

Step 0: chairperson assigns teaching load, i.e. professors teach 1 or 2 or 3 courses in a semester

Step 1: schedule courses

Map courses to professors based on teaching load and meet constraints

- All UG and graduate core courses must be offered each semester
- Must have at least 3 UG elective courses
- Must have at least 6 graduate elective courses
- Considering the case of preferred repeating courses, can be considered as pre-defined assigned course

Rough guidelines

- Professor teaching preference DB: professors with preferred courses to teach

Step 2: schedule classrooms

Map courses to classrooms & meet constraints

- Classroom capacity meets class size
- Class time meets classroom availability
- Class time meets professors' preference
- Class time will not clash
 - One professor's multiple class cannot clash
 - All graduate classes cannot clash
 - Same level, UG classes cannot clash
 - A special case, cross-listed courses (i.e., offered at both graduate and UG level) are treated as one course
- Prefer classrooms with closer distance

Step 3. Validation Check UI

Rough guidelines

- Classroom property DB: classrooms with capacity, technologies, etc.
- Classroom availability DB: classroom availability based on MWF or TR patterns
- Professor schedule preference DB: professors with preferred teaching times

Suggested routes:

- Literature study to explore possible available software solutions
- If development needed, prefer using Excel to do development, or with Python to accept input and output results