Design patterns exercise

The purpose of this exercise is to think about how you might apply some of the design patterns covered today to a particular problem. You're not expected to actually implement a solution, although this would be a good way to practice some of the material.

The problem - a course registration system

The course registration system will need to have ways to store information about courses, course rosters (students enrolled in a particular course), and students.

The system will need to support the following functionality:

- A student registers for a specific course. Questions to consider:
  - Which aspects of the system need to be updated?
  - How will you handle the case where the course is full
- A student joins a course waitlist if the course is full. Questions to consider:
  - Which aspects of the system need to be updated?
  - How will you handle the case where a student moves from the waitlist to the course roster?
- A student drops a course. Questions to consider:
  - Which aspects of the system need to be updated?
  - What effect will this have on the waitlist, if there is one?

Sketch out a design for the system and identify places where one or more of the design patterns covered today could be useful.