

ASU Course Registration System

System Requirements Capture

Use-case Model

Actors

ASU USE-CASE MODEL: ACTORS

At the beginning of each term, students may request a course catalogue containing a list of course offerings needed for the term. Information about each course, such as instructor, department, and prerequisites are included to help students make informed decisions.

The new system will allow **students** to select four course offerings for the coming term. In addition, each student will indicate two alternative choices in case a course offering becomes filled or is canceled. No course offering will have more than forty students or fewer than ten students. A course offering with fewer than ten students will be canceled. Once the registration process is completed for a student, the registration system sends information to the **billing system** so the student can be billed for the term.

Instructors must be able to access the online system to indicate which courses they will be teaching, and to see which students signed up for their course offerings.

For each term, there is a period of time that students can change their schedule. Students must be able to access the system during this time to add or drop courses.

ASU USE-CASE MODEL: ACTORS



Student

A person who is registered to take courses at the university.



Billing System

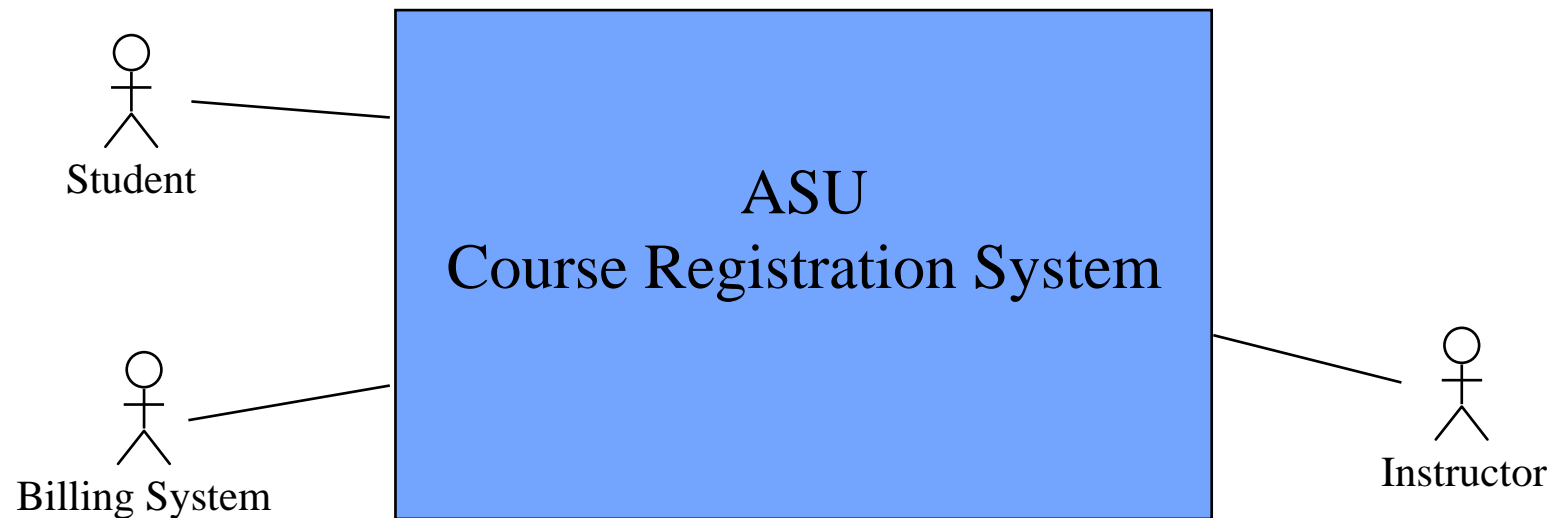
An external system responsible for billing students.



Instructor

A person who is part of the teaching staff of the university.

ASU USE-CASE MODEL



ASU Course Registration System

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Use-case Model

Use Cases

ASU USE-CASE MODEL: USE CASES

At the beginning of each term, **students** may request a course catalogue containing a list of course offerings needed for the term.

functionality: Student: ~~request course catalogue~~ → *browse course offerings*
Someone: ~~prepare course catalogue~~ → *prepare course offerings*

Information about each course, such as **instructor**, department, and prerequisites are included to help **students** make informed decisions.

functionality: Part of *prepare course offerings* functionality.

The new system will allow **students** to select four course offerings for the coming term.

functionality: Student: *select course offering*

ASU USE-CASE MODEL: USE CASES

In addition, each **student** will indicate two alternative choices in case a course offering becomes filled or is canceled.

functionality: Student: ~~select alternate choices~~ → *select course offerings*
Someone: *cancel course offering*

No course offering will have more than forty **students** or fewer than ten **students**.

functionality: *None (constraint on functionality)*

A course offering with fewer than ten **students** will be canceled

functionality: *No new functionality in this statement*

Once the registration process is completed for a **student**, the registration system sends information to the **billing system** so the student can be billed for the term.

functionality: Billing System: *receive billing information*

ASU USE-CASE MODEL: USE CASES

Instructors must be able to access the online system to indicate which courses they will be teaching, and to see which **students** signed up for their course offerings.

functionality: Instructor: *select courses to teach*
Instructor: *request enrollment list*

For each term, there is a period of time that **students** can change their schedule.

functionality: Student: *change course offering*

Students must be able to access the system during this time to add or drop courses.

Student: *add course offering*
functionality: Student: *drop course offering*

ASU USE-CASE MODEL: ACTOR DESCRIPTIONS



Registrar

Discovered from
domain experts.

A person who is responsible for maintaining the curriculum information inclusive of students, professors and courses. The Registrar uses the Course Registration System to prepare the course catalogue for the coming term and to manage course offerings.



Student

A person who is registered to take courses at the university. A student uses the Course Registration System to register for courses in the current or a future term.



Billing System

An external system responsible for billing students. After a student successfully registers for a term, the Course Registration System sends the billing information to the billing system.



Instructor

A person who is part of the teaching staff of the university. A professor uses the Course Registration System to make choices on the courses to teach and to request course enrolment lists.

ASU USE-CASE MODEL: ACTOR FUNCTIONALITY

Registrar – *prepare course offerings*

Registrar – *cancel course offering*

Student – *browse course offerings*

Student – *select course offering*

Student – *change course offering*

Student – *add course offering*

Student – *drop course offering*

Billing System – *receive billing information*

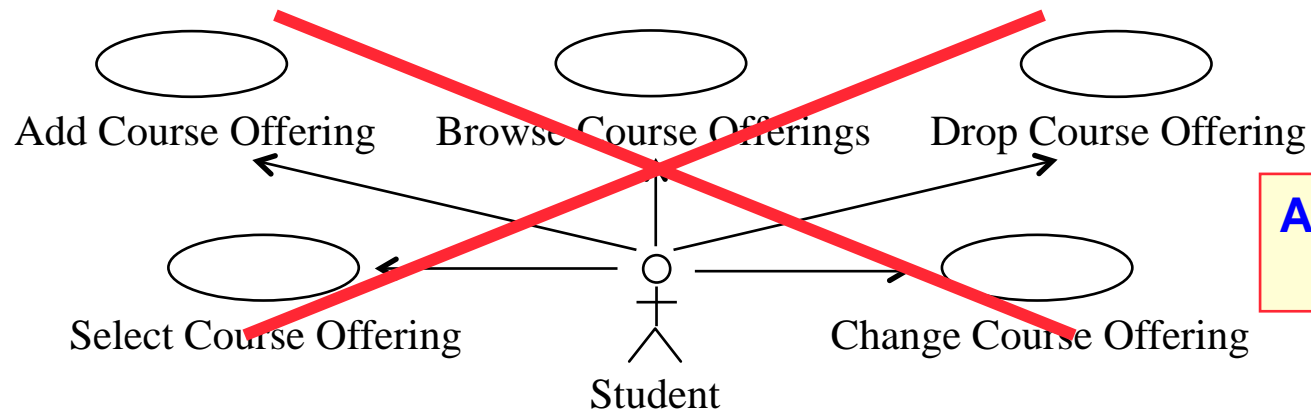
Instructor – *select courses to teach*

Instructor – *request enrollment list*

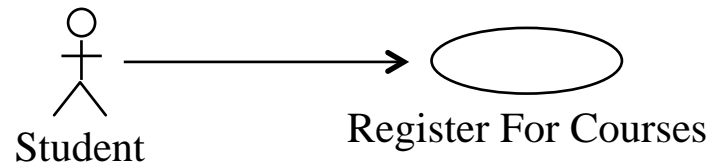
WHAT IS A GOOD USE CASE?

A use case typically represents a major piece of functionality that is complete from beginning to end.

A use case must deliver something of value to an actor.

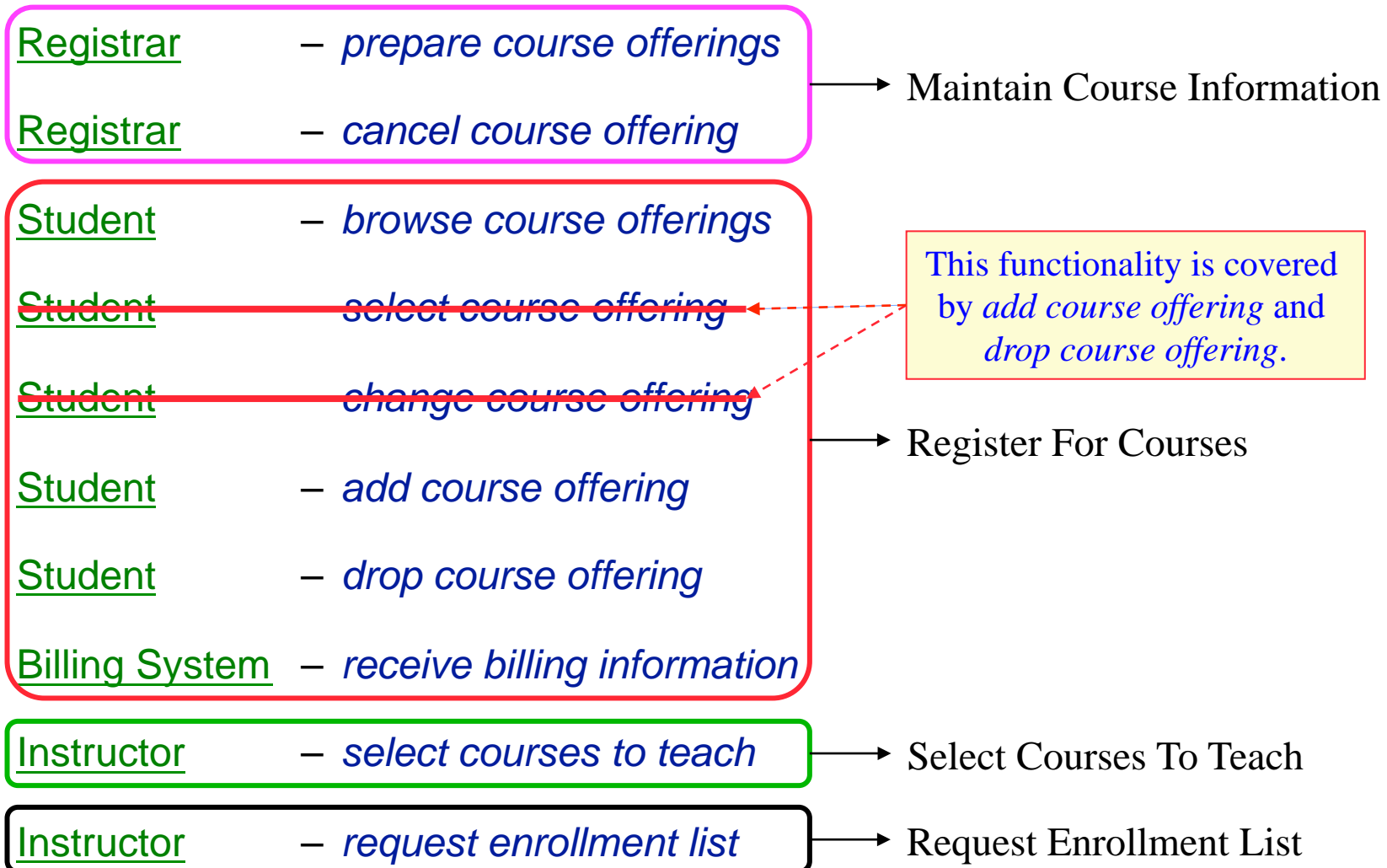


Are these good use cases?



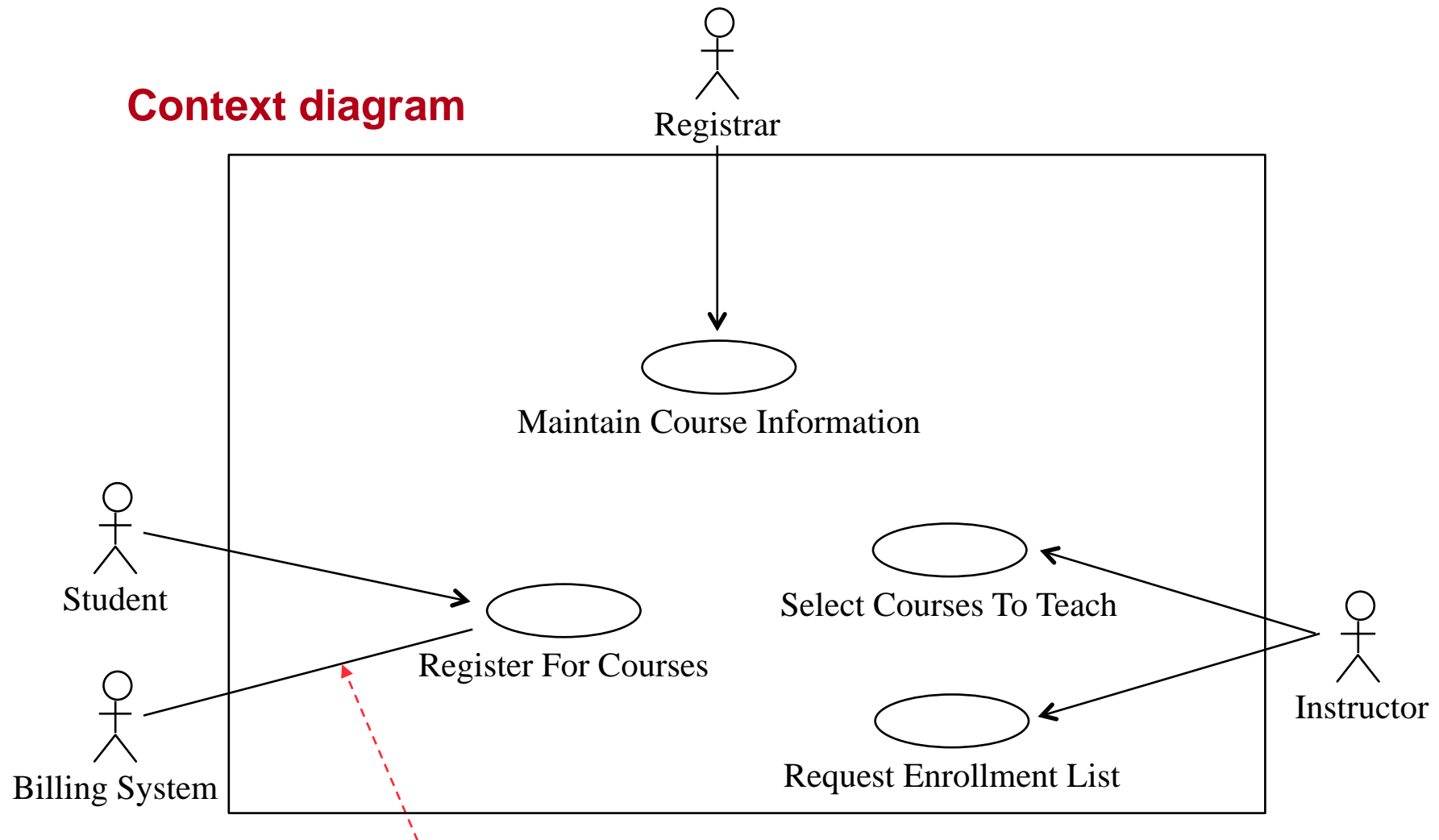
What is the actor trying to accomplish?

ASU USE-CASE MODEL: FUNCTIONALITY ANALYSIS AND GROUPING



ASU USE-CASE MODEL: USE-CASE DIAGRAM

Context diagram



«communication» association (implicit)

ASU USE-CASE MODEL: INITIAL USE-CASE SPECIFICATION

Register For Courses

This use case describes the process by which a student registers for a course offering. It provides the capability to create and modify a student's study schedule for the coming term.

Flow of Events

1. Add course offering.
2. Drop course offering.
3. Send billing information.

Initially, we just give a brief description of the purpose of a use case and an outline of the steps required to perform the use case.

The steps are refined and described in more detail as we discover more about the functionality required.

ASU Course Registration System

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Use-case Model

Use-case Detailed Specification

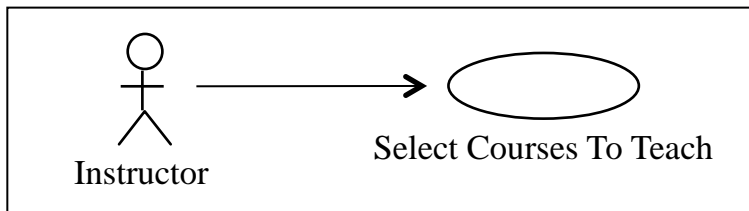
ASU: USE-CASE DETAILED SPECIFICATION—STYLE 1

Use Case: Select Courses To Teach

Brief Description

This use case describes how a professor selects courses to teach for a term that has not started.

Use-case Diagram



Basic Flow

1. The use case begins when the Instructor actor chooses to select the courses he wants to teach.
2. The system displays the interface for selecting the courses to teach.

ASU: USE-CASE DETAILED SPECIFICATION—STYLE 1

{Enter Term}

Single location extension point.

3. The Instructor indicates the term and year in which he would like to teach courses.

{Select Activity}

Single location extension point.

4. While the Instructor has an activity to perform
 - 4.1. If the CREATE activity is selected

{Begin Creating Schedule}

- 4.1.1. The system retrieves and displays the available course information for the given term if the final date for changes has not passed.

{Deadline Passed}

Discrete locations extension point (see next slide).

- 4.1.2. The Instructor selects the courses that he would like to teach.

{Confirm Creating Schedule}

- 4.1.3. The Instructor confirms the selection.
 - 4.1.4. The system creates the Instructor's teaching schedule in the database.
 - 4.1.5. The system notifies the Instructor that the teaching schedule has been created.

Region extension points.

ASU: USE-CASE DETAILED SPECIFICATION—STYLE 1

4.2. If the REVIEW activity is selected

{Display Schedule}

Single location extension point.

4.2.1. The system retrieves and displays the Instructor's teaching schedule.

4.3. If the MODIFY activity is selected

{Begin Modifying Schedule}

4.3.1. The system retrieves and displays the Instructor's teaching schedule and the available course information for the given term if the final date for changes has not passed.

{Deadline Passed}

Discrete locations extension point (see previous slide).

4.3.2. The Instructor adds course sections to and/or deletes course sections from his teaching schedule for the given term.

{Confirm Modifying Schedule}

4.3.3. The Instructor confirms the changes.

4.3.4. The system updates the Instructor's teaching schedule in the database.

4.3.5. The system notifies the Instructor that the modifications have been made.

5. The use case ends.

Region extension points.

ASU: USE-CASE DETAILED SPECIFICATION—STYLE 1

Alternative Flows

Exceptional Flow

A1: Invalid Term

At **{Select Activity}** if the entered term or year is invalid,

1. The system informs the Instructor that the term or year is invalid.
2. The flow of events is resumed at **{Enter Term}**.

Extension point at which the alternative flow can occur.

Extension point at which the flow of events resumes.

Variant Flow

A2: Schedule Exists

At **{Begin Creating Schedule}** if a schedule already exists.

1. The system informs the Instructor that a schedule already exists.
2. The flow of events is resumed at **{Select Activity}**.

Variant Flow

A3: No Section Selected

Compound condition for single extension points.

At **{Display Schedule}** or **{Begin Modifying Schedule}** if the Instructor has not selected any sections of courses to teach in the given term,

1. The system notifies the Instructor that this function is currently not available.
2. The flow of events is resumed at **{Enter Term}**.

ASU: USE-CASE DETAILED SPECIFICATION—STYLE 1

Variant Flow

A4: Change Date Passed

At **{Deadline Passed}** if the final date for changes has passed,

1. The system rejects the request.

2. The use case ends.

A use case can end in an alternative flow.

Variant Flow

A5: Cancel Activity

Compound condition for regions.

At any point between **{Begin Creating Schedule}** and **{Confirm Creating Schedule}** or between **{Begin Modifying Schedule}** and **{Confirm Modifying Schedule}**,

1. The Instructor can cancel the activity.

2. The flow of events is resumed at **{Select Activity}**.

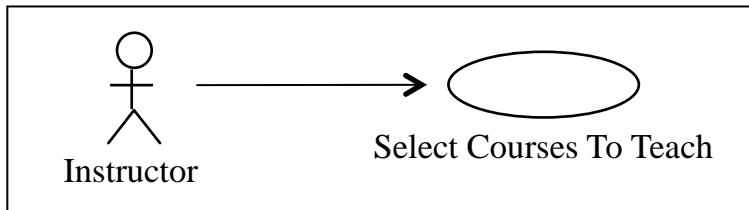
ASU: USE-CASE DETAILED SPECIFICATION—STYLE 2: USING SUBFLOWS

Select Courses To Teach

Brief Description

This use case describes how a professor selects courses to teach for a term that has not started.

Use-case Diagram



ASU: USE-CASE DETAILED SPECIFICATION—STYLE 2: USING SUBFLOWS

Basic Flow

1. The use case begins when the Instructor actor chooses to select the courses he wants to teach.
2. The system displays the interface for selecting the courses to teach.

{Enter Term}

3. The Instructor indicates the term and year in which he would like to teach courses.

{Select Activity}

4. While the Instructor has an activity to perform
 - 4.1. If the CREATE activity is selected
 - 4.1.1. Perform subflow *Create Schedule*.
 - 4.2. If the REVIEW activity is selected

{Display Schedule}

 - 4.2.1. The system retrieves and displays the Instructor's teaching schedule.
 - 4.3. If the MODIFY activity is selected
 - 4.3.1. Perform subflow *Modify Schedule*.

5. The use case ends.

ASU: USE-CASE DETAILED SPECIFICATION—STYLE 2: USING SUBFLOWS

Subflows

S1: Create Schedule

{Begin Creating Schedule}

1. The system retrieves and displays the available course information for the given term if the final date for changes has not passed.

{Deadline Passed}

2. The Instructor selects the courses that he would like to teach.

{Confirm Creating Schedule}

3. The Instructor confirms the selection.
4. The system creates the Instructor's teaching schedule in the database.
5. The system notifies the Instructor that the teaching schedule has been created.

ASU: USE-CASE DETAILED SPECIFICATION—STYLE 2: USING SUBFLOWS

S2: Modify Schedule

{Begin Modifying Schedule}

1. The system retrieves and displays the Instructor's teaching schedule and the available course information for the given term if the final date for changes has not passed.

{Deadline Passed}

2. The Instructor adds course sections to and/or deletes course sections from his teaching schedule for the given term.

{Confirm Modifying Schedule}

4. The Instructor confirms the changes.
5. The system updates the Instructor's teaching schedule in the database.
6. The system notifies the Instructor that the modifications have been made.

Alternative Flows (The specification is the same as in Style 1.)

**We note that the preceding two styles are *only examples*.
There are *many different ways* to write use-case descriptions.
A project should select a style and use it consistently.**