

# MGMTMSA 408 – Operations Analytics

## Homework 2 – Column / Constraint Generation and Assortment Optimization (Question 1)

Due May 6, 2024 (Section 2) / May 8, 2024 (Section 1) at 1:00pm PST

Name: \_\_\_\_\_ UID: \_\_\_\_\_

**Note:** Please submit your Python code on Canvas in order to receive full credit.

### 1 Learning Coffee Preferences

#### Part 1: Modeling preferences through rankings

a)

b)

#### Part 2: Choice probabilities as a linear system of equations

a)

b)

### Part 3: Understanding the data

- a)
- b)
- c)
- d)
- e)

### Part 4: Estimating the ranking-based model

- a)
- b)

## Part 5: A random sampling approach

a)

## Part 6: A column generation approach

a)

b)

c)

d)

e)

f)

**Part 7: Understanding the column generation solution**

a)

b)

c)

d)

## 2 Designing a Sushi Menu

### Part 1: Understanding the data

- a)
- b)
- c)
- d)
- e)

### Part 2: Common-sense solutions

- a)
- b)
- c)
- d)

e)

### Part 3: An integer optimization model

a)

b)

c)

d)

e)