

Software Requirements Specification (SRS)

Introduction

A course management system where any user can view and search courses. Students can enroll in courses and view the ones they are currently enrolled in, and instructors can view the courses they are teaching. It also provides a complex enrollment verification system considering the course's prerequisites, anti-requisites, and time against the student's information such as previous courses taken, currently enrolled course load, and registration holds. Instructors are able to set registration holds on students as well as see course rosters and the courses they are teaching.

Course management is a very complex system that if done manually, can be both incredibly time-consuming and prone to error. This is due to the vast amount of information required to be stored, the high number of verification checks required for many actions, and the complexity of any advanced search of stored data.

Using a student enrolling in a course as an example, you must check if the student has any registration holds. Then, you must check if adding this course will go over the student's credit limit, which may be different for each student. Then, check if the student fulfills the prerequisites and does not violate any anti-requisites. Finally, check if adding the course will have any time conflicts with the courses that the student is already currently enrolled in.

It follows then that creating a computer program and designing a database to manage all of this data and run these queries will significantly simplify the registrar's workflow, improve registrar efficiency manifold, improve both student and instructor accessibility, and more.

User Requirements Definition

All user requirements:

- Login: different permission levels for students, instructors, and administrators.
- Search courses
 - Query all the classes given filtered terms, course load, name, department, etc.
- View any course details.

Student user requirements:

- Shopping lists: Store courses that the students have saved for each term

- Enroll in courses
- Drop enrolled courses
- View enrolled courses

Instructor user requirements:

- Create/Add/Update/Delete courses: Publish course-related information.
- Set enrollment holds on students: Instructors can see if the students are to attend the class.
- View courses they are teaching.
- View roster information for courses they are teaching.

Administrator user requirements:

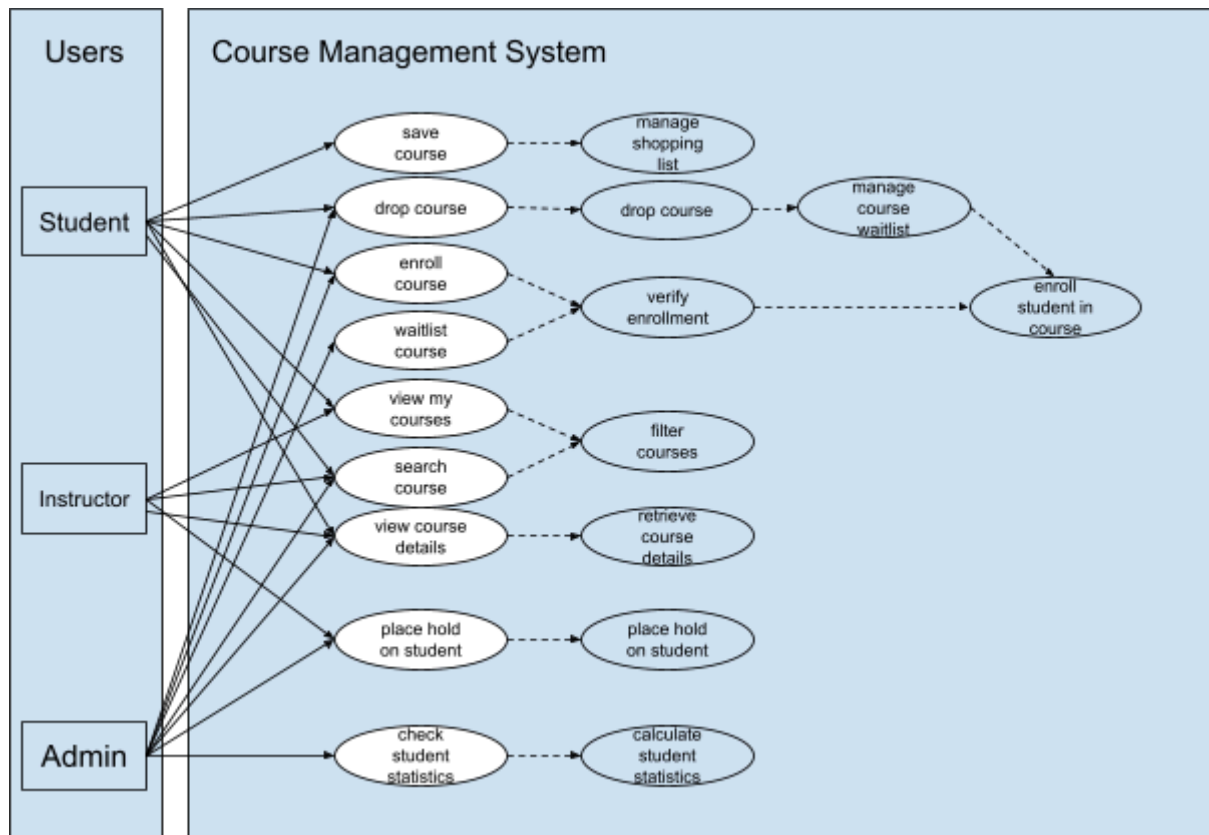
- Administrator: all access (view, modify, update, delete) for all information (students, instructors, courses, etc.).
- Check the statistical information of students, for example, the distribution of the GPA with specific majors or grades.

System Requirements Specification

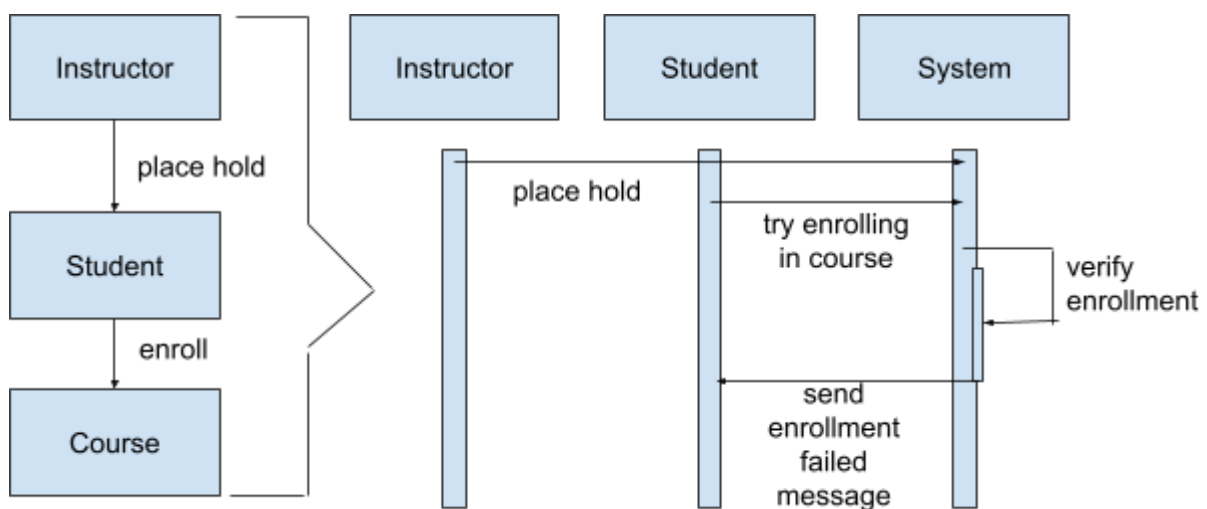
System requirements:

- When a student enrolls in a course, make the following verifications:
 - Prerequisites: Check whether the student has already taken all the prerequisite classes.
 - Anti-requisites: Check whether the enrollment contravenes the anti-requisites rule.
 - Credit limit: Check the currently enrolled or waitlisted credits with student-specific limits.
 - Time conflicts: Check whether the student already has a currently enrolled or waitlisted class at the given time.
 - Enrollment holds: Check the hold status of the student.
- When a student drops from a course:
 - Check if anyone is on the waitlist
 - Add the first person on the waitlist to the course if needed
- When a verification check fails:
 - Throw and handle errors well when database access is invalid for any reason (copy HTML status codes?)
- When there is an internet issue or other login time exceeding the limit, the user's action may not be recorded in the database; we should alert this information.
- Manage access levels: different users can only access their permitted information

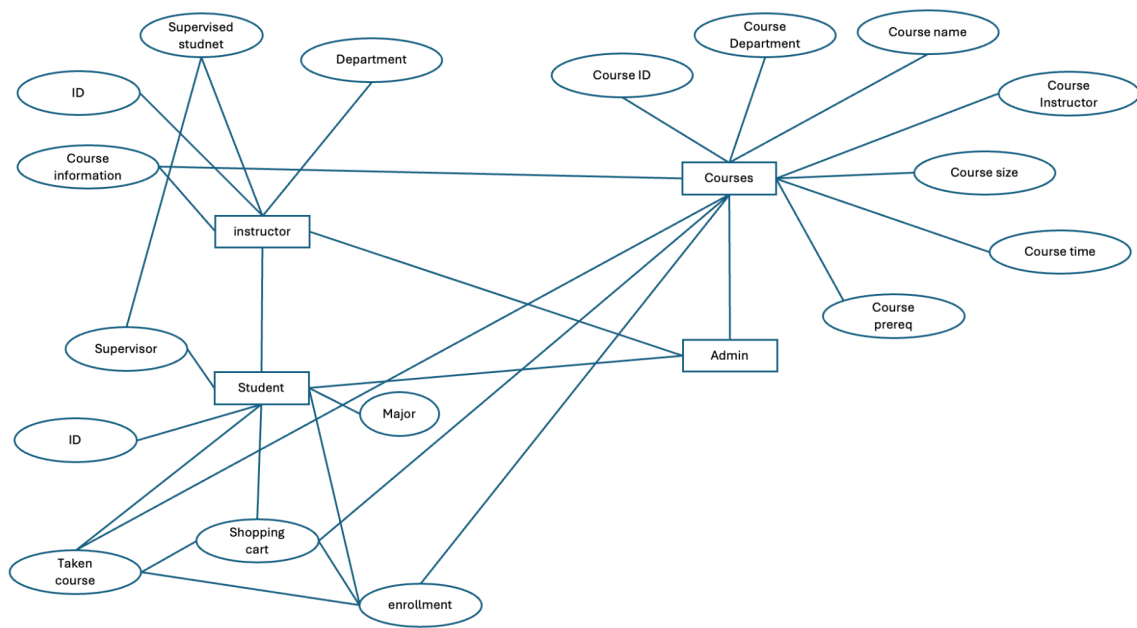
System Models



Use Case Diagram: Bubbles are use cases. White bubbles are user use cases, while blue bubbles are system use cases.



Sequence diagram: Enroll course use case



ER diagram