

Alumni Mentored Internships

IE 399 Summer Practice Project Proposal Form

Alumni Information

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Position: Founder

Proposed Project Information

Project Title: Course Scheduling Optimization/Heuristics

Planned Start Date: Open. **Planned End Date:** September 2020 (can be any date in between)

Project Overview: At the beginning of each academic year, the teachers (full-time and part-time) have to be assigned to certain courses taught to each class. A decision process is to assign a course to each class and assign an available teacher (who can teach that course) to it. To be clear, 4-A, 4-B, 3-A, etc. are what meant by class. The details of the system can be found below:

- The system includes preschool, primary school, secondary school and a high school.
- Each of these schools have some common teachers such as English, Spanish and Physical Education teachers.
- Part-time teachers are available only for some certain, specific hours of the week.
- For each day, every course has an upper limit on the number of hours that can be taught to each class (e.g. 5 hours of Turkish in a single day cannot be assigned to a class).
- Each class has to be assigned to a teacher for each hour.
- Each class has to be assigned to a certain amount of specific courses, with certain amount of hours each (e.g. a total of 8 hours of Turkish per week).
- Each course can be assigned in consecutive hours for each day (e.g. English from 10.40 to 12.40).
- Some courses can be assigned only in two-hour blocks, while some can be assigned in one-hour block.

Outcome of this project is a solution methodology that can obtain as many schedules as possible. The methodology can be based on either a mathematical model or an algorithm, as long as it provides feasible solutions. In case of algorithms, the preferred programming languages are python and java, but it's not a requirement. Data and programming support are available.

The project can be assigned to a group of 2-3 students.