

DATA SCIENCES AND OPERATIONS

SPRING 2025

DSO 428 – *Essentials and Digital Frontiers of Big Data*

Section(s) – 16187, 16188

Professor

Bowen Lou

Email

bowenlou@marshall.usc.edu

When

16187 - Tu/Th 2PM - 3:50PM

16188 - Tu/Th 4PM - 5:50PM

Units

4.0



WHY TAKE THIS COURSE?

In today's data-driven business landscape, the ability to analyze vast amounts of information and extract actionable insights is crucial for informed decision-making. This introductory course covers key concepts within the big data ecosystem and explores advancements in artificial intelligence, offering hands-on experiences. Students will gain foundational programming skills and analytical techniques necessary to unlock the power of big data. Tailored for those new to programming, the course offers an opportunity to delve into the essentials and cutting-edge developments of big data and digital innovation.

COURSE OBJECTIVES

- Bring knowledge and industry experience to the class (lecture, guest speaker, course project), and prepare students for data-related jobs
- Provide hands-on experience in working with data through digital solutions commonly applied in business settings
- Tackle real-world problems that require knowledge & skills around data/digital tools
- Use the course toward a number of different minors and majors (& careers!)

KEY CONCEPTS

Big Data Processing - processing and managing data using *Digital Solutions*

- Introduction to big data ecosystem and advancements in artificial intelligence (AI)
- Fundamentals of Python programming for data processing, emphasizing algorithmic thinking

Big Data Analytics – analyzing data for insights and applications with *Digital Tools*

- Data wrangling and visualization techniques
- Essentials of machine learning and unstructured data analysis
- Exploration of cutting-edge developments in generative AI/large language models

Big Data Landscape – seeking business opportunities through *Digital Innovations*

- Digital transformation and big data/AI-driven organization
- Business opportunities and careers in big data