Please formulate the mathematical model for the following business problem. The mathematical model would consist of:

- *Sets*
- *Parameters*
- *Decision Variables*
- *Objective function*
- *Constraints*
- *Necessary assumptions*

You can write the mathematical model in MS Word, MS Powerpoint, or any other medium of your choice.

Alternatively, you can write the mathematical model on paper and upload the scanned image.

Please make any assumptions which you feel are necessary for solving the problem.

Also if you think there is any rule/metric which the model should try to attain, but is not mentioned in the document, please feel free to add that.

Deadline: Please submit the assignment by 24th April 11 PM.

Note: This assignment would have 15% weightage

Business problem:

A particular class in a school has 4 sections. Each section has 8 classes in a day at 8 timeslots. There are 5 working days in a week, hence total number of classes in a week = 8*5 = 40. There would be 4 classes before lunch and 4 classes after lunch.

10 subjects are taught, each subject has 4 class. The subjects can be divided into science and non-science categories:

4 Science subjects, each with 3 theory + 1 practical class every week.

6 Non-science subjects, each with 4 theory class every week.

Objective is to assign the subjects to classes in such a way that:

Every subject has at most 1 class per day.

The practical classes should be preferably allocated after lunch.

One section should not preferably have 2 consecutive practical classes

Since there would be only 1 practical laboratory for a subject for the entire school, not more than 1 practical class of the same subject can be scheduled in the same timeslot.

Since every section would have 4 practical classes every week, there would not be more than 1 practical class per day.

Preferably 2 consecutive science classes, or 2 consecutive non-science classes should be avoided as much as possible.

The timeslot for a subject should vary as much as possible across the week.

All the above constraints should be equally applicable across the 4 sections.