Scheduling Software for a University Department

Implement a web-based application which supports the creation and viewing of a university academic department's semester schedule of its classes. The software needs to support three levels of users: administrative, faculty, and outside viewers.

The software should support the following types of input:
- possible class times to schedule
- the available rooms with the sizes and whether they are a lab or just a lecture room
- the list of courses to schedule along with the number of sections, the class size limit, whether a night class needs to be offered, whether an internet sections needs to be offered, as well as whether the course needs a regular Classroom or Lab
- a list of possible conflict with other courses from other departments with the usual time those classes are offered
- a list of courses with their prerequisites within the department
- a list of courses a faculty member prefers to teach along with their preference for early, mid-day, late afternoon/evening or no preference.
- a list of faculty members with their email address, their seniority, and the minimum number of hours to teach
- the method of consideration for scheduling (seniority or by order of submission)

The software should provide the following output:
- Graphical representation of the schedule created
- Excel spreadsheet representation of the schedule
- List of any courses unable to be scheduled along with the possible reason(s) for the inability to schedule.

Scheduling constraints:
- 400 level courses take precedence over any lower level course
- No 300/400 level courses should be scheduled for the same day/time unless one is the prerequisite of the other
- 300 level courses take precedence over any lower level course
- 200 level courses take precedence over any lower level course

Students should be able to view the schedule from the department's webpage.

Faculty members should be able to view the list of desired courses to be offered and given the ability to indicate the course and desired time interval (early, mid-day, late afternoon/evening or no preference). Preferences may be considered but are not binding to the constructing of the schedule. Preferences may be considered either in the order submitted or by seniority.