

DATA SCIENCES AND OPERATIONS

SPRING 2025

DSO 586 — *Global Healthcare*

Operations Management

Section – 033-16308R

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When : T-Th 5:00 to 6:20 PM

Units: 3



WHO SHOULD TAKE THIS COURSE?

The healthcare industry, valued at over \$4.5 trillion, constitutes nearly 17% of the U.S. GDP. Understanding healthcare delivery operations is crucial for anyone pursuing careers in:

- **Management consulting** (with a focus on healthcare),
- **Life sciences** (pharmaceuticals and medical devices),
- **Health insurance.**

This course emphasizes **process management** and **data analytics**, equipping you with the tools to analyze healthcare systems and improve quality and access to care. As a data-rich industry, healthcare offers tremendous opportunities to leverage forecasting, optimization, machine learning, and natural language processing to enhance operational efficiency.

Real-World Projects: You will work on a project with actual data from healthcare organizations like LA-USC Hospital, Keck, Children's Hospital Brasilia and University of Rome General Hospital, giving you hands-on experience in solving complex healthcare problems.

COURSE OBJECTIVES

By the end of this course, you will have developed the ability to:

- Apply **Operations Management frameworks** and **data science techniques** to design and improve healthcare delivery systems.
- Analyze healthcare systems to identify gaps in quality and access and develop solutions to address those gaps.
- Use data-driven models to make informed decisions in the healthcare environment.
- Focus on improving processes through **network design**, **facility roles**, **work design**, and **planning systems**, among others.

KEY CONCEPTS COVERED

- **Healthcare Industry Overview:** Gain a comprehensive understanding of the healthcare landscape, both in the U.S. and globally.
- **Process Design and Management:** Learn how to optimize healthcare processes for greater efficiency and better patient outcomes.
- **Service Quality Management:** Techniques to measure and improve the quality of care delivered.
- **Data Modeling:** Build models to predict demand, optimize resources, and manage patient care effectively.
- **Data-Driven Decision Models:** Use statistical and machine learning techniques to solve healthcare challenges.

COURSE DESCRIPTION

This course explores the intersection of **Operations Management** and **Data Science** in healthcare systems, offering frameworks and techniques to improve **access** and **quality** of care. You will learn to analyze current healthcare systems, estimate needs, and propose solutions to reduce gaps. The focus is on developing **data-driven decision tools** through a mix of lectures and a real-world **team project**.

Team Project: The course culminates in a project that involves analyzing real data from sponsoring healthcare organizations. Your goal will be to develop solutions that can be implemented in a healthcare setting, providing deployable results that have practical applications.

Why Healthcare? Healthcare systems are among the most complex operational systems. Insights gained in this course can also be applied to other service-based industries, giving you transferable skills in operations and analytics.