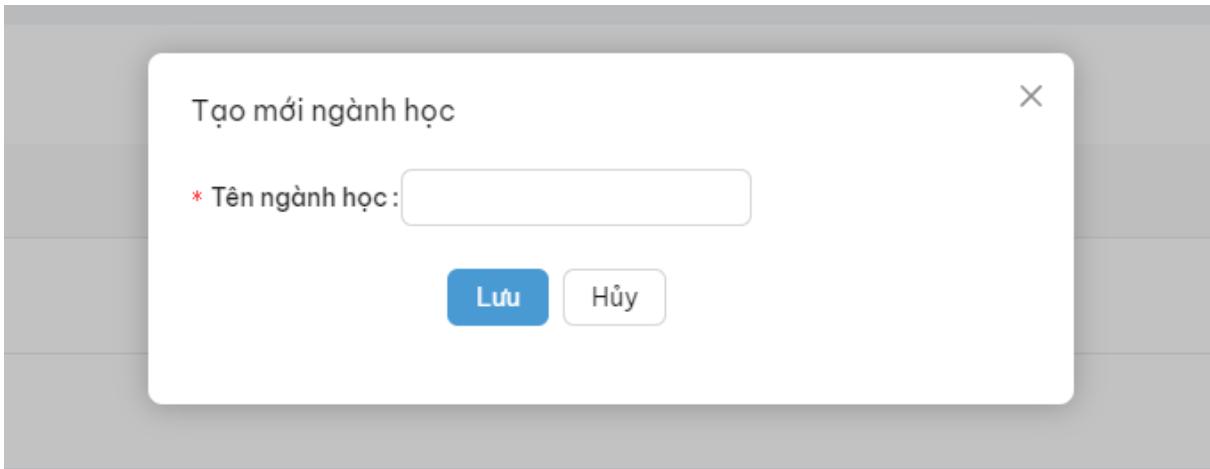
- Click on the pen icon to edit Major:



- Click on the trash bin icon to delete Major:



- Click on “Tạo Mới” button to create new major:



#### 4. Manage transactions:

- Click on “Giao Dịch” menu in the left sidebar:

#	Mô tả	Ngày giao dịch	Loại giao dịch	Phương pháp giao dịch	Mã giao dịch	Số tiền
1	Thanh toán cho mã GD:07081204. Số tiền 500000VND.	07-12-2023	Nạp tiền	Ví	07081204	500.000 ₫
2	Thanh toán cho mã GD:04233043. Số tiền 500000VND.	04-12-2023	Nạp tiền	Ví	04233043	500.000 ₫
3	Thanh toán cho mã GD:04224334. Số tiền 500000VND.	04-12-2023	Nạp tiền	Ví	04224334	500.000 ₫
4	Trả lương cho khóa học Mô khóa học Reactjs6	04-12-2023	Rút tiền	Ví	04223536	4.000.000 ₫
5	Giao dịch phản thường cho khóa học Mô khóa học Reactjs6 cho An Ánh	04-12-2023	Rút tiền	Ví	04223536	50.000 ₫
6	Thanh toán cho mã GD:04223130. Số tiền 400000VND.	04-12-2023	Nạp tiền	Ví	04223130	400.000 ₫

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## 5. Manage courses:

- Click on “Khóa Học” menu in the left sidebar:

#	Tên môn học	Tổng số học viên	Trạng thái
1	Mô khóa học Reactjs6	20 Người	Đã mở
2	Mô khóa học Reactjs5	20 Người	Đã mở
3	Mô khóa học Reactjs7	20 Người	Đã mở
4	Mô khóa học Reactjs4	20 Người	Đã mở
5	Mô khóa học Reactjs2	1 Người	Chưa mở
6	Mô khóa học Reactjs1	1 Người	Chưa mở

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- Click on “Mở lớp đủ học viên” to open all the course that have minimum members required

## 3.9 Workflow 8: Expert Web Application Dashboard

- Purpose: This workflow ensures that experts can manage their own skills or courses in their major.
- Steps:

### 1. Review feedback:

- Select the “Đánh Giá Khóa Học” menu in the left sidebar:

#	Tên khóa học	Người dạy
1	Mô khóa học Reactjs7	NhiênTrung
2	Mô khóa học Reactjs6	NhiênTrung
3	Mô khóa học Reactjs5	NhiênTrung
4	Mô khóa học Reactjs4	NhiênTrung
5	Mô khóa học Reactjs3	LiênNguyễn
6	Mô khóa học Reactjs1	LiênNguyễn
7	Mô khóa học Reactjs2	LiênNguyễn

Total 7 items < 1 > 10 / trang

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- Click on the eye icon button to view feedback detail of that course:

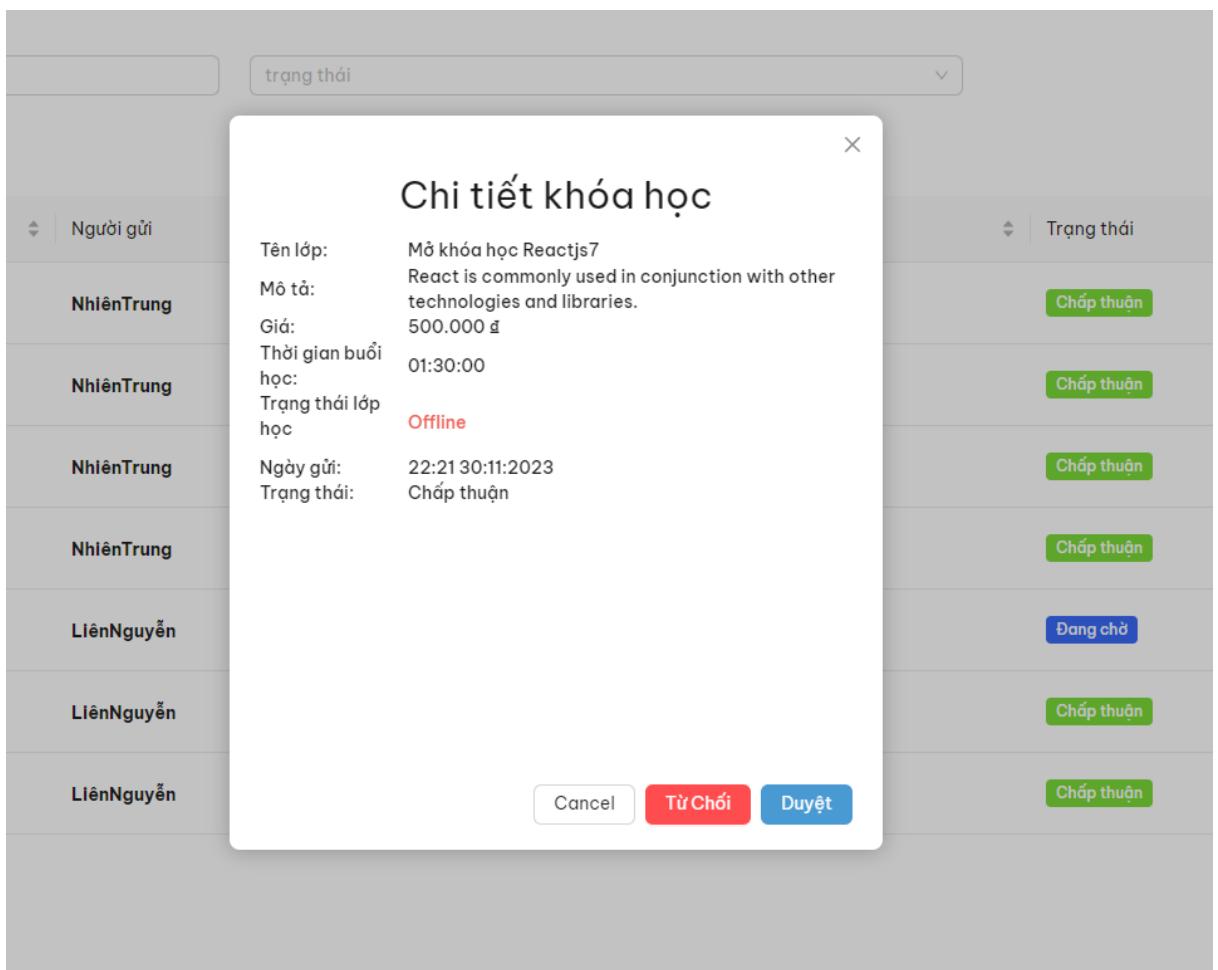
## 2. Manage request:

- Select the “Yêu Cầu” menu in the left sidebar:

#	Tên khóa học	Người gửi	Ngày gửi	Trạng thái	
1	Mở khóa học Reactjs7	NhiềnTrung	10:21:04 30-11-2023	Chấp thuận	
2	Mở khóa học Reactjs6	NhiềnTrung	10:20:30 30-11-2023	Chấp thuận	
3	Mở khóa học Reactjs5	NhiềnTrung	10:19:38 30-11-2023	Chấp thuận	
4	Mở khóa học Reactjs4	NhiềnTrung	10:18:57 30-11-2023	Chấp thuận	
5	Mở khóa học Reactjs3	LiênNguyễn	06:21:11 30-11-2023	Đang chờ	
6	Mở khóa học Reactjs1	LiênNguyễn	06:18:43 30-11-2023	Chấp thuận	
7	Mở khóa học Reactjs2	LiênNguyễn	06:17:59 30-11-2023	Chấp thuận	

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- Select “Mở khóa học” child menu to view all the creating course request:
- Click on the eye icon button the view the detail of the course:



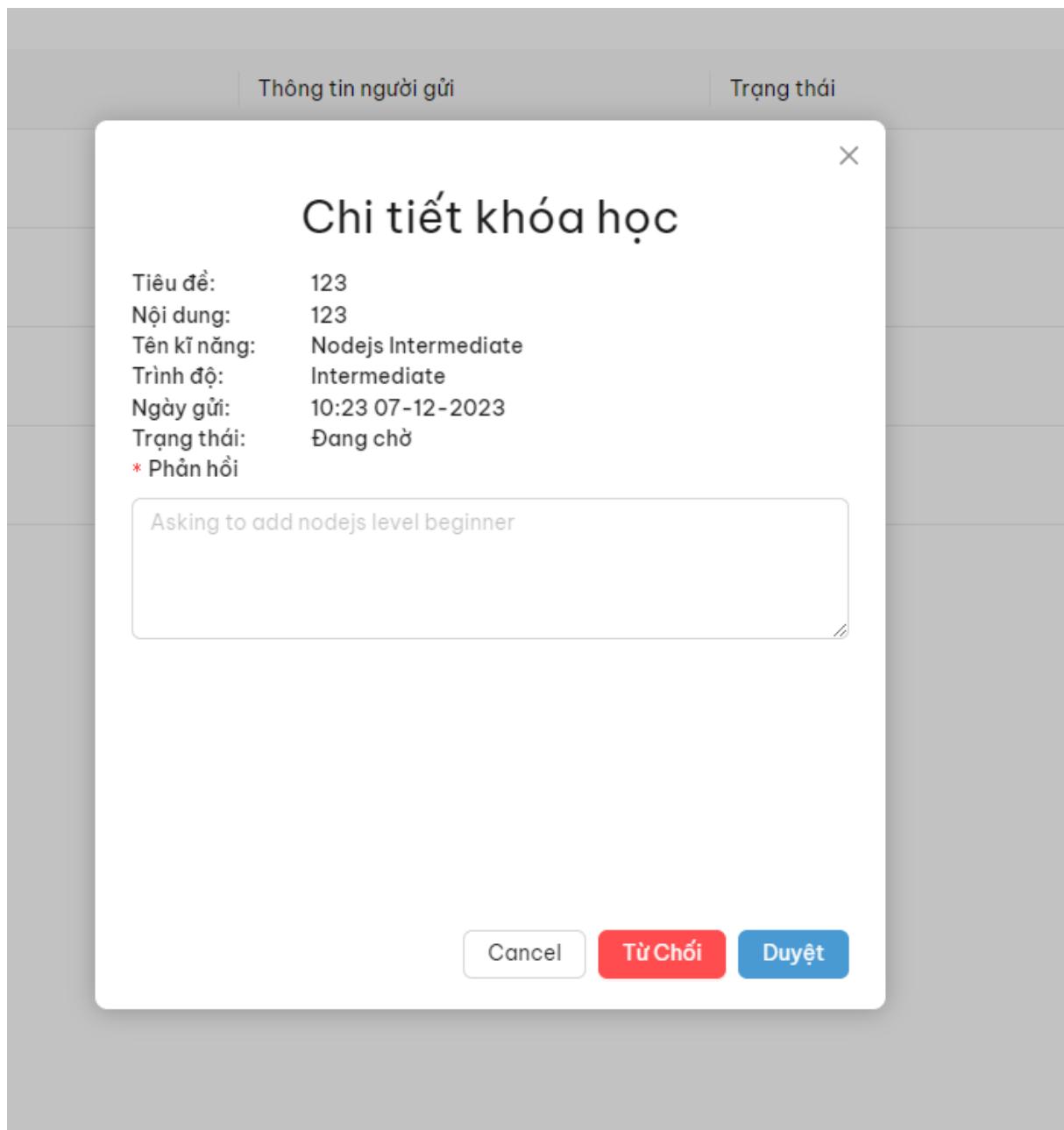
- Click on “Từ Chối” or “Duyệt” button to reject or approve the request
- Select “Đơn kĩ năng” child menu to view all the skill requesting requests:

The page shows a table of skill requests:

Số	Thời gian	Tên kĩ năng	Thông tin người gửi	Trạng thái	Tệp đính kèm
1	10:23 07-12-2023	Nodejs Intermediate	Nhiên Trung	Đang chờ	Tải xuống
2	10:20 07-12-2023	React Intermediate	Nhiên Trung	Đang chờ	Tải xuống
3	22:24 04-12-2023	Reactjs Beginner	Nhiên Trung	Chấp thuận	Tải xuống
4	17:59 04-12-2023	React Advanced	Nhiên Trung	Chấp thuận	Tải xuống

Total 6 items < 1 > 10 / trang

- Click on the eye icon button to view detail of the request:



- Type in response and press “Từ Chối” or “Duyệt” to reject or approve the request.

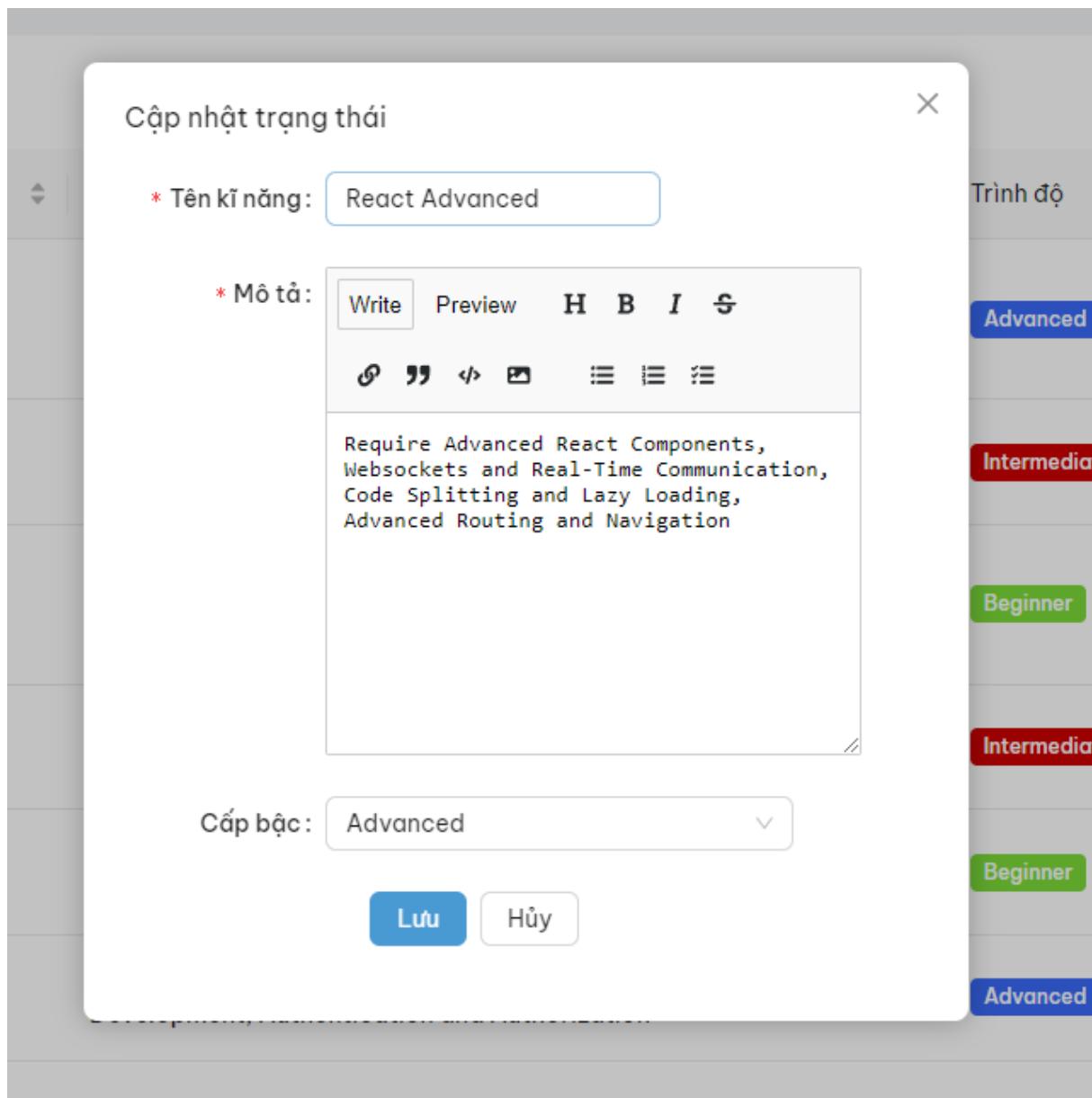
### 3. Manage skill:

- Select “Quản lý kỹ năng” menu in the left sidebar:

Số	Tên Kỹ Năng	Mô tả	Trình Độ	Đutton
1	React Advanced	Require Advanced React Components, Websockets and Real-Time Communication, Code Splitting and Lazy Loading, Advanced Routing and Navigation	Advanced	
2	React Intermediate	Require State Management, React Router, Component Styling, Error Handling and Debugging	Intermediate	
3	React.js Beginner	Require Understanding of JavaScript and ES6, Introduction to React Concepts, Setting Up a React Development Environment, Component Structure	Beginner	
4	Node.js Intermediate	Require Solid JavaScript Proficiency, Asynchronous Programming Mastery, Express.js Framework, Database Integration	Intermediate	
5	Node.js Beginner	Require Basic JavaScript Proficiency, Introduction to Asynchronous Programming, Getting Started with Node.js, Node.js Modules	Beginner	
6	Node.js Advanced	Require Express.js and Middleware Expertise, RESTful API Design and Development, Authentication and Authorization	Advanced	

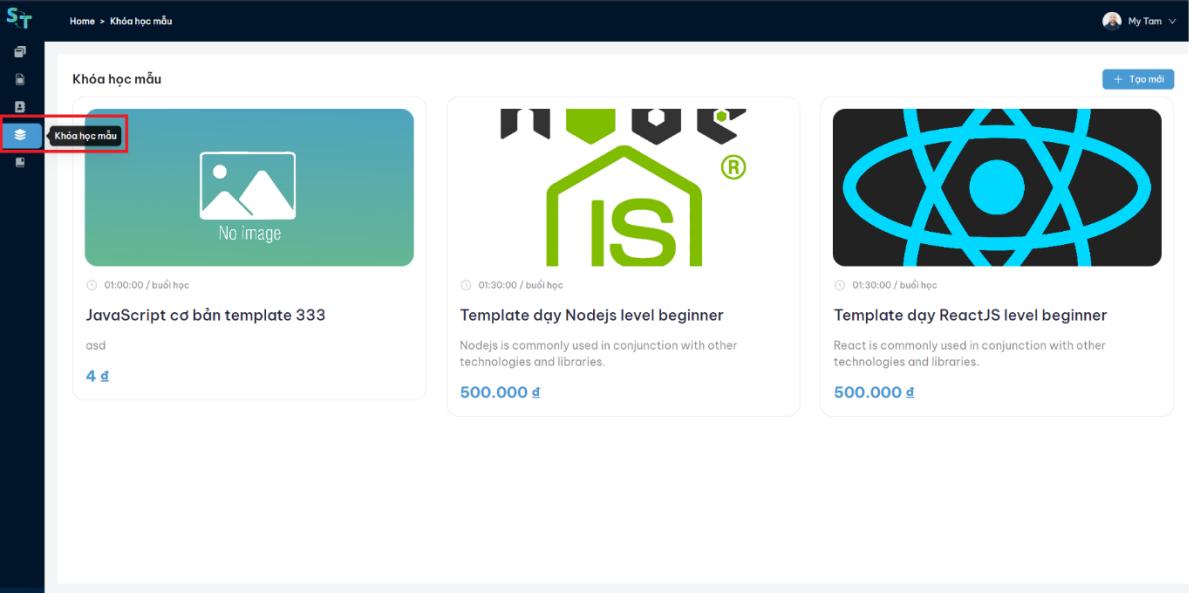
- Click on the “Tạo mới” button to create a new skill:

- Click on the pen icon button to update skill:



#### 4. Manage Course Template:

- Click on the “Khóa Học Mẫu” menu in the left sidebar:



The screenshot shows the STUD platform's course template management interface. On the left, a sidebar has a 'Khóa học mẫu' (Course Template) button highlighted with a red box. The main area displays three course template cards:

- JavaScript cơ bản template 333**: No image. Duration: 01:00:00 / buổi học. Rating: 4 ⭐.
- Template dạy Nodejs level beginner**: Logo featuring a green house-like shape with 'IS'. Duration: 01:30:00 / buổi học. Description: Nodejs is commonly used in conjunction with other technologies and libraries. Price: 500.000 ₫.
- Template dạy ReactJS level beginner**: Logo featuring a blue atom symbol. Duration: 01:30:00 / buổi học. Description: React is commonly used in conjunction with other technologies and libraries. Price: 500.000 ₫.

At the bottom, a footer bar reads "Copyright 2023 by STUD. All Rights Reserved."

- Click on course template card to update that course template:

Cập nhật mẫu khóa học

\* Tên khóa

Template dạy Nodejs level beginner

\* Mô tả

Nodejs is commonly used in conjunction with other technologies and libraries.

\* Giá thấp nhất

400000 VND

\* Giá cao nhất

600000 VND

\* Giá mặc định

500000 VND

\* Giờ / buổi học

01:30:00

Yêu cầu kỹ năng

+ Thêm kỹ năng

Chuyên Đề 1

\* Tên

\* Mô Tả

+ Thêm kỹ năng

Chuyên Đề 1

\* Tên

Mô Tả

Chủ Đề 1

\* Tên

Mô Tả

+Thêm Chủ Đề

+Thêm Chuyên Đề

\*Ảnh khóa học

BROWSE      UPLOAD

Kéo thả (các) tệp vào đây hoặc nhấp để chọn (các) tệp

Tải lên

Lưu      Hủy

- Click on the “Tạo mới” button to create a new course template:

Tạo mới mẫu khóa học

\* Tên khóa

A template

\* Mô tả

Khóa học A

\* Môn học

Chọn môn học

\* Giá thấp nhất

300000 VNĐ

\* Giá cao nhất

500000 VNĐ

\* Giá mặc định

400000 VNĐ

\* Giờ / buổi học

1:00:00

Yêu cầu kỹ năng

+ Thêm kỹ năng

Chuyên Đề 1

\* Tên

\* Mô Tả

Chủ Đề 1

\* Tên

\* Mô Tả

+ Thêm Chủ Đề

+ Thêm Chuyên Đề

\* Ảnh khóa học

BROWSE      **UPLOAD**

Kéo thả (các) tệp vào đây hoặc nhấp để chọn (các) tệp

Tải lên

Lưu      Hủy

## 5. Manage subject:

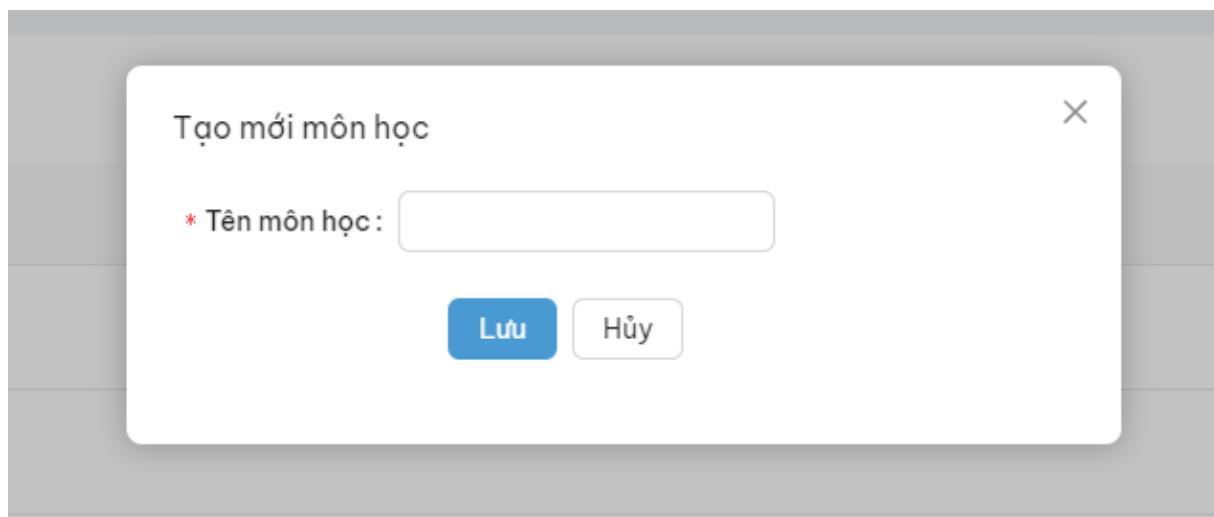
- Click on “Môn Học” menu in the left sidebar:

Môn học

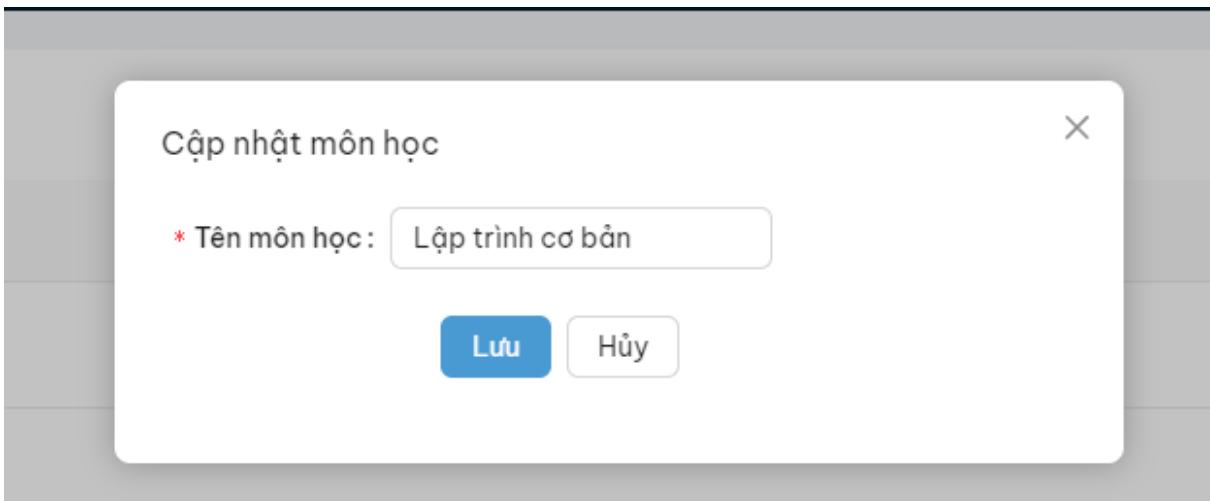
#	Tên môn học	Lớp trình cơ bản		
1	Lập trình cơ bản	Trí tuệ nhân tạo		
2	Trí tuệ nhân tạo	Lập trình C		
3	Lập trình C	Lập trình JS		
4	Lập trình JS	Khoa học dữ liệu		
5	Khoa học dữ liệu			

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- Click on “Tạo mới” button to create new subject:



- Click on the pen icon button to update subject:



- Click on the trash bin icon button to delete subject:

