USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

(SPRING 2023)

DSO 499 – *Optimization with Analytics for Better Decision-Making*

MW 12:00 - 1:50pm
Section – 16247R (4 units)

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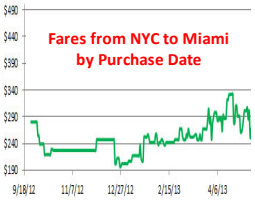
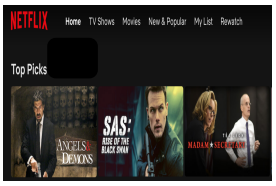
Optimization is used in virtually all business decisions!



Dynamic Pricing of Airfares

Developing Efficient Delivery Systems



Personalized Movie Recommendations

WHY TAKE THIS COURSE?

This course is designed for students who want exciting jobs that require advanced analytics! You will learn about "getting an edge" -- how to make effective decisions using data and models through optimization.

Optimization is used in virtually all business decisions. The skills and tools learned in this course will give you a unique analytics and competitive edge, and they can be applied to a broad range of careers, including finance, consulting, marketing, operations, and technology.

This course counts toward the USC Marshall Business Analytics Emphasis!

COURSE OBJECTIVES

The course will teach students how to make effective decisions through optimization. Students will learn about optimization concepts and tools, and see how it can be applied to a broad range of applications. The class will provide students with extensive hand-on optimization practices.

KEY CONCEPTS

Linear programming (LP)
Shadow prices
LP under uncertainty
Multiperiod LP
Nonlinear programming
Integer programming
Dynamic optimization over time
Applications of optimization in aviation, supply chain, manufacturing, finance, and retail

COURSE DESCRIPTION

You will learn how to translate a complex business problem into an optimization model by identifying appropriate decision variables, writing the objective function in terms of the decision variables, and developing constraints that capture the business requirements. After solving the optimization model, you will learn how to interpret the solution and extract key business insights to provide recommendations for better decisions.