SW Engineering CSC648-848 Fall 2025
Team 08

Kojiro Miura (Team Lead)

Kmiura@sfsu.edu

Atharva Walawalkar

Addhyan Kohli

Krinjal Basnet

Sonam Tobgyal

Aketzali Zeledon

Milestone 1

10/16/2025

Table of Contents

1. Executive Summary

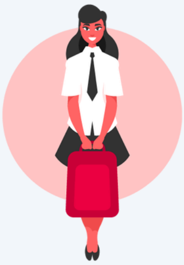
SFSU Tutoring Portal is an exclusive tutoring platform created for San Francisco State University students to connect with trusted and verified tutors in a secure and professional environment. The system focuses on one goal: making academic support easy, reliable, and accessible for every SFSU student. Unlike public tutoring websites, SFSU Tutor is fully integrated with the university system, allowing only verified users through SFSU Single Sign On. This ensures every interaction is safe and tailored to the courses offered at the university.

Students can search for tutors by course, subject, or language, and book sessions that match their schedule. Tutors can manage their availability, upload learning materials, and set hourly rates, while administrators review and approve all listings to maintain quality and compliance with SFSU standards. All users must register using an @sfsu.edu email address to keep the platform exclusive to the campus community. Communication between students and tutors happens through a one-round in-site messaging system that protects privacy and professionalism.

Built with modern technologies such as React, FastAPI, and MySQL and hosted on AWS EC2, SFSU Tutor delivers high performance, security, and reliability. The design is simple, mobile friendly, and intuitive for all users. SFSU Tutor is more than a website; it is a trusted digital ecosystem that strengthens learning, builds confidence, and enhances the academic success of every student at San Francisco State University.

2. Personae

User Categories: Tutor, Student, Tutor & Student, and Admin.

Akemi - Student 	**Goals:** ● Improve Business Calculus understanding to get a better grade. ● Get detailed explanations on calculus concepts. ● Take advantage of time in between classes with structured accountability to study.
	Skills: ● Experienced with SFSU portal, Canvas, and Zoom as a student. ● Comfortable web browsing on laptop or mobile devices.
General Characteristics: SFSU Undergrad Student A commuter student that has gaps between classes. Struggles with Business Calculus.	**Pain Points:** ● Difficulty finding subject specific tutors. ● Limited Time Constraints due to class schedule. ● Poor at keeping track of commitments. ● Distrustful of meeting people from third party websites.

Alex - Tutor 	**Goals:** ● Earn income while tutoring students on campus. ● Schedule tutoring sessions ahead of time with the general topic in mind in order to review before meeting. ● Limit tutoring to specific classes and topics.
	Skills: ● Experienced with SFSU portal and Zoom. ● Comfortable web browsing on laptop or mobile devices.
General Characteristics: SFSU Alumni Good communicator, with time on certain days. Bachelor's degree in Business Accounting and Minor in Mathematics.	**Pain Points:** ● Would like to avoid tutoring requests for unrelated topics or classes they are not familiar with. ● Prefer to not have contact information available to non-students.

Jean - Tutor & Student 	**Goals:** ● Earn income while tutoring students on campus. ● Gain experience teaching ● Get affordable tutoring on upper division courses. ● Keep track of previous completed tutoring sessions.
	Skills: ● Experienced with SFSU portal, Canvas, and Zoom as a student. ● Comfortable web browsing on laptop or mobile devices.
General Characteristics: SFSU Undergrad Student IR Major Enjoys explaining concepts as it helps reinforce learning.	**Pain Points:** ● I would prefer to have time in between sessions. ● Clarity and differentiation between hosting tutoring vs being tutored. ● Open to appointment time flexibility outside of posted hours.

Chris - Admin 	**Goals:** ● Manage the tutoring posts for appropriateness. ● Update Available Class Lists
	Skills: ● Management and Organization Tools ● Experienced with SFSU portal, Canvas, and Zoom as SFSU Staff.
General Characteristics: SFSU Admin Staff	**Pain Points:** ● Not knowing the difference between current semester listings vs previous semester listings.

3. High-level Use Cases

Logs into tutoring through the SFSU portal.

A **student** who is an SFSU undergrad student is not doing so well in Business Calculus class. The student is experienced with the **SFSU portal** and Canvas. They want tutoring and login to the tutoring website to find specific Business Calculus tutoring sessions on Zoom. After their class they browse and choose a tutor that is teaching specifically Business Calculus that aligns with their schedule. The **tutoring website portal** then shows a list of available times and different classes for Zoom tutoring, the student confirms the time slot that fits their busy schedule for business calculus **tutoring meeting** and adds a **reminder** for the student to join the Zoom through the Zoom link on the selected time slot through the tutoring website on their SFSU portal.

Tutor inserts their own time availability

The **tutor** who is an SFSU alumni teaches both Business Accounting and mathematics. The tutor is experienced with the **SFSU portal**, Canvas, and Zoom. The tutor first logs into the **tutoring website portal**, after the tutor logs in using his SFSU login, the tutor checks his **tutor schedule** to check his monthly **available time slots** and selects and limits what courses the tutor wants to offer and at what time availability. The tutor receives a request that matches with what the tutor wants to offer. The tutor accepts the offer and the tutoring website portal automatically sends that the tutor has accepted the offer to the student and adds the **tutoring meeting** to both tutor and student's email and calendar notification with a **reminder** to both and the tutor's **Zoom link**.

Student and tutor receive notification along with a zoom link

Mei is both a tutor & student who is an SFSU undergraduate student majoring in IR. Mei is experienced with all of the **SFSU portal**, Canvas, and Zoom. Mei logins into the **SFSU portal** and is prompted for a **tutoring meeting** with a student who wants a **tutoring meeting**. Mei accepts the **tutoring meeting** and checks her **available time slots** as she also needs tutoring in IR between her classes.Mei searches for an upper division tutoring meeting that fits her available session and requests for a **tutoring meeting** that fits both her tutor and student schedules.

The Admin needs to monitor the tutoring website for outdated or irrelevant class posts. The Admin sets up the **Class Options** using the **School Catalog** for the semester.

The Admin accesses the **Admin Dashboard** and reviews existing course listings, tutor profiles, and student requests. Using the available **Management Tools**, the Admin updates tutor availability and ensures that each **Tutor Profile** includes accurate subjects, schedules, and contact information.

The Admin uses the **Scheduling Module** to assign tutors to the correct courses based on their areas of expertise and availability. When new tutors are hired or existing ones leave, the Admin updates the database accordingly through the **Tutor Management Panel**.

The Admin monitors **Session Reports** to track student attendance, tutor activity, and overall platform usage. If issues arise such as duplicate course listings or inactive tutor accounts the Admin resolves them using the **Maintenance Tools** provided by the system.

Implement a Dynamic waitlist to recommend tutoring sessions for last minute tutoring

During finals week at SFSU, Anjali tries to book a Business Calculus tutoring session but finds her preferred tutor, Marcus, is fully booked. Instead of hitting a dead end, she joins a dynamic waitlist offered by the system. Behind the scenes, the platform groups Anjali with three other students requesting the same topic and time range. It notifies Marcus, who agrees to convert the session into a small group class. Within minutes, Anjali receives an alert, confirms her spot with one click, and is scheduled for the group session. This smart waitlist system ensures no student misses out during peak times while allowing tutors to maximize their time and impact.

Student can request for specific course to be tutored for if not offered

A **Student** searches the SFSU tutoring portal for help with ECON 301 (Intermediate Microeconomics) but finds no **Tutors** currently offering this course. Instead of leaving the platform, the Student submits a **Course Coverage Request** specifying the SFSU course number, topics needed (consumer theory and market equilibrium), preferred rate range, and availability between classes. The system identifies Tutors with expertise in related courses like ECON 101 or ECON 200 and sends them notifications about the request. A Tutor teaching ECON 200 reviews the request, decides they can help, and accepts. The system notifies the Student, they schedule their first **Tutoring Session**, and the Tutor's profile is updated to show ECON 301 as an available course for future students.

Student can give the tutor a rating (Like rate my professor or something)

A **Student** completes a DS 212 (Business Calculus) **Tutoring Session** with a **Tutor** via Zoom. Both receive prompts to provide feedback. The Student rates the Tutor on teaching effectiveness and subject knowledge, adds written comments. The Tutor rates the Student's preparedness because both authenticated through the SFSU portal, the system verifies all feedback comes from legitimate SFSU community members. Tutors can link their LinkedIn profiles for credential verification. The platform aggregates feedback by SFSU course numbers, so students searching for DS 212 tutoring can see tutor ratings specific to that course, including which professor's curriculum the tutor knows best.

4. Data Glossary/ Description

User: Any person who logs into the tutoring website through the SFSU portal.

Student: A person enrolled at SFSU, using the website.

Tutor: An SFSU enrolled person (or student) who offers tutoring services.

Tutor & Student: A user who serves both as a tutor and as a student.

Admin: SFSU staff who monitor the tutoring website

Class Options: The list of available SFSU courses for the semester as configured by the Admin.

Course Listings: Courses offered by SFSU, added by the admin.

Tutor Profile: Contains information about tutor name, subjects, schedule, and credentials.

Student Profile: Contains information about enrolled classes, requests

Tutoring Session: A scheduled meeting between student and tutor including course, time, location or meeting link.

Dynamic Waitlist: A feature that groups students requesting the same topic and time range for small-group tutoring when sessions are full.

Course Coverage Request: A request submitted by a student when a desired course is not currently offered for tutoring.

Meeting Link: The meeting link automatically sent to both tutor and student when a session is confirmed.

Session Feedback: Ratings and written comments exchanged between student and tutor after completing a session.

Tutor Management Panel: Admin interface used to update tutor information, assign courses, and remove accounts.

Maintenance Tools: System utilities allowing the Admin to resolve issues such as duplicate course listings or inactive tutor accounts.

Session Reports: Records that show student attendance, tutor activity, and overall platform usage, used by Admin for monitoring.

Management Tools: General admin utilities used to update and maintain tutor listings, schedules, and system content.

SFSU Portal: Authentication gateway for all users (students, tutors, admins) to log in securely.

5. High Level Functional Requirements

Unregistered Users

1. Unregistered users can browse and search tutor profiles without logging in.
2. They can filter search results by course number, subject tag, or language.
3. They can open and view tutor profiles from the search results.

Registered Students

4. Registered students can send one in-site message to a selected tutor through the contact form.
5. Students can view their sent message in their personal dashboard.
6. Each student is limited to a single in-site message per tutor to maintain privacy and professionalism.
7. Students can submit a “Reported Item” form to flag inappropriate or inaccurate tutor profiles.

Registered Tutors

8. Registered tutors can create and manage their tutor profile, which includes courses covered, subjects, hourly rate, languages spoken, and availability summary.
9. All newly created or edited tutor profiles are automatically placed in **Pending** status for administrative review.
10. Tutor profiles become visible in search results only after admin approval.
11. Tutors can edit their profiles and resubmit them for approval when needed.
12. Tutors can view received in-site messages through their dashboard.
13. Tutors can view the current approval status of their profile (pending, approved, or rejected).

Administrators

14. Administrators can review pending tutor profiles and approve or reject them.
15. Administrators can delete inappropriate listings, manage reported items, and update class or course lists.

16. Administrators can monitor overall activity, including tutor availability, student requests, and message reports.

Platform-Wide Features

17. The website supports browsing, searching, and reviewing tutor information.
18. Tutors can upload and manage their information through a secure dashboard.
19. Both tutors and students can use dashboards to view postings and messages.
20. The system ensures that only verified SFSU students, tutors, and staff can access platform features using their @sfsu.edu credentials.
21. The application includes SFSU-specific functionality, such as course-based search, admin moderation, and secure messaging, to compete effectively with existing tutoring services.

6. Non-functional Requirements

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0
2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers
3. All or selected application functions shall be rendered well on mobile devices (no native app to be developed)
4. Posting of tutor information and messaging to tutors shall be limited only to SFSU students
5. Critical data shall be stored in the database on the team's deployment server.
6. No more than 50 concurrent users shall be accessing the application at any time
7. Privacy of users shall be protected
8. The language used shall be English (no localization needed)
9. Application shall be very easy to use and intuitive
10. Application shall follow established architecture patterns
11. Application code and its repository shall be easy to inspect and maintain
12. Google analytics shall be used
13. No e-mail clients shall be allowed. Interested users (clients) can only message service providers via in-site messaging. One round of messaging (from client to service provider) is enough for this application. No chat functions shall be developed or integrated
14. Pay functionality (e.g. paying for goods and services) shall not be implemented nor simulated in UI.
15. Site security: basic best practices shall be applied (as covered in the class) for main data items
16. Media formats shall be standard as used in the market today

17. Modern SE processes and tools shall be used as specified in the class, including collaborative and continuous SW development and GenAI tools
18. The application UI (WWW and mobile) shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Fall 2025. For Demonstration Only”at the top of the WWW page Nav bar. (Important so as to not confuse this with a real application).

7. Competitive Analysis

Key Functions	**Wyzant**	**CSM**	**Tutor.com**	**SFSU (our product)**
Uni Access	❌ No university login	✅ Supports university access	❌ Individual login only	✅Supports university SSO ✅ integrates with student records
Adding Tutor listings by Admin	❌Tutors create own listings	✅Admins can add tutors manually	✅Admins can approve and post listings	✅Admins can add tutors ✅link to specific courses ✅manage approvals
Search tutor	✅Search by subject and price	✅Search by subject and department	✅Search by subject and availability	✅Advanced search by course/subject and specialization ✅Search by schedule
In-app Text	✅Supports messages	❌No messaging option	✅Supports messages	✅Supports messages ✅Offers real-time chat ✅notifications, and file sharing
Mobile Responsive	✅Mobile responsive	❌Limited mobile layout	✅Mobile responsive	✅Fully responsive ✅ Optimized for chat, booking, and schedules

8. High-level System Architecture & Technologies

Amazon AWS EC2 (t2.micro, Free Tier)
Ubuntu Ubuntu 22.04 LTS
MySQL 8.0
Nginx 1.24
React
Python 3.11
FastAPI 0115
Uvicorn workers
SQLAlchemy
Pytest
Google Analytics

9. Use of GenAI

9.1 ChatGPT: High Level Use Case - Admin

ChatGPT was given the low level description of the admin use case as a rough draft as presented below and then asked to convert it into a 'high level' use case for the admin.

> "The admin needs to monitor the website for outdated or relevant class posts. The admin sets up the **class options** using the school catalog for the semester. The Admin reviews the existing **listings** by tutors, tutor profiles, student & tutor profiles, and student profiles. The admin uses the **admin tools** to update or archive out of date listings. "

The output was edited and reduced to be more relevant to the goals discussed by the group.

9.2 ChatGPT – Executive Summary

A rough draft was given to ChatGPT so that we have much polish, sales worthy executive summary.

10. Team Roles

Name	Role	School email
Kojiro Miura	Team Lead	kmiura@sfsu.edu
Atharva Walawalkar	Backend Lead	awalawalkar@sfsu.edu
Addy Kohli	Frontend Lead	akohli@sfsu.edu

Sonam Tobgyal	Github Master	stobgyal@mail.sfsu.edu
Krinjal Basnet	Frontend Dev	kbasnet1@sfsu.edu
Aketzali Zeledon	Backend Dev	azeledon@mail.sfsu.edu

11. Team Lead Checklist

- So far all team members are fully engaged and attending team sessions when required
  - On Track
- Team found a time slot to meet outside of the class
  - Done
- Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing
  - Done
- Team reviewed class slides on requirements and use cases before drafting
  - Done

Milestone 1

- Team reviewed non-functional requirements from “How to start...” document and developed Milestone 1 consistently
  - Done
- Team lead checked Milestone 1 document for quality, completeness, formatting and compliance with instructions before the submission
  - Done
- Team lead ensured that all team members read the final M1 and agree/understand it before submission
  - In Progress
- Team shared and discussed experience with GenAI tools among themselves
  - Done
- Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)
  - On Track