MARSHALL SCHEDULING OPTIMIZATION REPORT

TEAM 7: OLIVIA HUANG | TZU-YI HUANG | KEN NHAN | ZHUOLIN OUYANG | YUFEI WANG

EXECUTIVE SUMMARY

In this project, we aim to create an optimization algorithm that streamlines the course scheduling process for the Marshall School of Business at the University of Southern California. Our preliminary analysis of the current process shows that it can take up to months and a lot of email exchanges between the Marshall course scheduling team and the departmental coordinators to finalize the schedule. Additionally, there is currently no systematic way to address students and faculty preference in scheduling courses. These are the specific areas for improvement that our team have decided to address in this project.

In terms of the process, we recommend the Marshall course scheduling team to replace the two-phase process with a centralized scheduling process. Instead of assigning slots to different departments, the scheduling team should gather all the preferences from departments and faculties, create a draft schedule that accommodates those preferences, and then allow departments and faculties to make changes if needed before publishing the final schedule.

In constructing our prototype algorithm, we collected data about student enrollment each course and the capacity of classrooms in different buildings from the course scheduling team, as well as data from the faculty preference survey conducted by Dr. Peng Shi. The prototype itself is created using Python and Gurobi.

Our algorithm aims to enhance the scheduling outcome measured by the following three metrics:

- ***The classroom capacity utilization rate:*** how fully used are the classrooms?
- ***The "prime time" utilization rate:*** how many classes that take place between 10AM to 6PM?
- ***The average number of teaching days per professor****:* how many teaching days per week for each professor?

The result of our algorithm shows evidence of improvement in all of these metrics: capacity utilization improves 51%, prime time utilization improves 185%, and professor's teaching days drop from 2 to 1.7 days (a 15% reduction).

We therefore recommend the Marshall scheduling team to adopt our model in order to reduce the manual workload, optimize the usage of classroom resources while enhancing the experience of faculty and students.

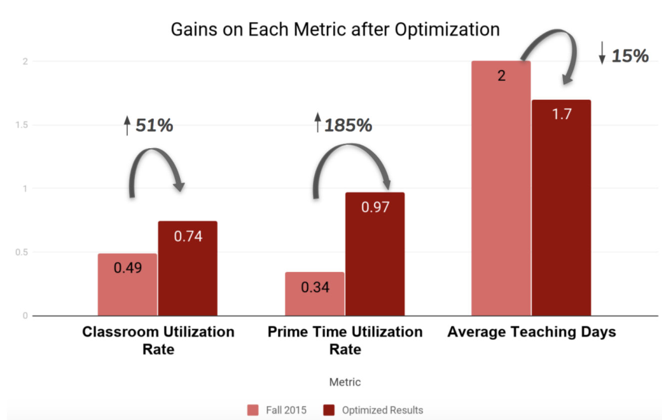


TABLE OF CONTENTS

Context of the Project

The objective of this project is to devise an optimization model to improve the current system of course scheduling in USC Marshall School of Business, and to quantify the potential gains behind the optimization model.

Based on the analysis of the current situation, we have identified two possible points of intervention within the course scheduling process: the initial allocation of time slots assigned by Shannon's team to each department every semester, and the subsequent allocation of courses in the given time slots within each department. To be specific, we believe the opportunities for improvement in the current scheduling process mainly lie in the following aspects:

1. **Optimizing time slots**: Maximizing the number of courses during the prime time (10AM to 6PM) on weekdays to maximize the utilization efficiency of classroom, and also to improve student and faculty satisfaction towards time slots.
2. **Optimizing classroom capacity**: Minimizing the total difference between the assigned classroom capacity and number of students enrolled in each course to fully utilize the available classroom resources.
3. **Optimizing faculty satisfaction:** Minimizing the average number of teaching days for all professors to improve faculty satisfaction on course scheduling results.

Given that the future demand for Marshall courses is expected to rise, and the school is planning to undergo a large-scale renovation on the Bridge and Accounting buildings, it is important that the new optimization model efficiently utilizes all available resources. Here, we propose our centralized optimization model, which strives to address the existing scheduling inefficiency and the dissatisfaction among faculty and students.

Current Process

Description

Currently, the scheduling process is rather time- and effort-consuming and suffers from various inefficiencies. For each semester, Shannon and her team allocate a set of classroom time slots to each department coordinator based on historical course allocation and special requests from department coordinators. Upon receiving the allocated time slots, each department coordinator will populate these time slots with courses throughout a few months. At this step, only around 60% of the scheduling process is completed, which is followed by lots of last minute scrambling and coordination among different departments.

Inefficiencies

The inefficiencies mainly lie in the following aspects:

1. Insufficient utilization of available classrooms and prime time slots

Due to the fact that the initial allocation of time slots is primarily done manually based on historical scheduling, the existing inefficiencies in the previous years may still exist in the future scheduling unless addressed by special departmental requests. This will lead to a certain level of inefficiency in utilizing available classroom resources and prime time slots.

2. Dissatisfaction among students and faculties

Given that the faculty preferences are collected at an ad-hoc basis, and that student preferences are not collected at all, the current scheduling process fails to address their preferences, which may lead to great dissatisfaction among students and faculties.

3. Too much administrative effort and time is needed

The back-and-forth communication between Shannon's team and each department coordinator is too time- and effort-consuming, leading to great inefficiency in administration.

PROPOSED PROCESS

DESCRIPTION

Discovering the disadvantages mentioning above, we are proposing a centralized optimization model for Shannon's team to implement and take place of the current system in order to improve course scheduling efficiency.

Our goal is to simultaneously optimize the average classroom utilization rate, prime time utilization rate and days for professors to come on campus. A low utilization rate indicates that classroom capacity is not efficiently used or intuitively speaking, small classes are assigned to large classrooms. Prime time is the time during which most faculty and students prefer to have classes, which is from 10:00am to 6:00pm. A low prime time utilization rate denotes that classes are not assigned to prime time efficiently, which may lead to dissatisfaction among students and faculties. Besides, we have noticed that some professors complain about they have to come on campus for multiple days. They would like to have classes on the same day since they might live far away and have to deal with traffics when commuting to campus. Our centralized model tackles these inefficiencies to guarantee that Marshall's limited classroom resources are allocated wisely and efficiently and both faculty and students needs are satisfied.

Our optimization model is built mainly on two types of data: course section data and classroom capacity data. The course section data includes course section ID, number of students registered, number of sessions per week, the session time length, and professors. The classroom capacity data includes a set of available classrooms with its corresponding capacity.

After inputting the above-mentioned data in our MIP optimization model, the output consists of two parts, the optimal classroom utilization rate and the optimized scheduling solution. The scheduling solution is shown in a detailed table with allocation of all input course sections on all available time slots and classrooms.

ADVANTAGES

Our centralized model basically resolves most of the above-mentioned inefficiencies.

1. Efficient utilization of available classrooms and prime time slot

Our model maximizes classroom utilization rate so that no small classes will be assigned to large size classrooms. Also, we take prime time, which is 10:00 to 18:00 on weekdays, into consideration to build our optimization model. Since most students and professors prefer classes during prime time, we would like to make sure that classrooms are fully utilized during prime time.

2. Regarding professors' convenience and time

Besides fulfilling the prime-time preference for students and faculties, we also notice that professors who teach more than one section or consecutive sections might have to walk from one building to another. Observing this issue, we build schedules that guarantee professors who teach more than one section will stay in the same building for convenience. Also, we have discovered that some professors might have to come on campus more than one or two days a week. To resolve this problem, we try to arrange their sections on the same day so that they do not have to spend time commuting.

3. Taking in charge of the whole scheduling process

Our model covers the entire course scheduling process, and thus is more efficient than the original two-phase process of going back and forth between management and coordinators with a partially filled schedule. After running our model, Shannon's team will have a nearly finalized schedule of course sections matched with classrooms, days, and start times for each department. Department coordinators can evaluate the schedule and negotiate with Shannon's team for further corrections in the final stage of scheduling process. After revision, Shannon's team can deliver 100% scheduled course sections ready for students to register for courses.

METHODOLOGY

ASSUMPTIONS

1. We calculated the predicted number of students registered for each course by averaging the number of students enrolled in the same course for the past two years.
2. Classroom capacity remains the same.
3. Number of sessions required for each section remains the same to the previous term.
4. Based on our exploratory analysis, our model is built to assign courses on 7 patterns. The classes are allocated on any of both Monday and Wednesday, both Tuesday and Thursday, or one of the weekdays.

INPUT DATA

Before introducing our methodology, we need to briefly go through what information is needed.

1. To cover different session hour classes, we divided our 13.5-hour schedule into 26 30-minute blocks. In addition, all classes are allocated on weekdays.
2. Also, we need section information such as all course section ID, predicted number of students who will register for each section, number of sessions for each section, blocks required for each session, sections requiring 2 sessions a week, professors with their corresponding sections and buildings where each classroom is located.
3. Last, we need to know which classrooms are available for scheduling and their corresponding seats offered.

METRIC

Our metric is a combination of three metrics: classroom utilization rate, average days professors comes on campus, and prime time utilization rate.

1. Classroom Utilization Rate

We can compute average utilization rate by summing the predicted number of students enrolled in each section and dividing by the total number of seats offered for every section.

2. Average Days that Professors come on campus

We can compute the average days that professors come on campus by summing up the days that they have classes and dividing by the total number of professors.

3. Prime Time Utilization Rate

We compute the prime time utilization rate by summing up the time length in minutes that are allocated to prime time (10am to 6pm) and then divided by the total regular operating time (8 hours for 5 weekdays) in minutes of all classrooms.

DECISION

To calculate our metrics, we have three decisions. First, we need to decide whether we are going to assign a course section to a specific classroom at one of the weekdays starting at one of our defined time blocks. In addition, we need to decide whether we are going to assign the professor to give lecture on one of the weekdays. Last, we need to decide the how many prime-time blocks we are going to use for scheduling.

OBJECTIVE

Our objective consists of three parts: classroom utilization, professor convenience, and prime time utilization.

1. Classroom Utilization

Our first objective is to maximize the average classroom utilization rate. A higher rate indicates that classroom capacity is efficiently used. In other words, Marshall is assigning classes to their most suitable size classrooms. Hence, the higher the rate, the more efficient the Marshall course scheduling indicates. The maximum of this value is 1, indicating that classrooms are fully utilized.

2. Professor Convenience

Our second objective is to minimize the days that a professor gives lectures on campus if he or she has multiple sections. In addition, considering professors might have multiple or consecutive sections in one day, our model will assign classrooms in the same building for professors' convenience.

3. Prime Time Utilization

Our third objective is to maximize prime time utilization rate to satisfy most students' and professors' preferences. A higher rate denotes that we are allocating classes to prime time efficiently. The maximum of this value is 1, indicating that prime time are fully utilized.

Our goal is to simultaneously maximize the usage of classrooms and prime time and minimize the days that professors need to come on campus.

CONSTRAINTS

There are five kinds of constraints to consider when implementing our model.

1. Capacity Constraint

- Number of students enrolled in the course must not exceed the number of seats offered in the course's assigned classroom.

2. Conflict Constraints

- Every professor can only teach one session at one time slot or otherwise professors teaching more than one section might be assigned to multiple classrooms at the same time.
- If a section is assigned to a classroom on either one or two of the weekdays in specific time slots, other sections must not be assigned to the same classroom, days, and time slots.

3. Session Required Constraint

- For each course section, we must fully assign its required sessions.

4. Time Constraints

- Classes cannot last beyond school time (9:30PM). Hence, for a 1.5-hour session class, it must start no later than 8:00 PM, and for a 3-hour class, it must start no later than 6:30 PM.
- If a section is divided into 2 sessions, it is allocated either on both Monday and Wednesday or on both Tuesday and Thursday.
- If the section is required to divide into two sessions, it will not be assigned to Friday.

5. Professor Constraints

- Professors who have more than one section will stay in the same building.

6. Constraints on Auxiliary Variables

- <u>Teaching days for professors</u>

If a professor is assigned to give lectures on one of the weekdays, the model will force the value of one of our binary decision variables(PD_{dp}) to be 1. In other words, the more ones that the model has assigned indicates that a professor is assigned to give lectures on multiple days.

- <u>Prime time</u>

If a section starts and finishes within the prime time (i.e., 10AM to 6PM), the model will force the number of sessions to the decision variable PT_i. The higher the total of PT_i, the higher the prime time utilization rate.

Evaluation of Input Data

Due to the limited computation power of machine and to test if our model works for all departments in Marshall, we randomly select 85 sections with predicted number of students less than 150 from the whole dataset to be our test data. Also, since we are scheduling only for courses from Monday to Friday, we only chose classes happen on weekdays.

In addition to selecting a subset of courses, we also select a subset of classrooms. Different departments offer different class sizes, for example, DSO in general offers classes with 45 seats provided, while BUCO offers classes with only 25 seats in average. Thus, we would like to prove that our model can allocate courses among all Marshall schools to different classrooms. Our criterion is quite simple. Based on our exploratory analysis, we found that most classrooms offer about 50 seats, with few offering more than 100 seats. Hence, we select only one large size classroom, JFF LL105 with 149 seats offered, one small size classroom, ACC312 with 20 seats offered and randomly selected the other 4 classrooms among the other medium size classrooms. Then, to simulate the same situation as the original dataset, we try our best to match the ratio of number of predicted students to number of seats offered of our subset data (8.4) to the same ratio of the original data (9.7).

Results

The output of our model is the optimized scheduling solution based on the sample input data, which includes information about 85 different course sections and 6 available classrooms in the 2015 fall term. For each classroom, we created a time table to show the optimized scheduling results of courses in different time slots, with each row representing the start time of a 30-minute time block from 8:00 to 21:00, and each column representing the day of week from Monday to Friday. The values filled in each cell in the time tables are displayed as the combinations of the course ID and the section number. Below is a screenshot of the partial scheduling solution we provided for classroom JFF414.

JFF 414					
Timeslot	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8:00:00					
8:30:00					
9:00:00					
9:30:00					
10:00:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
10:30:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
11:00:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
11:30:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
12:00:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
12:30:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
13:00:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
13:30:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
14:00:00	BUAD-302 / 14648		BUAD-302 / 14648		BUAD-304 / 14732

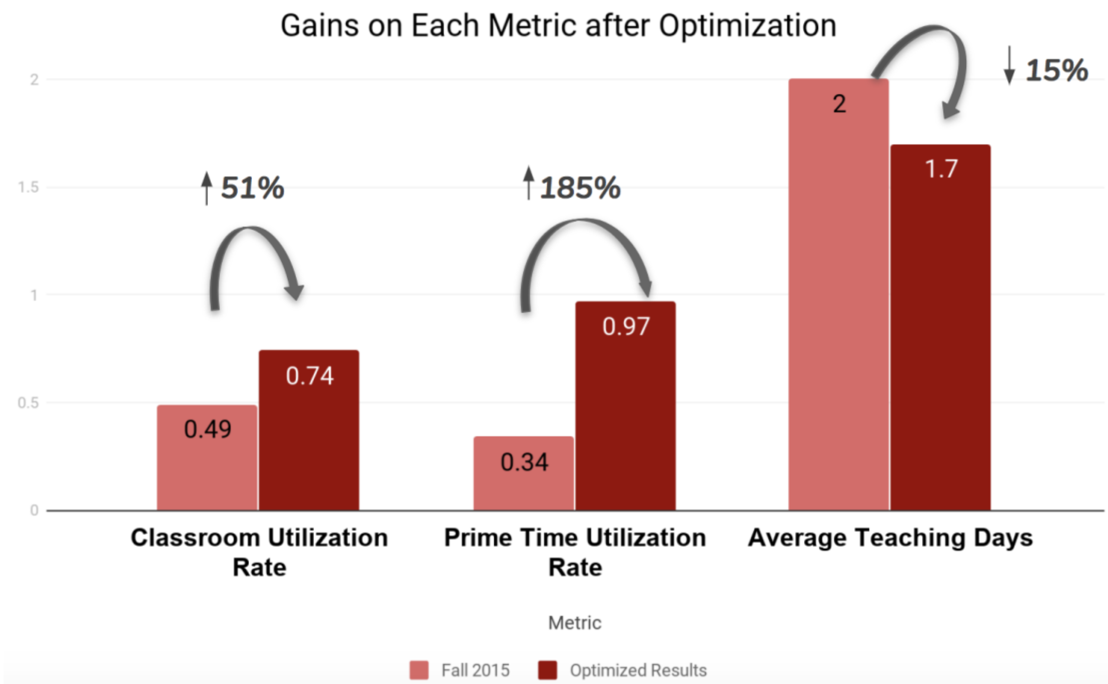
We can easily tell from the screenshot that no conflict is aroused between courses, and that all courses with 2 sessions are allocated at the same time slots on either Monday/Wednesday or Tuesday/Thursday.

Output Evaluation

Given the input data, which is representative of the full dataset and mimics the status quo of the current scheduling process, as is stated in our justification of the input data, our optimization was performed correctly by seeking to maximize the **utilization of classrooms** and **prime time** and minimize **professors' average teaching days per week.** Therefore, the results yielded by our model can indeed approximate the potential gains in the whole scheduling process and prove that our model can be generalized on larger input dataset given machine with higher computational power.

In order to evaluate the performance of our model in a quantifiable way, we compared the scheduling results in 2015 Fall with the optimized scheduling results of the input data by calculating the changes in three key metrics that concern us most throughout the model building process. Substantial gains in all three metrics can be seen from this comparison:

- **49% increase** in classroom utilization rate from 49% to 73%. Intuitively, it means that a half full classroom in 2015 Fall semester will become 70% full with our optimization model.
- **162% increase** in prime time utilization from 34% to 96%. Intuitively, it means that with our optimization model, we will have courses during 96% of the time span from 10AM to 6PM, compared to 34% in 2015 Fall.
- **15% decrease** in professor average teaching days per week from 2 days per week to 1.67 per week. Intuitively, it means that more professors only need to teach one day per week compared to 2015 Fall.



Therefore, our result offers evidence that the model can indeed improve the classroom and prime time utilization, and professor convenience in terms of commuting to campus. Also, with more data on professor's preferences, course popularity and new courses, etc., we can further improve our centralized model's performance.

CONCLUSION & RECOMMENDATION

In this project, our objective is to build an optimization model to help improve Marshall's course scheduling process. From our preliminary analysis, we first identify some inefficiencies that the current process possesses. It shows that the current process does not fully utilize the classrooms and prime time slots. In other words, many classes are assigned to unsuitable classrooms and timeslots which satisfy neither faculty nor students preferences. Also, we noticed that there is too much back-and-forth manually changing between Shannon's team and each department after current process phase 1 scheduling, which is very time- and effort-consuming for both administration and departments.

To solve the above problems, we recommend Marshall to build a centralized scheduling process to replace its current two-phase process and apply our centralized optimization model. Considering students' and faculties' preference, we take prime time into consideration. In addition, we also take professors' convenience into consideration by minimizing the days they need to come on campus. Last, we also noticed that Marshall plans to undergo a large-scale renovation of Bridge and Accounting buildings which would remove several medium sized classrooms. In this case, classrooms should be fully utilized to make up for the supply shortage. Hence, we also include classroom utilization rate as one of our objectives.

Solving the above efficiencies and fulfilling every aspect of needs, when Marshall undergoes a short-term renovation of buildings, our model will tackle the shortage of the supply by efficiently assigning classes to their suitable classrooms without overlooking the needs of faculties and students. To be more specific, our model will try to reduce the loss caused by the renovation as much as possible.

For future improvement, we recommend Marshall to conduct a survey of professors' preference for classrooms so that we can better satisfy the true needs of professors. Also, understanding the needs of students is important. From a student point of view, we recommend Marshall to conduct a survey of students' preference for classes. In this case, we can prevent popular and required courses from conflict with each other. Lastly, understanding that our optimization model is just a prototype, if we were given more time, we would refine our model to consider different types of stakeholders such as graduate students or part-time students. Also, due to computation time, we only randomly select 90 courses and a subset of classrooms as our input data, hence, if given more time, we will try to apply to full dataset to see what the results are.

APPENDIX

MIP FORMULATION

Input data:

Section information:

$$\begin{aligned} I &= \{\text{list of course sections}\} \\ student &= \{\text{predicted number of students who will register for each section}\} \\ PS &= \{\text{number of sessions for each section}\} \\ TS &= \{\text{the timelength of each session in 30-minute block unit (e.g., 3, 6)}\} \\ I_2 &= \{\text{sections with 2 sessions a week (i.e., MW and TH)}\} \end{aligned}$$

Professor information:

$$\begin{aligned} P &= \{\text{list of professors}\} \\ profSec &= \{\text{list of sections taught by each professor}\} \end{aligned}$$

Classroom information:

$$\begin{aligned} J &= \{\text{list of classrooms}\} \\ seat &= \{\text{number of seats in each classroom}\} \\ B &= \{\text{list of buildings}\} \\ BC &= \{\text{list of classrooms by each building}\} \end{aligned}$$

Day-time information:

$$\begin{aligned} D &= \{\text{day of week (i.e., M T W H F)}\} \\ T &= \{\text{indexes representing start time of a section (0 is 8AM and 26 is 9PM}\} \\ Prime &= \{\text{indexes representing start time of prime time section (4 is 10AM and 20 is 6PM}\} \end{aligned}$$

Decision variables:

Binary variable X_{ijdt} denotes whether we assign course section i to classroom j at day d starting at time t.

Auxiliary variables:

Binary variable Y_{ijdt} denotes whether class i is still in session in classroom j at day d at time t.

Binary variable PD_{dp} denotes whether professor p has classes on day of week d.

Binary variable $PDB_{p,d,b}$ denotes whether professor p has any class in day of week d in building b.

Integer variable PT_i denotes the number of sessions of section i that starts and ends within prime time. Prime time is defined as 10AM to 6PM.

Objective:

Our goal is to balance different components:

- Maximize the average capacity utilization rate
- Minimize the average number of days professors have to teach
- Maximize the prime time classroom utilization

The linear program is thus:

$$
\begin{aligned}
\text{maximize}(\quad & 3 * \frac{1}{|PS|} \sum_{i \in I} \sum_{j \in J} \sum_{d \in D} \sum_{t \in T} X_{ijpt} \frac{student_i}{seat_j} \\
& - \frac{1}{|P|} \sum_{p \in P} \sum_{d \in D} PD_{p,d} \\
& + 2 * \frac{1}{5 * 8 * 60 * |J|} \sum_{i \in I} PT_i * TS_i * 30)
\end{aligned}
$$

Constraints:

1. No start time conflict for classes:

$$Y_{ijdt} = \sum_{t'=max(0,t-TS_i+1)}^{t} X_{ijdt'} \qquad \forall i \in I, j \in J, d \in D, t \in T$$

$$\sum_{i \in I} y_{ijdt} \leq 1 \qquad \forall j \in J, d \in D, t \in T$$

2. All required sessions must be scheduled:

$$\sum_{j \in J} \sum_{d \in D} \sum_{t \in T} X_{ijdt} = PS_i \qquad \forall i \in I$$

3. Number of students must not exceed total seats:

$$X_{ijdt} * student_i \leq seat_j \qquad \forall i \in I, j \in J, d \in D, t \in T$$

4. No class lasts beyond school time (i.e., 9.30PM):

$$\sum_{j \in J} \sum_{d \in D} \sum_{t \in \{T_{26} - TS_i + 2, \ldots, T_{26}\}} X_{ijdt} = 0 \qquad \forall i \in I$$

5. Binding clause for 2-session course (MW):

$$X_{ij'M't} = X_{ij'W't} \qquad \forall i \in I_2, j \in J, t \in T$$

6. Binding clause for 2-session course (TH):

$$X_{ij'T't} = X_{ij'H't} \qquad \forall i \in I_2, j \in J, t \in T$$

7. No Friday class for courses with 2 sessions:

$$\sum_{j \in J} \sum_{t \in T} X_{ij'F't} = 0 \qquad \forall i \in I_2$$

8. No teaching conflict for professor:

$$\sum_{i \in ps} \sum_{j \in J} X_{ijdt} \leq 1 \qquad \forall ps \in profSec, d \in D, t \in T$$

9. Professor to teach in one building in one day of week:

$$PDB_{pdb} \geq X_{ijdt} \qquad \forall p \in profSec, i \in p, d \in D, b \in BC, j \in b, t \in T$$

$$\sum_{b \in B} PDB_{pdb} \leq 1 \qquad \forall p \in P, d \in D$$

10. Number of day professor has to teach (auxiliary):

$$\sum_{j \in J} \sum_{t \in T} X_{ijdt} \leq PD_{dp} \qquad \forall ps \in profSec, i \in ps, d \in D$$

11. Prime time (auxiliary):

$$\sum_{j \in J} \sum_{d \in D} \sum_{t \in Prime | t + TS_i \in Prime} \geq PT_i \qquad \forall i \in I$$

JFF LL 105

Timeslot	Monday	Tuesday	Wednesday	Thursday	Friday
8:00:00		BUAD-306 / 14785		BUAD-306 / 14785	
8:30:00		BUAD-306 / 14785		BUAD-306 / 14785	
9:00:00		BUAD-306 / 14785		BUAD-306 / 14785	
9:30:00		BUAD-306 / 14785		BUAD-306 / 14785	
10:00:00	BUAD-215 / 14495	GSBA-521B / 15661	BUAD-215 / 14495	GSBA-521B / 15661	FBE-558 / 15440
10:30:00	BUAD-215 / 14495	GSBA-521B / 15661	BUAD-215 / 14495	GSBA-521B / 15661	FBE-558 / 15440
11:00:00	BUAD-215 / 14495	GSBA-521B / 15661	BUAD-215 / 14495	GSBA-521B / 15661	FBE-558 / 15440
11:30:00	BUAD-215 / 14495	GSBA-509A / 15561	BUAD-215 / 14495	GSBA-509A / 15561	FBE-558 / 15440
12:00:00	BUAD-311T / 14968	GSBA-509A / 15561	BUAD-311T / 14968	GSBA-509A / 15561	FBE-558 / 15440
12:30:00	BUAD-311T / 14968	GSBA-509A / 15561	BUAD-311T / 14968	GSBA-509A / 15561	FBE-558 / 15440
13:00:00	BUAD-311T / 14968	FBE-441 / 15362	BUAD-311T / 14968	FBE-441 / 15362	FBE-558 / 15440
13:30:00	BUAD-311T / 14968	FBE-441 / 15362	BUAD-311T / 14968	FBE-441 / 15362	BUAD-304 / 14743
14:00:00	BUAD-306 / 14786	FBE-441 / 15362	BUAD-306 / 14786	FBE-441 / 15362	BUAD-304 / 14743
14:30:00	BUAD-306 / 14786	FBE-441 / 15362	BUAD-306 / 14786	FBE-441 / 15362	BUAD-304 / 14743
15:00:00	BUAD-306 / 14786	GSBA-521B / 15660	BUAD-306 / 14786	GSBA-521B / 15660	BUAD-304 / 14743
15:30:00	BUAD-306 / 14786	GSBA-521B / 15660	BUAD-306 / 14786	GSBA-521B / 15660	BUAD-425 / 15053
16:00:00	BUAD-215 / 14497	GSBA-521B / 15660	BUAD-215 / 14497	GSBA-521B / 15660	BUAD-425 / 15053
16:30:00	BUAD-215 / 14497	GSBA-509A / 15560	BUAD-215 / 14497	GSBA-509A / 15560	BUAD-425 / 15053
17:00:00	BUAD-215 / 14497	GSBA-509A / 15560	BUAD-215 / 14497	GSBA-509A / 15560	BUAD-425 / 15053
17:30:00	BUAD-215 / 14497	GSBA-509A / 15560	BUAD-215 / 14497	GSBA-509A / 15560	
18:00:00				FBE-527 / 15398	
18:30:00				FBE-527 / 15398	
19:00:00				FBE-527 / 15398	
19:30:00				FBE-527 / 15398	
20:00:00				FBE-527 / 15398	
20:30:00				FBE-527 / 15398	
21:00:00				FBE-527 / 15398	

JFF 414

Timeslot	Monday	Tuesday	Wednesday	Thursday	Friday
8:00:00					
8:30:00					
9:00:00					
9:30:00					
10:00:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
10:30:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
11:00:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
11:30:00	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-311 / 14901	ACCT-370 / 14025	BUAD-304 / 14725
12:00:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
12:30:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
13:00:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
13:30:00	MKT-425 / 16480	BUAD-285B / 14522	MKT-425 / 16480	BUAD-285B / 14522	BUAD-425 / 15057
14:00:00	BUAD-302 / 14648		BUAD-302 / 14648		BUAD-304 / 14732
14:30:00	BUAD-302 / 14648	GSBA-548 / 15904	BUAD-302 / 14648	GSBA-548 / 15904	BUAD-304 / 14732
15:00:00	BUAD-302 / 14648	GSBA-548 / 15904	BUAD-302 / 14648	GSBA-548 / 15904	BUAD-304 / 14732
15:30:00	BUAD-302 / 14648	GSBA-548 / 15904	BUAD-302 / 14648	GSBA-548 / 15904	BUAD-304 / 14732
16:00:00	BAEP-452 / 14381	ACCT-370 / 14026	BAEP-452 / 14381	ACCT-370 / 14026	BUAD-304 / 14741
16:30:00	BAEP-452 / 14381	ACCT-370 / 14026	BAEP-452 / 14381	ACCT-370 / 14026	BUAD-304 / 14741
17:00:00	BAEP-452 / 14381	ACCT-370 / 14026	BAEP-452 / 14381	ACCT-370 / 14026	BUAD-304 / 14741
17:30:00	BAEP-452 / 14381	ACCT-370 / 14026	BAEP-452 / 14381	ACCT-370 / 14026	BUAD-304 / 14741
18:00:00					
18:30:00					
19:00:00					
19:30:00					
20:00:00					
20:30:00					
21:00:00					

ACC 201

Timeslot	Monday	Tuesday	Wednesday	Thursday	Friday
8:00:00	BUAD-497 / 15100		BUAD-497 / 15100		
8:30:00	BUAD-497 / 15100		BUAD-497 / 15100		
9:00:00	BUAD-497 / 15100		BUAD-497 / 15100		
9:30:00	BUAD-497 / 15100		BUAD-497 / 15100		
10:00:00	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-307 / 14830
10:30:00	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-307 / 14830
11:00:00	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-307 / 14830
11:30:00	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-497 / 15108	ACCT-374 / 14062	BUAD-307 / 14830
12:00:00	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-307 / 14810
12:30:00	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-307 / 14810
13:00:00	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-307 / 14810
13:30:00	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-497 / 15099	BUAD-285A / 14515	BUAD-307 / 14810
14:00:00	MKT-405 / 16470	BUAD-285A / 14512	MKT-405 / 16470	BUAD-285A / 14512	BUAD-307 / 14804
14:30:00	MKT-405 / 16470	BUAD-285A / 14512	MKT-405 / 16470	BUAD-285A / 14512	BUAD-307 / 14804
15:00:00	MKT-405 / 16470	BUAD-285A / 14512	MKT-405 / 16470	BUAD-285A / 14512	BUAD-307 / 14804
15:30:00	MKT-405 / 16470	BUAD-285A / 14512	MKT-405 / 16470	BUAD-285A / 14512	BUAD-307 / 14804
16:00:00	MKT-405 / 16474	ACCT-374 / 14061	MKT-405 / 16474	ACCT-374 / 14061	BUAD-307 / 14828
16:30:00	MKT-405 / 16474	ACCT-374 / 14061	MKT-405 / 16474	ACCT-374 / 14061	BUAD-307 / 14828
17:00:00	MKT-405 / 16474	ACCT-374 / 14061	MKT-405 / 16474	ACCT-374 / 14061	BUAD-307 / 14828
17:30:00	MKT-405 / 16474	ACCT-374 / 14061	MKT-405 / 16474	ACCT-374 / 14061	BUAD-307 / 14828
18:00:00			DSO-505 / 16298		
18:30:00			DSO-505 / 16298		
19:00:00			DSO-505 / 16298		
19:30:00			DSO-505 / 16298		
20:00:00			DSO-505 / 16298		
20:30:00			DSO-505 / 16298		
21:00:00			DSO-505 / 16298		

JKP 104

Timeslot	Monday	Tuesday	Wednesday	Thursday	Friday
8:00:00					
8:30:00					
9:00:00					
9:30:00					
10:00:00	BUAD-311 / 14907	MKT-465 / 16504	BUAD-311 / 14907	MKT-465 / 16504	BUAD-310 / 14917
10:30:00	BUAD-311 / 14907	MKT-465 / 16504	BUAD-311 / 14907	MKT-465 / 16504	BUAD-310 / 14917
11:00:00	BUAD-311 / 14907	MKT-465 / 16504	BUAD-311 / 14907	MKT-465 / 16504	BUAD-310 / 14917
11:30:00	BUAD-311 / 14907	MKT-465 / 16504	BUAD-311 / 14907	MKT-465 / 16504	BUAD-310 / 14923
12:00:00	BUAD-285A / 14514	MKT-599 / 16548	BUAD-285A / 14514	MKT-599 / 16548	BUAD-310 / 14923
12:30:00	BUAD-285A / 14514	MKT-599 / 16548	BUAD-285A / 14514	MKT-599 / 16548	BUAD-310 / 14923
13:00:00	BUAD-285A / 14514	MKT-599 / 16548	BUAD-285A / 14514	MKT-599 / 16548	MOR-569 / 16705
13:30:00	BUAD-285A / 14514	ACCT-561T / 14236	BUAD-285A / 14514	ACCT-561T / 14236	MOR-569 / 16705
14:00:00	FBE-460 / 15372	ACCT-561T / 14236	FBE-460 / 15372	ACCT-561T / 14236	MOR-569 / 16705
14:30:00	FBE-460 / 15372	ACCT-561T / 14236	FBE-460 / 15372	ACCT-561T / 14236	MOR-569 / 16705
15:00:00	FBE-460 / 15372	MKT-599 / 16549	FBE-460 / 15372	MKT-599 / 16549	MOR-569 / 16705
15:30:00	FBE-460 / 15372	MKT-599 / 16549	FBE-460 / 15372	MKT-599 / 16549	MOR-569 / 16705
16:00:00	BUAD-285A / 14513	MKT-599 / 16549	BUAD-285A / 14513	MKT-599 / 16549	MOR-569 / 16705
16:30:00	BUAD-285A / 14513	GSBA-523T / 15701	BUAD-285A / 14513	GSBA-523T / 15701	BUAD-310 / 14916
17:00:00	BUAD-285A / 14513	GSBA-523T / 15701	BUAD-285A / 14513	GSBA-523T / 15701	BUAD-310 / 14916
17:30:00	BUAD-285A / 14513	GSBA-523T / 15701	BUAD-285A / 14513	GSBA-523T / 15701	BUAD-310 / 14916
18:00:00		GSBA-528 / 15723		GSBA-528 / 15723	MOR-569 / 16703
18:30:00	GSBA-511 / 15592	GSBA-528 / 15723	GSBA-511 / 15592	GSBA-528 / 15723	MOR-569 / 16703
19:00:00	GSBA-511 / 15592	GSBA-528 / 15723	GSBA-511 / 15592	GSBA-528 / 15723	MOR-569 / 16703
19:30:00	GSBA-511 / 15592	GSBA-528 / 15723	GSBA-511 / 15592	GSBA-528 / 15723	MOR-569 / 16703
20:00:00	GSBA-511 / 15592	GSBA-528 / 15723	GSBA-511 / 15592	GSBA-528 / 15723	MOR-569 / 16703
20:30:00	GSBA-511 / 15592	GSBA-528 / 15723	GSBA-511 / 15592	GSBA-528 / 15723	MOR-569 / 16703
21:00:00	GSBA-511 / 15592		GSBA-511 / 15592		MOR-569 / 16703

ACC 312

Timeslot	Monday	Tuesday	Wednesday	Thursday	Friday
8:00:00					
8:30:00					
9:00:00					
9:30:00					
10:00:00			DSO-621 / 16321	GSBA-625 / 16120	ACCT-581 / 14279
10:30:00	MOR-601 / 16792		DSO-621 / 16321	GSBA-625 / 16120	ACCT-581 / 14279
11:00:00	MOR-601 / 16792		DSO-621 / 16321	GSBA-625 / 16120	ACCT-581 / 14279
11:30:00	MOR-601 / 16792		DSO-621 / 16321	GSBA-625 / 16120	ACCT-581 / 14279
12:00:00	MOR-601 / 16792		DSO-621 / 16321	GSBA-625 / 16120	ACCT-581 / 14279
12:30:00	MOR-601 / 16792		DSO-621 / 16321	GSBA-625 / 16120	ACCT-581 / 14279
13:00:00	MOR-601 / 16792				ACCT-581 / 14279
13:30:00	MOR-601 / 16792	WRIT-340 / 66746		WRIT-340 / 66746	
14:00:00		WRIT-340 / 66746		WRIT-340 / 66746	BAEP-460 / 14387
14:30:00		WRIT-340 / 66746		WRIT-340 / 66746	BAEP-460 / 14387
15:00:00	WRIT-340 / 66769	WRIT-340 / 66771	WRIT-340 / 66769	WRIT-340 / 66771	BAEP-460 / 14387
15:30:00	WRIT-340 / 66769	WRIT-340 / 66771	WRIT-340 / 66769	WRIT-340 / 66771	BAEP-460 / 14387
16:00:00	WRIT-340 / 66769	WRIT-340 / 66771	WRIT-340 / 66769	WRIT-340 / 66771	BAEP-460 / 14387
16:30:00	WRIT-340 / 66750	WRIT-340 / 66781	WRIT-340 / 66750	WRIT-340 / 66781	BAEP-460 / 14387
17:00:00	WRIT-340 / 66750	WRIT-340 / 66781	WRIT-340 / 66750	WRIT-340 / 66781	BAEP-460 / 14387
17:30:00	WRIT-340 / 66750	WRIT-340 / 66781	WRIT-340 / 66750	WRIT-340 / 66781	BAEP-460 / 14387
18:00:00					
18:30:00					
19:00:00					
19:30:00					
20:00:00					
20:30:00					
21:00:00					

BRI 5

Timeslot	Monday	Tuesday	Wednesday	Thursday	Friday
8:00:00	BAEP-480 / 14384	FBE-324 / 15343	BAEP-480 / 14384	FBE-324 / 15343	
8:30:00	BAEP-480 / 14384	FBE-324 / 15343	BAEP-480 / 14384	FBE-324 / 15343	
9:00:00	BAEP-480 / 14384	FBE-324 / 15343	BAEP-480 / 14384	FBE-324 / 15343	
9:30:00	BAEP-480 / 14384	FBE-324 / 15343	BAEP-480 / 14384	FBE-324 / 15343	
10:00:00	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-310 / 14920
10:30:00	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-310 / 14920
11:00:00	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-310 / 14920
11:30:00	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-286B / 14548	ACCT-410 / 14096	BUAD-310 / 14892
12:00:00	ACCT-547 / 14209	MOR-469 / 16671	ACCT-547 / 14209	MOR-469 / 16671	BUAD-310 / 14892
12:30:00	ACCT-547 / 14209	MOR-469 / 16671	ACCT-547 / 14209	MOR-469 / 16671	BUAD-310 / 14892
13:00:00	ACCT-547 / 14209	MOR-469 / 16671	ACCT-547 / 14209	MOR-469 / 16671	BUAD-310 / 14894
13:30:00	ACCT-373 / 14055	MOR-469 / 16671	ACCT-373 / 14055	MOR-469 / 16671	BUAD-310 / 14894
14:00:00	ACCT-373 / 14055	MKT-445 / 16496	ACCT-373 / 14055	MKT-445 / 16496	BUAD-310 / 14894
14:30:00	ACCT-373 / 14055	MKT-445 / 16496	ACCT-373 / 14055	MKT-445 / 16496	BUAD-310 / 14895
15:00:00	ACCT-373 / 14055	MKT-445 / 16496	ACCT-373 / 14055	MKT-445 / 16496	BUAD-310 / 14895
15:30:00	BUAD-302 / 14650	MKT-445 / 16496	BUAD-302 / 14650	MKT-445 / 16496	BUAD-310 / 14895
16:00:00	BUAD-302 / 14650	ACCT-377 / 14065	BUAD-302 / 14650	ACCT-377 / 14065	BUAD-307 / 14844
16:30:00	BUAD-302 / 14650	ACCT-377 / 14065	BUAD-302 / 14650	ACCT-377 / 14065	BUAD-307 / 14844
17:00:00	BUAD-302 / 14650	ACCT-377 / 14065	BUAD-302 / 14650	ACCT-377 / 14065	BUAD-307 / 14844
17:30:00	ACCT-373 / 14057	ACCT-377 / 14065	ACCT-373 / 14057	ACCT-377 / 14065	BUAD-307 / 14844
18:00:00	ACCT-373 / 14057	DSO-528 / 16271	ACCT-373 / 14057		GSBA-534 / 15753
18:30:00	ACCT-373 / 14057	DSO-528 / 16271	ACCT-373 / 14057		GSBA-534 / 15753
19:00:00	ACCT-373 / 14057	DSO-528 / 16271	ACCT-373 / 14057		GSBA-534 / 15753
19:30:00	BUAD-285A / 14519	DSO-528 / 16271	BUAD-285A / 14519		GSBA-534 / 15753
20:00:00	BUAD-285A / 14519	DSO-528 / 16271	BUAD-285A / 14519		GSBA-534 / 15753
20:30:00	BUAD-285A / 14519	DSO-528 / 16271	BUAD-285A / 14519		GSBA-534 / 15753
21:00:00	BUAD-285A / 14519	DSO-528 / 16271	BUAD-285A / 14519		GSBA-534 / 15753