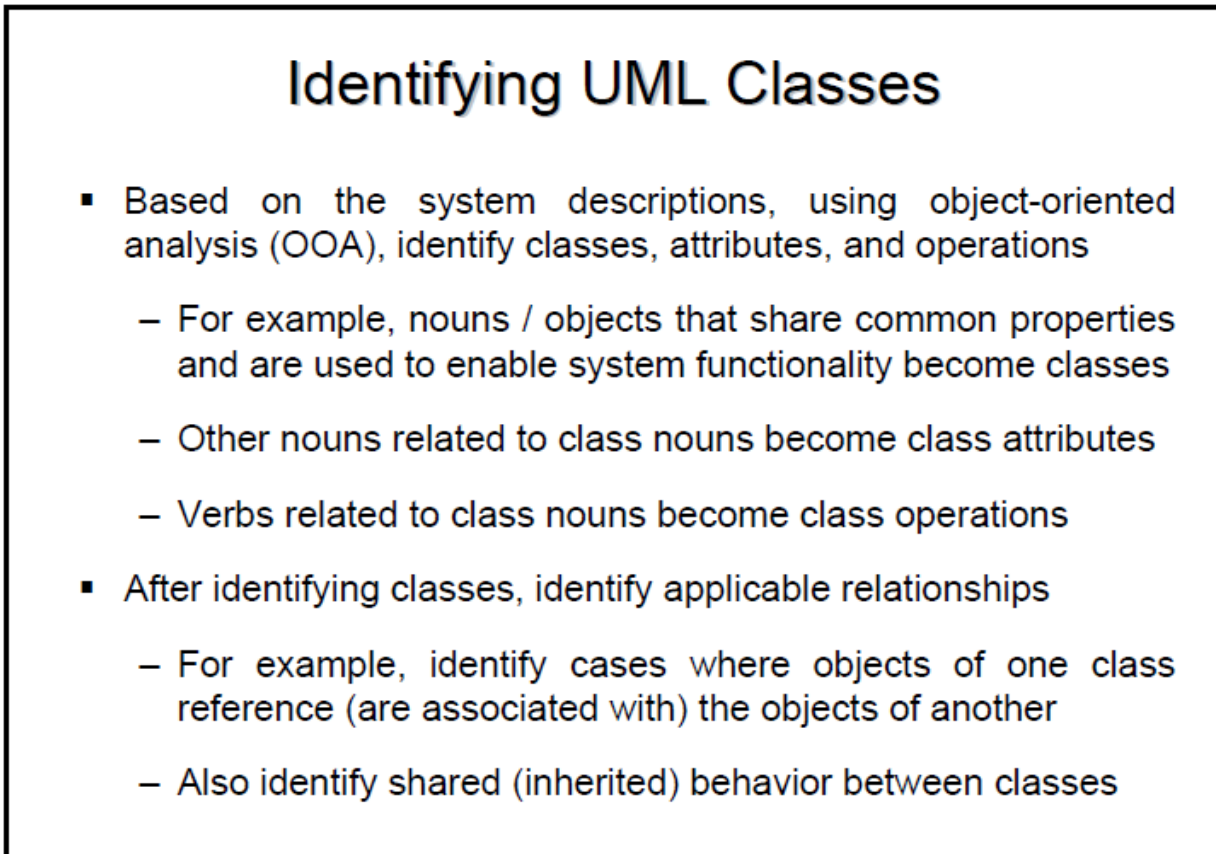
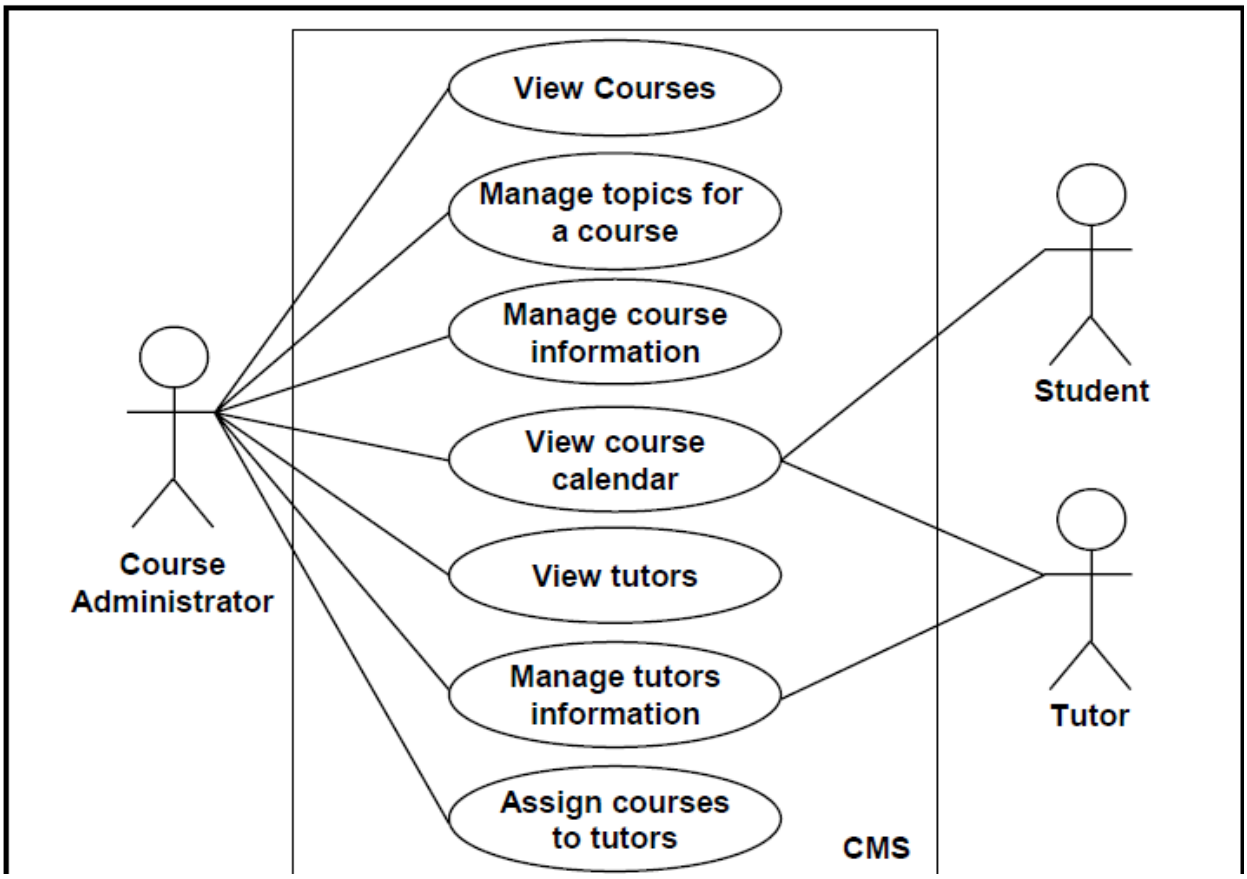
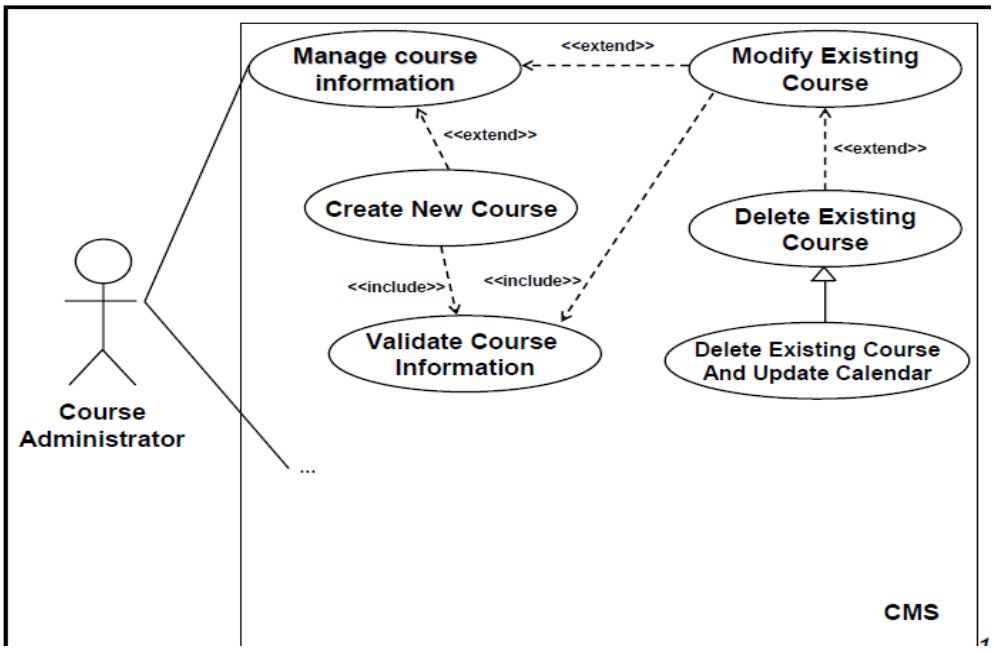
# Lab Manual

## SE-401 Software Engineering

**Lab Plan 8**
**Example 1:**




View Courses
Manage topics for a course
Manage course information
View course calendar
View tutors
Manage tutors information
Assign courses to tutors
CMS
Course Administrator
Student
Tutor

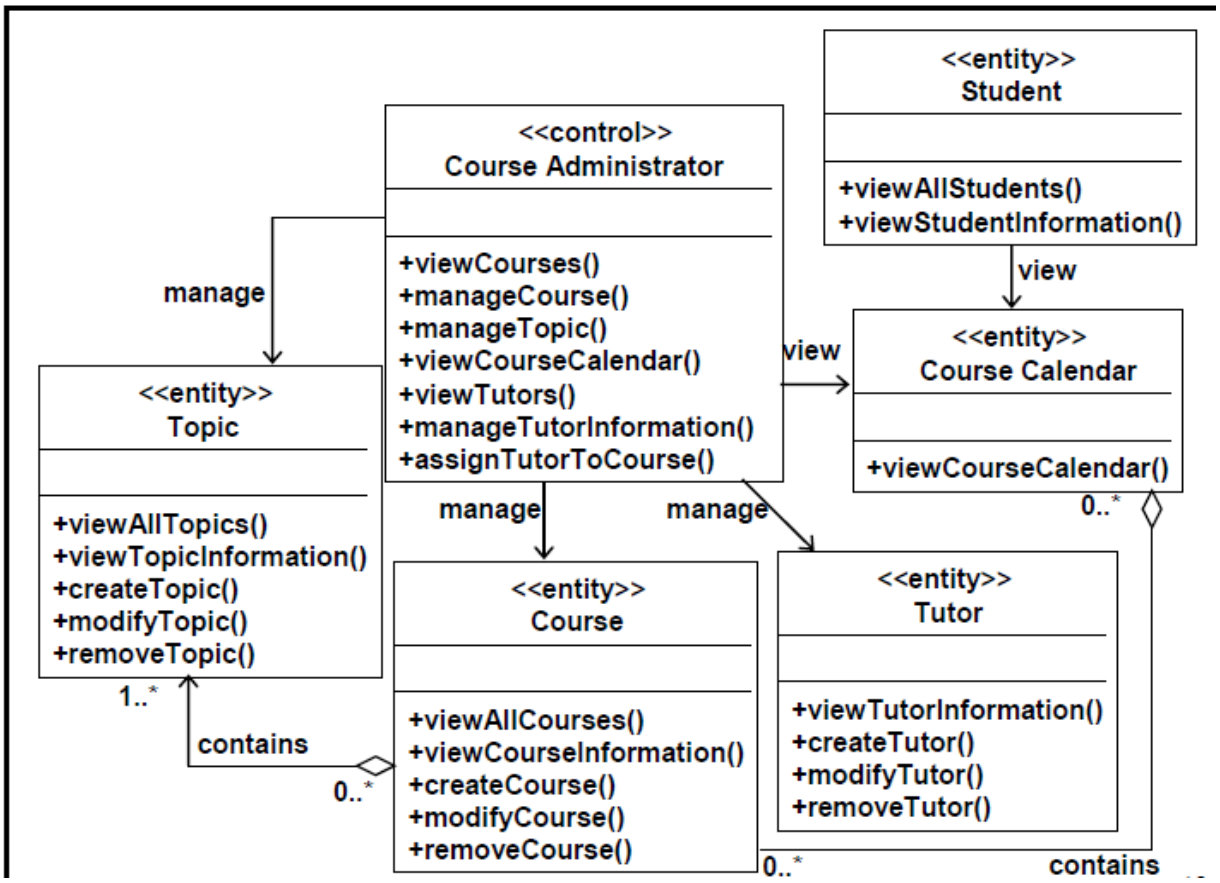

Manage course information
<<extend>>
Modify Existing Course
<<extend>>
<<extend>>
Create New Course
Delete Existing Course
<<include>>
<<include>>
Validate Course Information
Delete Existing Course And Update Calendar
Course Administrator
...
CMS

# Identified Classes

- The following classes are identified:
  - As use case actors:
    - Course Administrator
    - Student
    - Tutor
  - As system objects:
    - Course Calendar
    - Course
    - Topic

| ClassName | Methods |
|---|---|
| CourseAdministrator | viewCourses()<br>manageCourse()<br>manageTopic()<br>viewCourseCalendar()<br>viewTutors()<br>manageTutorInformation()<br>assignTutorToCourse() |

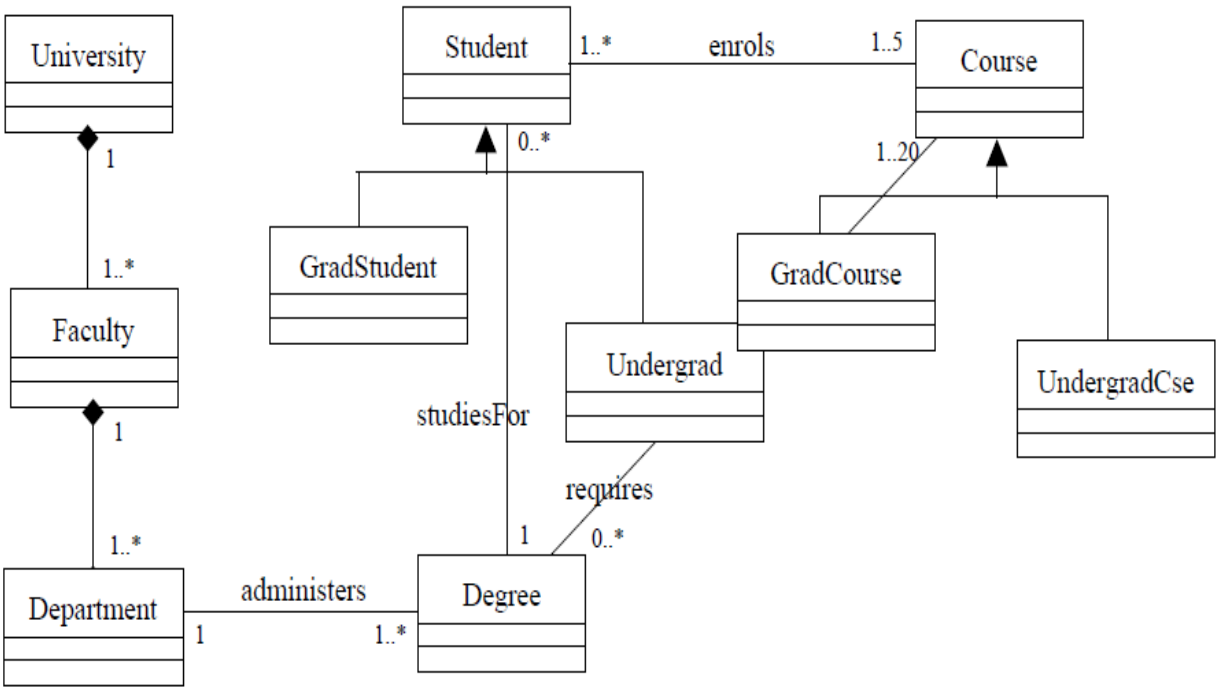
| ClassName | Methods |
|---|---|
| Course | viewAllCourses()<br>viewCourseInformation()<br>createCourse()<br>modifyCourse()<br>removeCourse() |
| Topic | viewAllTopics()<br>viewTopicInformation()<br>createTopic()<br>modifyTopic()<br>removeTopic() |
| Tutor | viewTutorInformation()<br>createTutor()<br>modifyTutor()<br>removeTutor() |
| CourseCalendar | viewCourseCalendar() |
| Student | viewAllStudents()<br>viewStudentInformation() |




**Example 2:**

- A university offers degrees to students. The university consists of faculties each of which consists of one or more departments. Each degree is administered by a single department. Each student is studying towards a single degree. Each degree requires one to 20 courses. A student enrolls in 1-5 courses (per term.) A course can be either graduate or undergraduate, but not both. Likewise, students are graduates or undergraduates but not both.

*Draw a class diagrams which represents the generic objects and relationships described above. Make sure to specify multiplicities for all associations shown in your diagrams.*




Example 3:

- Consider the world of companies: Companies employ employees (who can only work for one company), and consist of one or more departments. Each company has a single president, who is an employee. Departments have employees as members and run projects (one or more.) Employees can work in 1 to 3 projects, while a project can have 2 to 50 assigned employees. You may assume that companies have a name and address, while employees have a emp# and a salary