

# Development of Campus Parking Model

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VALPARAISO  
UNIVERSITY  

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**ENGINEERING**

# Abstract

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- Goal: Optimize parking on Valparaiso University's campus
- Determine: Parking lot occupancy & building usage
- Data segregated by:
  - Parking Class (Commuter/Faculty)
  - Building Usage (Number of Students in Building for Class)
- Video Data Collection used to track parking usage throughout the day

# Data Collection

## Parking Counts

- Lots analyzed: Lots 1, 2, 3, & 5
- When: Tuesday, October 22, 2019 & Wednesday, October 23, 2019
- Times: Morning, Mid-day, & Afternoon

- Faculty
- Commuter



# Building Usage

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- Buildings Analyzed: GEM/Fites, Meier Hall, & Urschel Hall
- Data: Number of students in class throughout the day
- Days: Tuesday & Wednesday
- Goal: Make correlation with parking usage

# Video Data Collection

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- VUCA Handicap Lot
- When: November 18<sup>th</sup> – 22<sup>nd</sup>, 2019
- Data Collected:
  - Occupancy throughout each day
  - Average time parked



# Lot 1 – Faculty

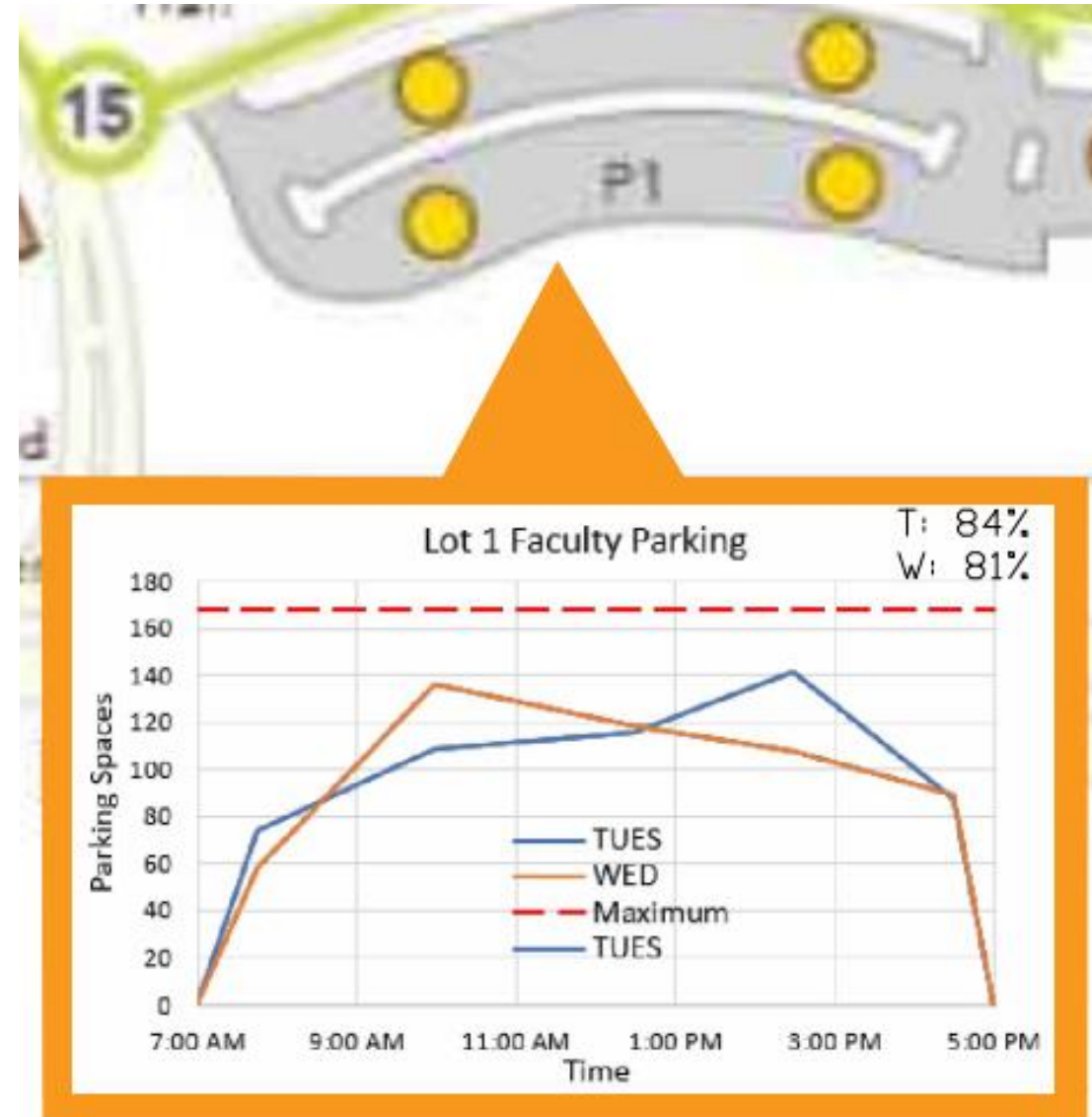
## Percent Maximum Occupancy

Tuesday: 84%

Wednesday: 81%

**Table 1.** Parking Lot 1.

Tuesday			Wednesday		
Time	Occupied Spaces	Total Spaces	Time	Occupied Spaces	Total Spaces
7:00 AM	0	168	7:00 AM	0	168
7:45 AM	74	168	7:45 AM	58	168
10:00 AM	109	168	10:00 AM	136	168
12:30 PM	116	168	12:30 PM	118	168
2:30 PM	141	168	2:30 PM	108	168
4:30 PM	87	168	4:30 PM	89	168
5:00 PM	0	168	5:00 PM	0	168



# Lot 2 – Commuter

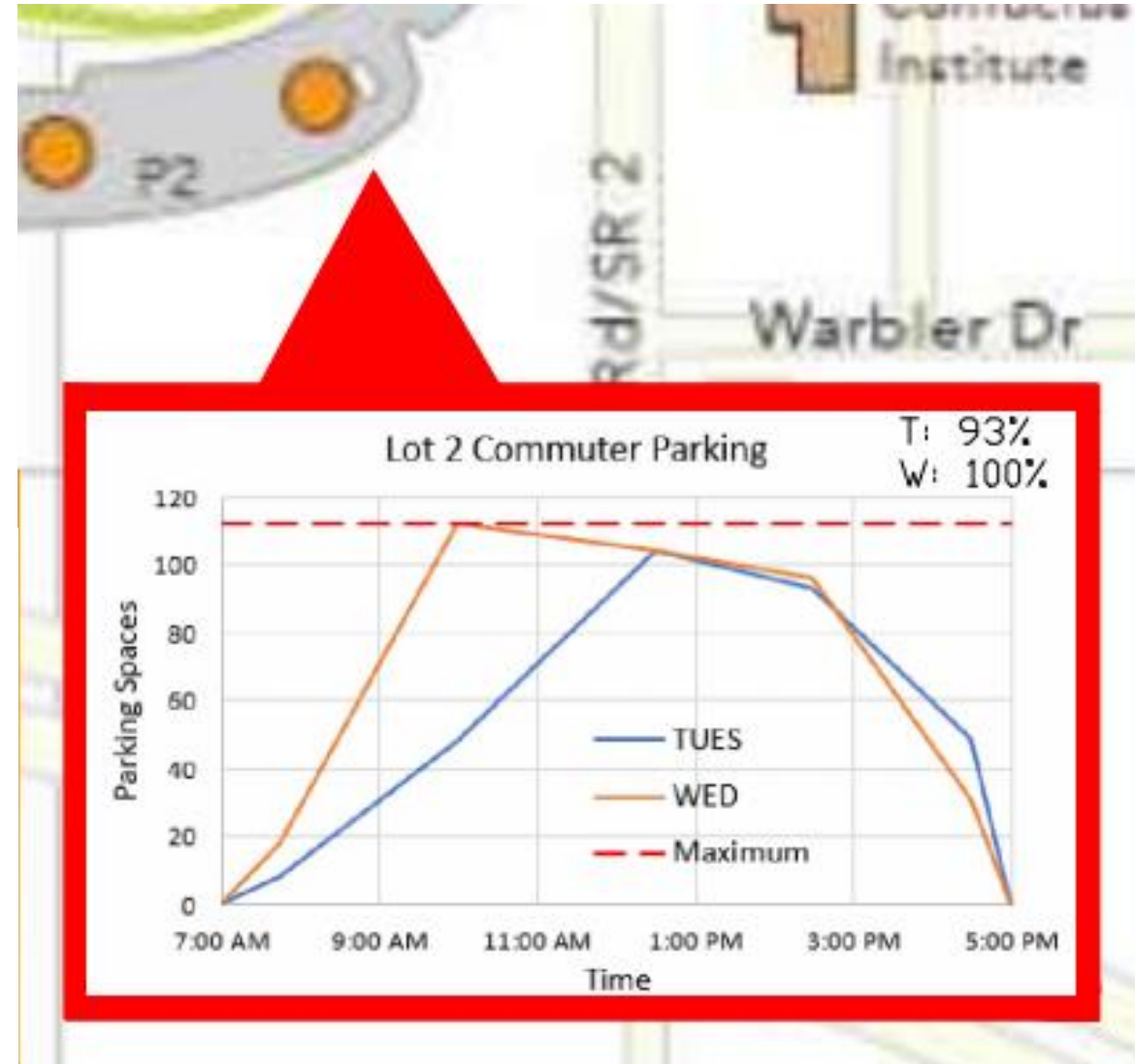
## Percent Maximum Occupancy

Tuesday: 93%

Wednesday: 100%

**Table 2.** Parking Lot 2.

Tuesday			Wednesday		
Time	Occupied Spaces	Total Spaces	Time	Occupied Spaces	Total Spaces
7:00 AM	0	112	7:00 AM	0	112
7:45 AM	8	112	7:45 AM	18	112
10:00 AM	48	112	10:00 AM	112	112
12:30 PM	104	112	12:30 PM	104	112
2:30 PM	93	112	2:30 PM	96	112
4:30 PM	49	112	4:30 PM	31	112
5:00 PM	0	112	5:00 PM	0	112





# Lot 3 – Faculty & Faculty/Commuter

## Faculty: Percent Maximum Occupancy

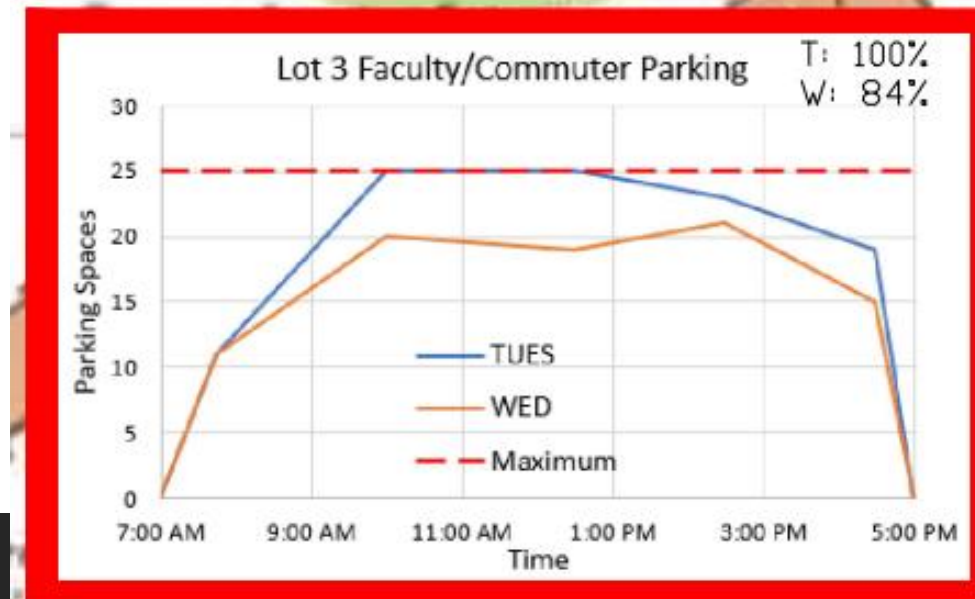
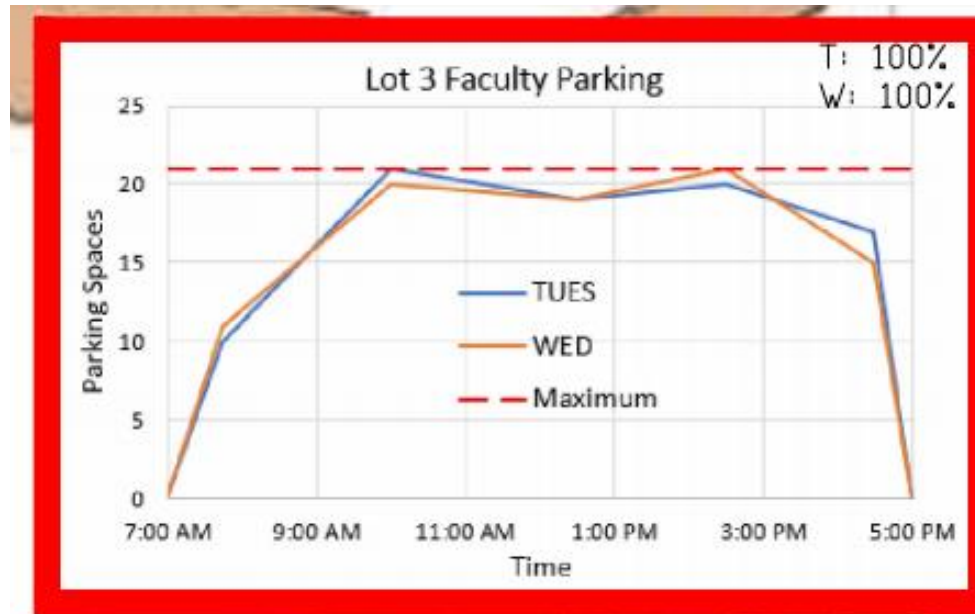
Tuesday: 100%

Wednesday: 100%

## Faculty/Commuter: Percent Maximum Occupancy

Tuesday: 100%

Wednesday: 84%





# Lot 5 – Faculty & Commuter

## Faculty: Percent Maximum Occupancy

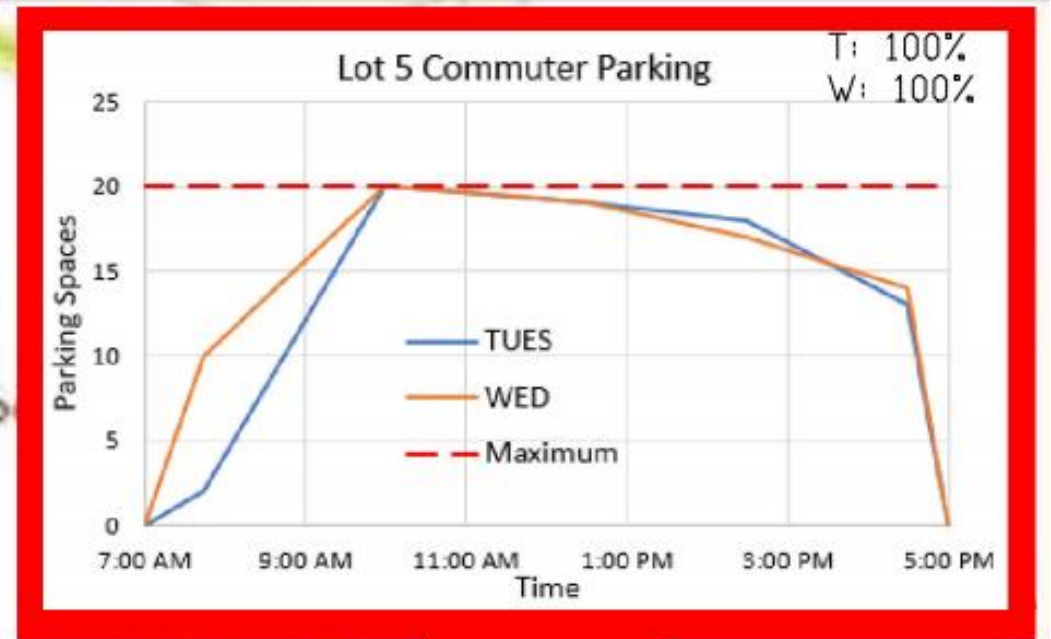
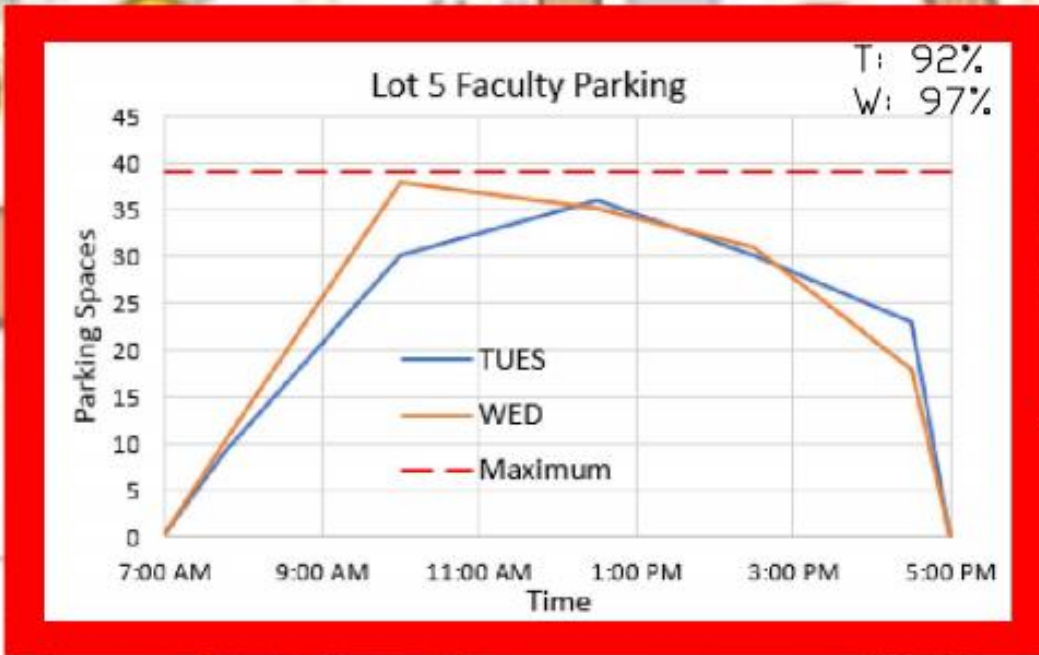
Tuesday: 92%

Wednesday: 97%

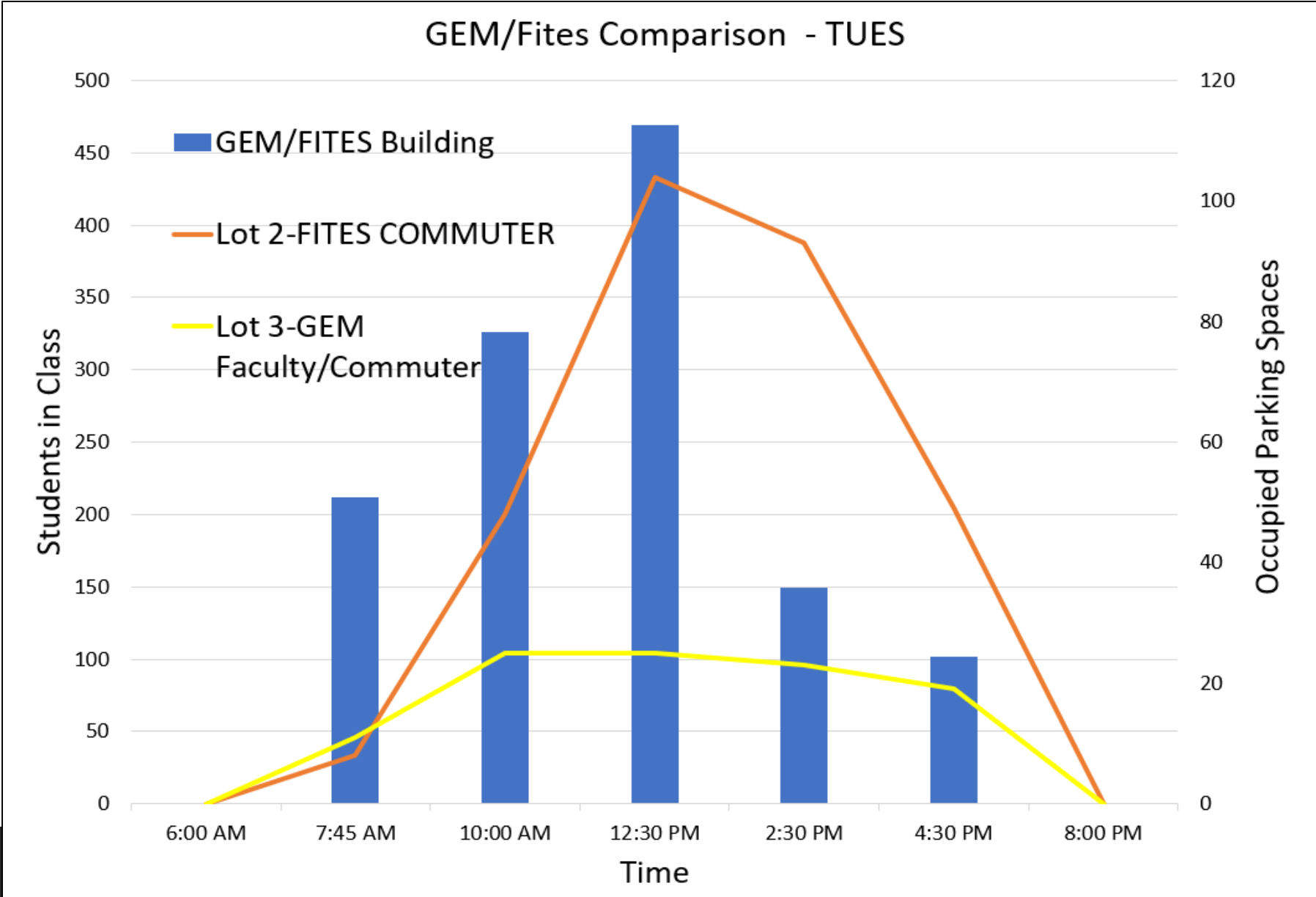
## Commuter: Percent Maximum Occupancy

Tuesday: 100%

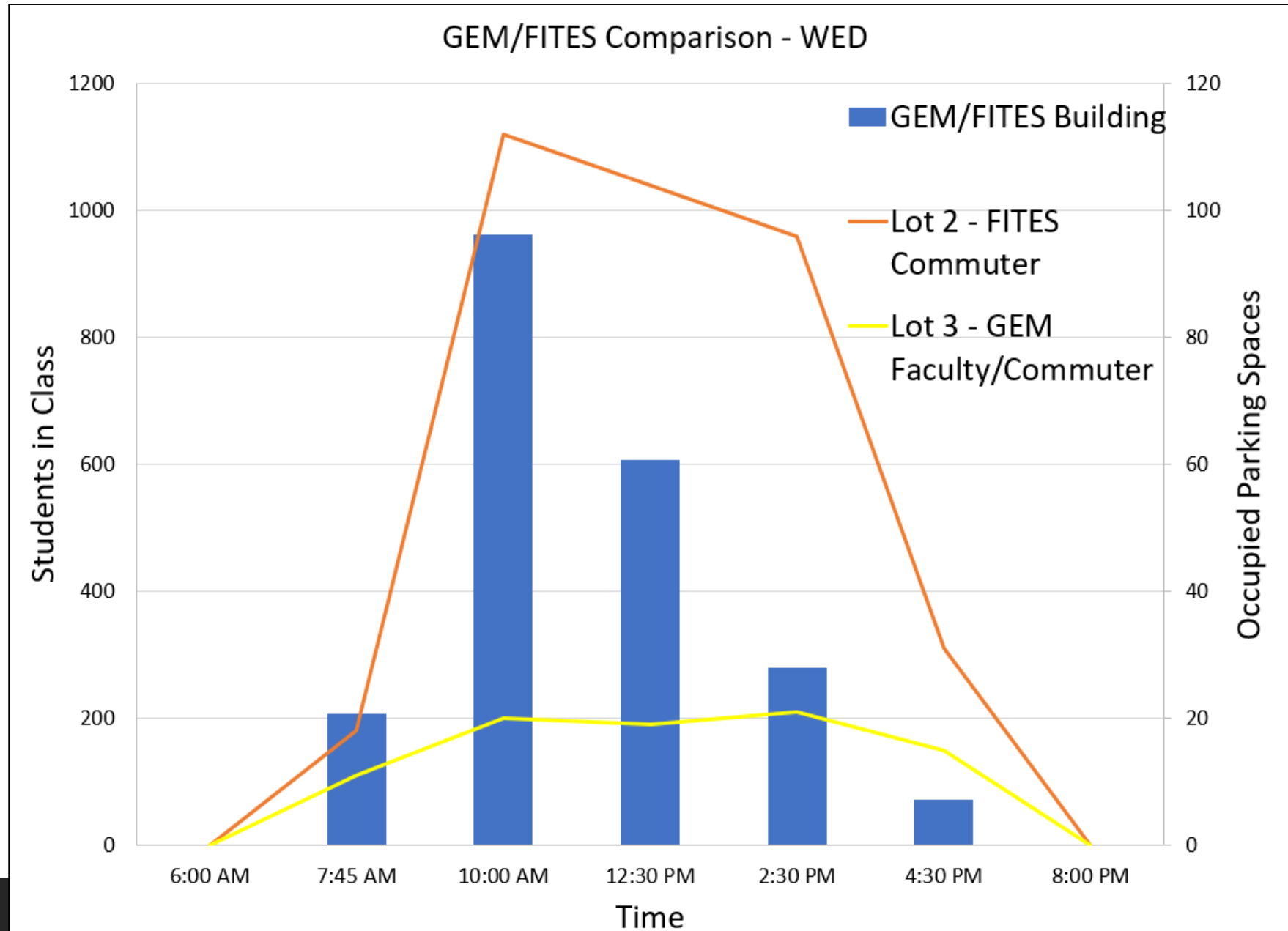
Wednesday: 100%



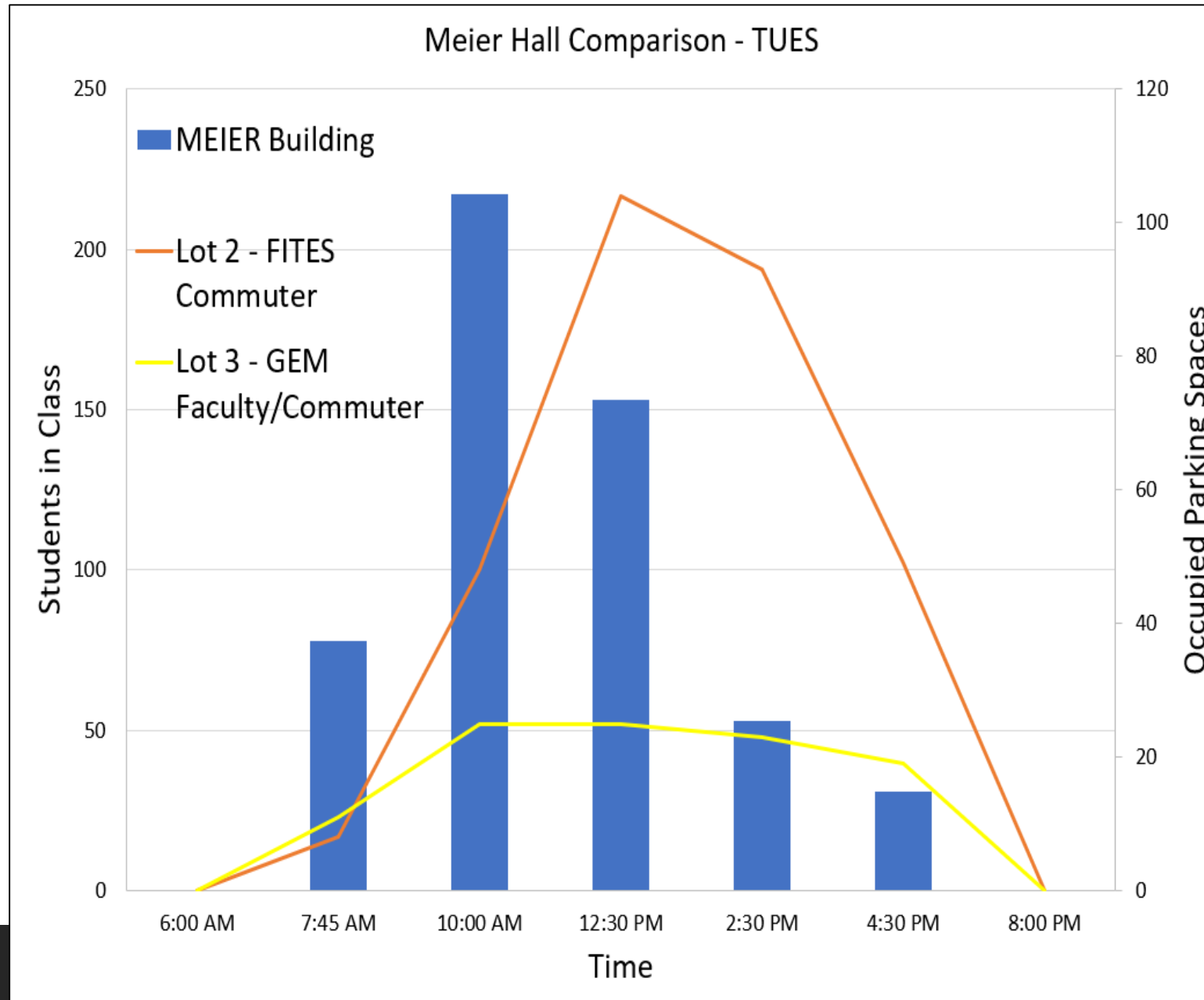
# GEM/Fites with Lot 2 & 3 - Tuesday



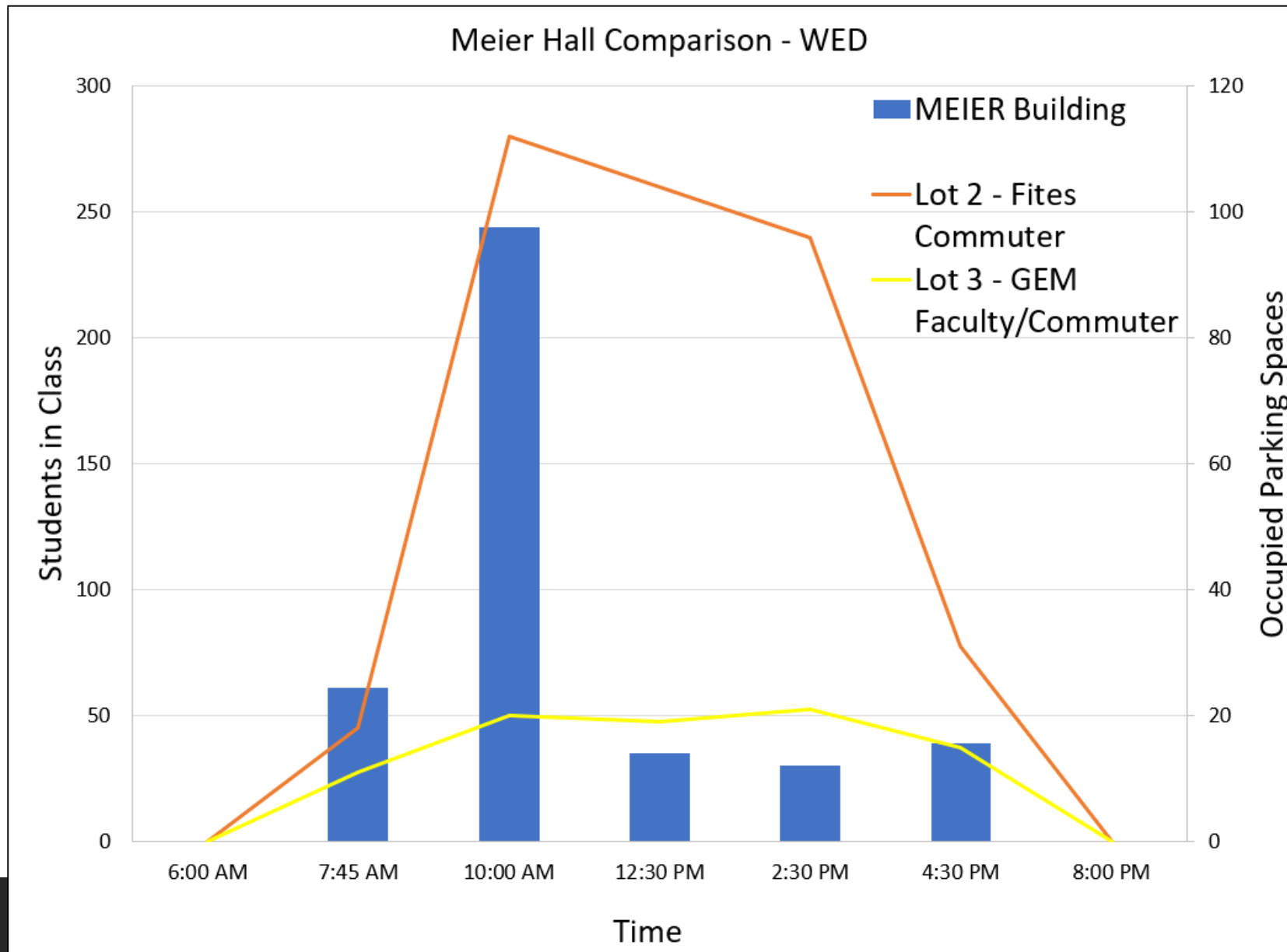
# GEM/Fites with Lot 2 & 3 - Wednesday



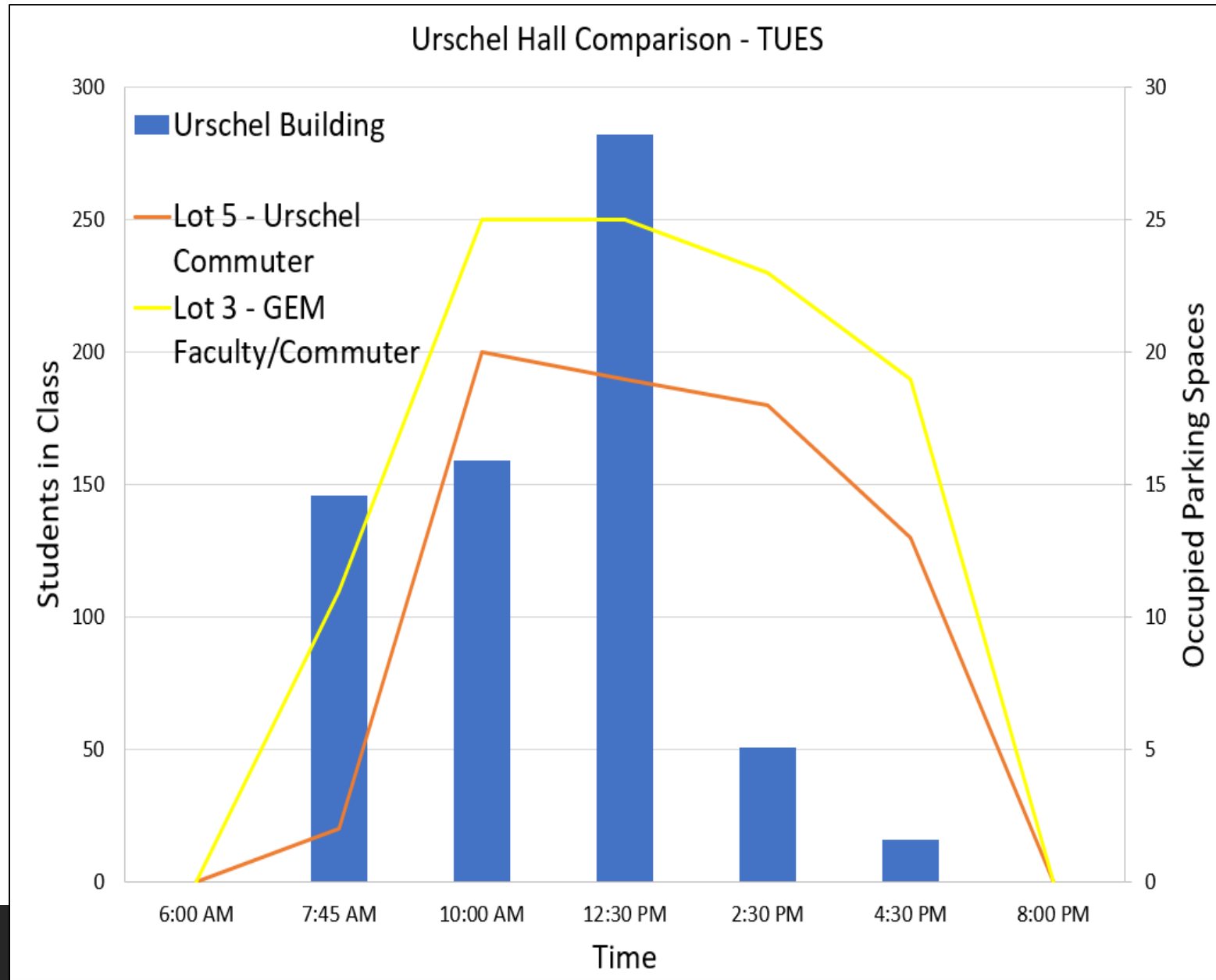
# Meier Hall with Lot 2 & 3 - Tuesday



# Meier Hall with Lot 2 & 3 - Wednesday

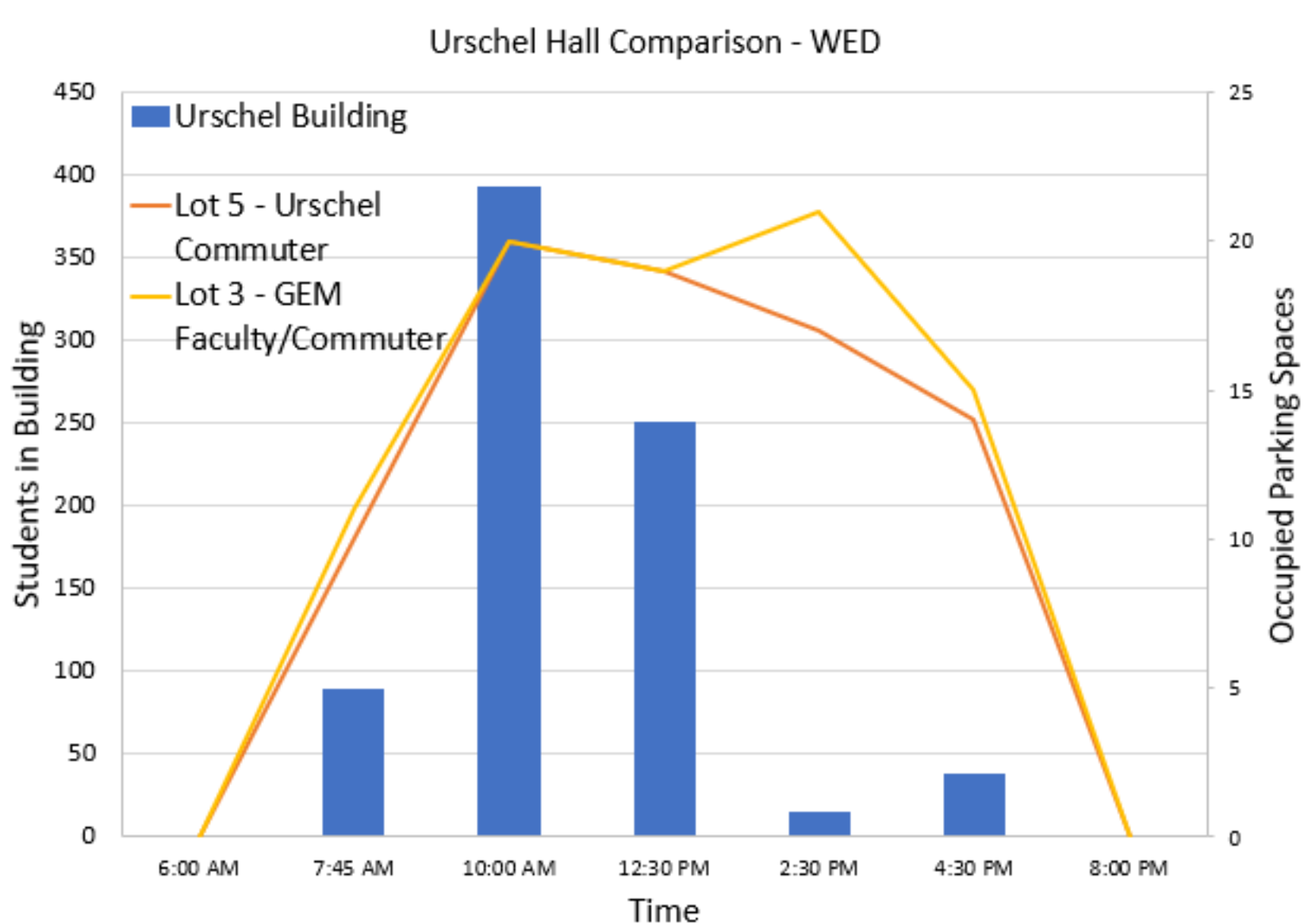


# Urschel Hall with Lot 3 & 5 - Tuesday





# Urschel Hall with Lot 3 & 5 - Wednesday



# Results from Handicapped Lot

**Table 9.** Daily Parking Data.

<b>Day</b>	<b>Vehicles Per Day</b>	<b>Total Time Parked Per Day (Hours)</b>	<b>Average Time Parked Per Vehicle (Hours)</b>	<b>Maximum Occupancy (Vehicles)</b>	<b>Time of Maximum Occupancy</b>
<b>Monday</b>	8	23.6	2.95	4	12:20 PM
<b>Tuesday</b>	12	28.5	2.38	8	7:00 PM
<b>Wednesday</b>	13	24.3	1.87	7	7:00 PM
<b>Thursday</b>	15	23.5	1.57	6	3:20 PM
<b>Friday</b>	5	3	0.60	3	11:30 PM

**Table 10.** Weekly Parking Data.

<b>Total Vehicles</b>	53
<b>Total Hours Parked</b>	102.9
<b>Average Maximum Occupancy (Vehicles)</b>	5.6
<b>Average Time Parked (Hours)</b>	1.94

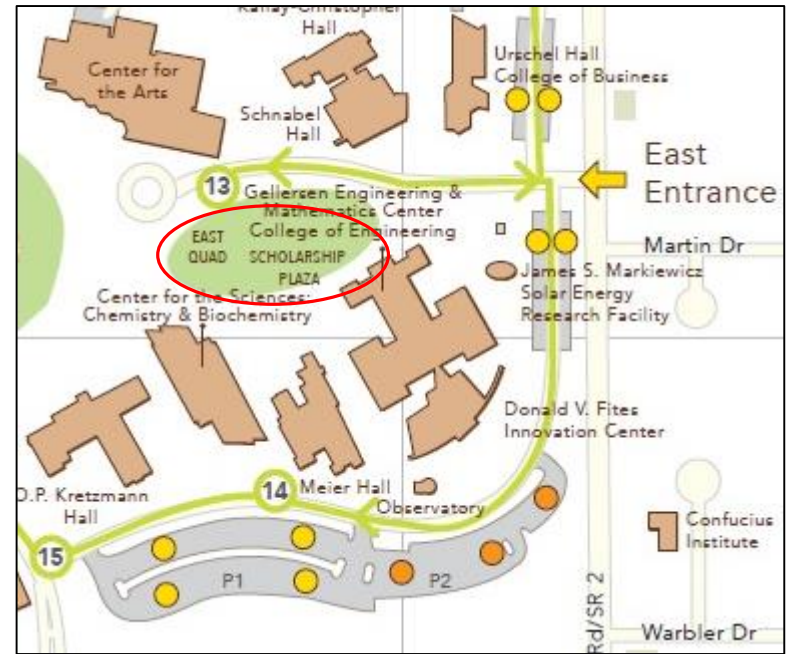
# Overall Results

- Lots 2, 3 (faculty), and 5 (commuter) have capacity concerns
- Lots 2 & 3 show strong correlations with student building occupancy
- Handicapped Lot has no serious concerns

# Possible Solutions

- Designate spaces from Lot 1 as Commuter Parking
- Create additional parking in the Scholarship Plaza area
- Expand Lot 5 into area between Wehrenberg Hall & Urschel Hall

- Faculty
- Commuter



Thank You!  
Questions?

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