USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023 SEMESTER

DSO 505 – *Sustainable Supply Chain*

Section(s) – 16283

Professor

Christopher Gopal

Email

cgopal@marshall.usc.edu

When

Wednesdays, 6:30 PM – 9:30 PM

Office

TBD

Units

1.5

WHY TAKE THIS COURSE?

Anybody interested in consulting, marketing, operations, manufacturing, or entrepreneurship. Product innovation can lead to first-mover advantage, environmental product differentiation can open new markets, green sourcing and waste reduction can reduce operating cost and assure supply, etc.

COURSE OBJECTIVES

To provide students with an understanding of the sustainability challenges and opportunities facing supply chains today.

KEY CONCEPTS

- Sustainability concepts and frameworks
- Sustainable design of products
- Closed-loop supply chains
- Supplier management
- Facilities management
- Renewable energy
- Facilities and locations decisions
- Transportation decisions
- Strategic sustainability implementation

COURSE DESCRIPTION

We will look at some of the factors that contribute to the adoption of sustainability strategies, such as legislations that are penalizing negative environmental and social impacts, and society's expectations of business in terms of health, human rights, and the environment. In addition to maximizing profit and creating shareholder value, supply chain performance is also measured in terms of social, environmental and economic impact.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 506 – *Sourcing and Supplier Management*

Section 16299D

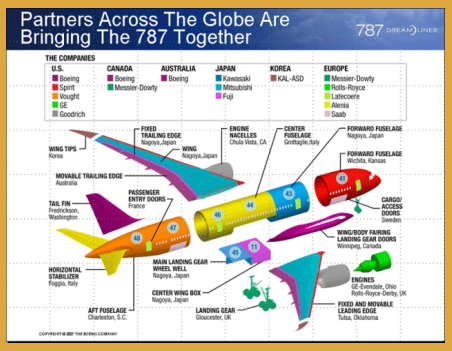
Professor
Alireza Kabirian

Email
kabirian@marshall.usc.edu

When
Mon, 12:30 PM – 3:20 PM

Office
BRI 401 N

Units
1.5



WHO SHOULD TAKE THIS COURSE?

Anybody interested in consulting, operations, manufacturing, or entrepreneurship. In a recent study of supply chain job ads for MBAs, sourcing and supplier management was the most important topic, required in 57% of ads.

COURSE OBJECTIVES

To provide students with an understanding of the impact that sourcing and supply management have on the success and profitability of firms in today's business environment.

KEY CONCEPTS

- Purchasing and supplier management
- Cost analysis
- Total cost of ownership
- Prices and contracts
- Procurement risks
- Supplier selection and evaluation
- Global sourcing
- Dual sourcing
- Environmental and social issues in sourcing and purchasing

COURSE DESCRIPTION

We will look at some of the factors that need to be considered when making sourcing and supplier management decisions (costs, prices, contracts, ethics, globalization, risks), and discuss the influence that sourcing and supply management have on other functional activities, such as product design, inventory management, etc.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 510 - *Business Analytics*

Section(s) – 16324

Professor

Tathagata 'Das' Dasgupta

Email

tdasgupt@marshall.usc.edu

When

Saturday; 9:00 AM – 11:50 PM PDT ***ONLINE***

Office	**Units**
ONLINE	*3.0*

WHO SHOULD TAKE THIS COURSE?

Graduate students seeking to obtain an understanding of the transformative role of business analytics on various domains and functions of an organization while also developing their analytical toolkits.

Section 16324 requires proficiency in Microsoft Excel (or R or Python). Use of a PC is preferred for Excel Add-on and Analytic Solver. Intermediate level of Statistics (Probability, Inference, Hypothesis Testing). Section 16324 is for MSGSCM students only.

COURSE OBJECTIVES

- Describe business analytics and the required skills, methods, tools, and resources
- Explain how leading companies use business analytics in multiple major functional areas of an organization
- Use an overall business analytics framework and several techniques and tools to implement strategies and approaches for business analytics
- Define, perform, and present business analytics for data-driven decision making and innovation

KEY CONCEPTS

We will cover four major modules:

1) Defining Business Problems and Obtaining and Organizing Data
2) Descriptive Analytics and Visualization
3) Probability and Probability Distribution
4) Statistical Inference
5) Predictive Analytics (Regression, Supervised Data Mining, Time Series)
6) Prescriptive Analytics (Simulation and Optimization)

COURSE DESCRIPTION

Business analytics is the process of utilizing tools and techniques to turn data into meaningful business insights. This course provides students with foundational knowledge for business analytics, including strategies, methods, and tools. Students will obtain the necessary skills for defining business analytics for data-driven decision-making and innovation and hands-on experience using analytics to solve real-world problems. While this course exposes students to various analytics tools, the focal objective is to provide a managerial perspective on the usage and role of business analytics in progressive corporations.

This course will help students obtain a managerial perspective on the applications of analytics across various domains. Importantly, this course focuses on the process of defining a business problem, breaking it down into concrete hypotheses, translating these hypotheses into an analytically solvable question, conduct analysis, and then translating data analytics into meaningful business insights and outcomes.

Business analytics helps organizations achieve a broad and deep understanding of and insights into markets, customers, operations, and suppliers. Business analytics provides benefits throughout all major functional areas of an organization, including strategy, product development, marketing, operations, customer service, and finance. Organizations ranging from entrepreneurial start-upsto large global companies can innovate using business analytics to accelerate communication, enhance products, grow relationships, and operate in efficient, effective, and scalable manners.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

Fall 2023

DSO 522 – *Applied Time Series Analysis for Forecasting*

Section(s) – 16240/16243

Professor

Inga Maslova

Email

imaslova@marshall.usc.edu

When

16240 – Mon/Wed: 11:00 AM – 12:20 PM
16243 – Tue/Thu: 11:00 AM – 12:20 PM

Office *ACC 203*

Units *3.0*

WHY TAKE THIS COURSE?

- In business forecasting, time series models are used to analyze data that are collected over time to develop forecasting models for revenues, earnings, inventory, sales, budgets, and new product development.
- Because time series data arise in so many different business areas, forecasting methods apply to problems in finance, marketing, real estate, production, operations research, international business, and accounting.
- Knowledge of forecasting methods is among the most demanded qualifications for business people working in either private or public sector of the economy. This course provides those skills and also opens possibilities for a forecasting management position in business.

  There is a shortage of well-trained MBAs for these positions.

COURSE OBJECTIVES

Students learn simple and sophisticated methods and obtain forecasting skills and experience by completing several projects. There is a comprehensive final exam but no midterm. The course projects provide practical experience developing forecasting models for actual business operations.

The general aim is the development of sophisticated professionals, able to critically analyze business data and create business forecasting reports.

KEY CONCEPTS

- Business Forecasting
- Time Series Models
- Forecasting Methods
- Regression and Box-Jenkins

COURSE DESCRIPTION

Topics to be covered include the concept of stationarity, autoregressive and moving average models, identification and estimation of models, prediction and assessment of model forecasts, seasonal models, and intervention analysis. The course goals are for each student to understand time series methods and obtain "hands on" experience using, analyzing, and developing forecasting models for business applications.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 528 – *Blended Data Business Analytics for Efficient Decisions*

Section(s) – 16227D

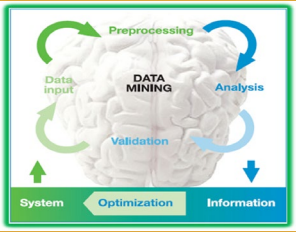
Professor
Arif Ansari

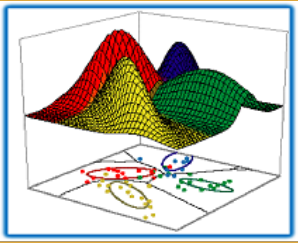
Email
aansari@marshall.usc.edu

When
TBD

Office
BRI 401 R

Units
3.0





WHY TAKE THIS COURSE?

Students who plan to have a career in Business Analytics and interested in knowing more about Big Data and Predictive Analytics should take this class. Students who have previous knowledge in Analytical Models do not know how to use it in Business should take this class. Managers who want to combine Analytics with Business Analysis should take this class.

COURSE OBJECTIVES

- To provide students with concepts, frameworks, analytical thinking, critical thinking, and creative thinking skills for converting Company Data + Big Data into actionable form and building analytical models for monetizing data.
- To provide practical knowledge (cases), skills, methods, tools, KPIs and resources for conceiving, building, and solving new paradigms in Big Data Analytics space.
- To give a Big Picture view of Big Data Analytics

KEY CONCEPTS

- Data Mining
- Business Intelligence
- Data Warehousing
- Big Data Platforms
- MAGIC framework
- JMP Software
- SAS Enterprise Miner
- Classification & Clustering & Association
- Decision Tree, Logistic Regression, KNN
- Neural Network, Naïve Bayesian
- Partitional and Hierarchical Clustering
- KPIs – Business and Statistical
- Search Engine Marketing
- Enrichment, Star Schema, Dash Boards
- Introduction to many industry tools

COURSE DESCRIPTION

The course focus is to give a Big Picture view of Business Analytics, its components and platforms. To build sophisticated business analytical models from raw data using Desk top and Industry level tools for Classification, Clustering and Association Problems. To show how to leverage the readily available "Big Data" from third party sources for enriching and monetizing data. To develop data mining and business analysis skillset to gain inference from your analysis, from Executive, Business and Statistical point of view. **To provide a systematic approach to build Analytical Models. To provide the missing link between Analytics and Business Analysis.**

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 530 – *Applied Modern Statistical Learning Methods*

Section(s) - 16305

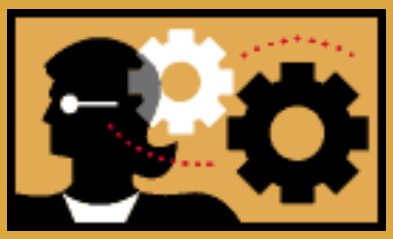
Professor
Inga Maslova

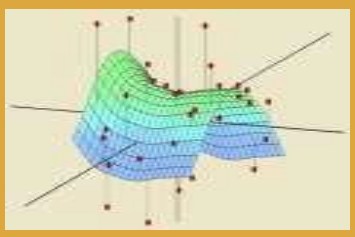
Email
imaslova@marshall.usc.edu

When
Tue/Thu, 12:30 PM – 1:50 PM

Office *ACC 203*

Units *3.0*





WHO SHOULD TAKE THIS COURSE?

Knowing how to implement modern statistical methods will give you an edge over less quantitatively competent MBA's.

COURSE OBJECTIVES

To give students an understanding of modern non-linear statisticalmethods and how to apply them in real business situations.

KEY CONCEPTS

- Modern statistical learningapproaches
- Shrinkage methods
- Non-linear regression
- Tree methods
- Boosting and Bagging
- Support Vector Machines
- Statistical methods for OptionPricing
- Using the statistical software R
- Neural networks

COURSE DESCRIPTION

This course aims to provide an applied overview to such modern non- linear methods as *Generalized Additive Models, Decision Trees, Boosting,Bagging, Neural Networks* and *Support Vector Machines* as well as moreclassical linear approaches such as *Logistic Regression,* and *Nearest Neighbors*. We will cover these approaches in the context of Marketing, Finance and other important business decisions.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023 SEMESTER

DSO 531 – *Digital Foundations for Business Innovation*

Section - 16279

Professor

Vivek Sharma and Daniel Altobello

Email

Vivek.Sharma@marshall.usc.edu

da_112@marshall.usc.edu

When

Mon, 2:00 PM – 4:50 PM

Office

TBD

Units

1.5

WHO SHOULD TAKE THIS COURSE?

Students looking to gain a greater understanding of how digital tools and technologies can accelerate business innovation firsthand, from executives currently driving digital growth in a Fortune 100 company.

COURSE OBJECTIVES

- Demonstrate fluency in the language framework of digital as a tool for business innovation
- Engage in dialogue with one another and with executive guest speakers how the emerging digital tools and technologies of our time can provide opportunities for business leaders, along with potential drawbacks to be safeguarded against.
- Infuse perspectives from thought leaders and business executives working to address real-world business needs into written work.
- Build a business case based on digital innovation.

KEY CONCEPTS

The course examines 15 emerging digital innovations shaping consumer-oriented businesses, in order to provide a basic framework for these concepts and provide leaders a greater understanding of how to leverage these powerful capabilities to build or grow businesses. For each of these digital innovations and in each class session, the course is focused on five questions: What does it mean? Why is it an important trend? What is the landscape? What are the key metrics? What are the implications for users, organizations and business leaders?

COURSE DESCRIPTION

Every business has become, or is transitioning into, a digital business. Consumers today live in a world where the most valuable retailer has no inventory, the world's most popular media owner creates no content, the world's largest accommodation provider owns no real estate and the world's largest taxi company owns no vehicles. But the forces shaping this digital revolution are often difficult to understand, for both these consumers and many business leaders.

This course will largely be based on discussion and require students' active participation in every session. Its content and format stem from a successful initiative undertaken at The Walt Disney Company to provide greater context around digital innovations to thousands of its business leaders addressing cur- rent business realities.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 547 – *Spreadsheet Modeling for Business Insights*

Sections – 16280

Professor

Murat Bayiz

Email

bayiz@marshall.usc.edu

When

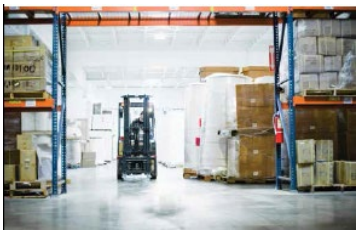
Tue/Thu, 12:30 PM – 1:50 PM

Office

BRI 307 A

Units

3.0



WHY TAKE THIS COURSE?

Aspiring finance professionals, business analysts, quant-savvy entrepreneurs, and management consultants need spreadsheet modeling skills to draw insights and build projections amidst uncertain conditions.

COURSE OBJECTIVES

Using MS Excel as the platform, this course trains professionals to become effective modelers: to translate industry challenges into well-formulated spreadsheet models, and then use those models to drive decision-making.

KEY CONCEPTS

- Spreadsheet Modeling
- Sensitivity Analysis
- Monte Carlo simulation
- Optimization
- Financial Modeling
- Scenario and Risk Analysis
- Decision Analysis
- Data tables & Pivot Tables
- Think-cell Applications
- Multiple Regression Modeling

COURSE DESCRIPTION

The course teaches spreadsheet modeling skills as well as industry best practices and expectations. Modeling skills are developed throughout the course using examples from many functions and industries. In addition to general modeling skills, the course will teach a handful of frameworks and tools useful to drawing managerial insights.

Particular emphasis is placed on the understanding of the fundamental drivers to quantitative decision-making as well as the communication skills necessary to drive organizational change.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

Fall 2023

DSO 547 – Spreadsheet Modeling for Business Insight

Section – 16304R

Professor

Phil Rogers

Email

phil.rogers@marshall.usc.edu

When

Tu/Th 5:00 - 6:20

Office

Bridge 400E

Units

3

WHY TAKE THIS COURSE?

Learn how finance professionals, business analysts, quant-savvy entrepreneurs, and management consultants use spreadsheet modeling to solve business problems, drawing insights and building projections in the face of uncertain conditions.

COURSE OBJECTIVES

This course will enable students to build models of unstructured business problems so they can make better decisions and gain insight into the impact various factors have on those decisions.

KEY CONCEPTS

- Spreadsheet Modeling
- Sensitivity Analysis
- Monte Carlo simulation
- Optimization
- Resource allocation
- Financial Modeling
- Scenario and Risk Analysis

COURSE DESCRIPTION

Students will learn the creative process of constructing and using spreadsheet models of business problems, specifically how to design, build and test spreadsheets and workbooks, and how to improve the efficiency and effectiveness with which they are used. Topics are explored by learning how to solve problems across a wide variety of business functions (manufacturing, finance, purchasing, marketing, logistics, planning and staffing) and across a wide variety of industries (banking, healthcare, energy, telecommunications, packaged goods, utilities, airlines, etc.), often using tools and techniques from the field of management science that are built into Excel.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 551 – *Digital Transformation in the Global Enterprise*

Section(s) - 16222

Professor

Rik Reppe

Email

rgr_730@marshall.usc.edu

When

Monday, 6:30 PM – 9:30 PM

Office *TBD*

Units *3.0*

WHO SHOULD TAKE THIS COURSE?

Come and check out the most recent developments in digital transformations and be ready to lead the charge. Learn to design digital initiatives for hyper-personalization, edge computing, digital twins, data monetization, blockchain, digital workplace, distributed AI, no-code app development, mesh architectures, and API economy. Job titles: Any business unit manager or consultant since you can't ignore the new digital technologies coming down the pike), ANY financial investment broker wanting to ensure that digital investments will provide payout, business process analyst since a firm can no longer simply improve their processes but must disrupt the industry, ANY business data analyst since data cannot simply be analyzed, it must be strategized.

COURSE OBJECTIVES

1. Gain hands-on practice in the 10 skills for designing and leading the most recent development in digital transformation to compete in a fast-changing digital world.
2. Gain hands-on practice serving sector leading clients across the business spectrum by working with a team to create an innovation strategy.
3. Gain hands-on practice with customer journey mapping, business opportunity mapping, and disruptive technology mapping

COURSE DESCRIPTION

- Taught by a Digital Transformation practice leader who does this every day.
- Hands-on projects with clients interested in digitally disrupting their business and hiring you to carry it out
- Not just talk about cases, but hands-on labs actually touching the stuff
- Exposure to lots of case examples of companies successfully making these transformation to serve as role models.
- Seminar format

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 556 - *Business Models for Digital Platforms*

Section(s) – 16330/16336

Professor

Inge Lindholm

Email

ilindhol@marshall.usc.edu

When

Mon or Wed, 6:30 PM – 9:30 PM

Office

Available upon request/ In person & virtual hours

Units

3.0

WHO SHOULD TAKE THIS COURSE?

MBA/MS students who are interested in being in designing and launching new products and services over digital platforms in established or start-up companies. Individuals who would like to learn how to design, assess and generate innovative digital business models while examining how to transform a traditional company into a platform business model company with an ecosystem approach.

COURSE OBJECTIVES

Increasingly, all industries are being- "flipped" with the digital platform becoming the foreground while physical activities are becoming the background. Digital platform leadership is increasingly vital for strategic advantage. Even more so in a post Covid-19 world! This course gives MBA/MS participants a competitive advantage in career preparation for full participation in aspects of business development and business model innovation in any industry where products & services are offered through digital platforms.

KEY CONCEPTS

- How to design & manage a business model in a digital platform ecosystem
- Scoping and assessing digital business platform ecosystem niches
- Leveraging partner capabilities through governance and APIs in digital business platform ecosystems
- How to establish digital platform leadership
- Digital business strategy in dynamic and disruptive environments
- How to identify, design, and assess innovative digital business models
- Different types of digital business models (open innovation, user-generated content, Internet of things, sharing economy models, social commerce...)

COURSE DESCRIPTION

- Recent case studies, articles, industry reports, current happenings.
- Cases include ScaleFast, Niantic Pokemon Go, Intuit, LinkedIn, Twitch, Pinduoduo, ByteDance, Lemonade, Vestas, and Stripe. Updates in summer.
- Frequent senior executive guest speakers who provide current practice insights.
- Mid-term and end-term team projects: Developing digital business model innovation proposal for company, digital platform ecosystem strategic moves.
- Course Reference Text: *Platform Revolution* (2016).
- Fosters interactive discussion & peer learning. Online discussion forum.
- General management multi-disciplinary format.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 559 - Introduction to Python for Business Analytics

Section - 16339

Professor

Richard Selby

Email

rselby@marshall.usc.edu

When

Tuesday, 6:30 PM – 9:30 PM

Office

TBD

Units

3.0

WHO SHOULD TAKE THIS COURSE?

Motivated graduate students with little or no prior programming experience who would like to develop essential competencies in the Python programming language and the Pandas package for data analytics. These skills are foundational for every business manager in today's data-rich economy.

COURSE OBJECTIVES

Upon successful completion, students will be able to:

- Write Python code to clean, manipulate, plot, and analyze business data
- Convert raw data into business insights for guiding business decision making
- Formulate and communicate actionable business recommendations based upon exploratory business data analysis

KEY CONCEPTS

- Algorithmic thinking
- Data structures
- Python and Jupyter notebook
- Functions and packages
- Iterations and conditional statements
- Automating mundane tasks
- Pandas DataFrame and Series
- Plotting
- Data assembly
- Data cleaning
- Data munging
- Efficiently analyzing large and messy datasets

COURSE DESCRIPTION

This course is concerned with the nuts and bolts of manipulating, processing, cleaning, and crunching data in Python. The primary goal of the course is to offer a guide to the parts of the Python programming language and its data-oriented library ecosystem and tools that will equip you to become an effective data analyst. It aims to provide students with an understanding of the role computation can play in solving real-world business problems and to help business students feel justifiably confident of their ability to write Python programs that allow them to creatively solve business problems and formulate actionable business recommendations based upon the data analysis.

DATA SCIENCES AND OPERATIONS

USC Marshall School of Business

DSO 573

DSO-573 (Section 16303)

Data Analytics Driven Dynamic Strategy & Execution

TUESDAY
6:30 PM- 9:30 PM

Professor Sid Mohasseb
Sid.Mohasseb@marshall.usc.edu

Why Take the course?

- As stated by a previous student, because: "It's the perfect complement to the other analytics courses offered at Marshall. While the other courses provide tools for performing analytics, this course provides the all-important "Why?" element."
- Because the course is designed to help you harness the power of analytics with a broader enterprise view and to prepare you for leadership roles in corporate strategy and operations as well as Data Analytics.

Course Objectives

- Students learn about real life applications of data analytics in strategy formulation and execution through cases, business / leadership expert and business analytics practitioners as well as projects. The course provides a comprehensive framework for devising dynamic strategies within a continually changing and increasingly competitive business environment. The objective of the course is to provide the students the knowledge, the conceptual framework and the methods required to effectively leverage Data Analytics to shape winning strategies and execution plans. And to help students ready for a critical role as a translator that can work with both Data Science and business teams to identify and solve business problems.
- The Ultimate goal is the development of leaders that understand and can embrace both dynamic Strategy and Data Analytics and are prepared to help their organizations

Dynamic Strategy Powered By D&A

Connected View of Planning to Execution

Strategic applications of Data Analytics – beyond tools

Key Concepts

- Exertive / Dynamic Strategy Concepts
- Connected and living Enterprise
- Shifting Focus and Convergence
- Value Zones of Big Data and business centric data buckets and signals.
- Business Objectives to analytics connectivity model for Data Exploration & Discovery
- Value of Unstructured Data
- Dynamic Sustainability of competitive advantage
- Role of Translators

Course Description

Achieving and enhancing competitive advantage through applications of data analytics, continuous insight discovery, strategy formulation and execution for the next generation of corporate leaders.

This course focuses on the use of Data Analytics for business advantage across the value chain. It addresses advanced thinking in leveraging Analytics to discover and address business challenges in a functionally connected and strategically targeted manner. NOTE: This course is NOT focused on teaching tools, discussing data manipulation methods and/or covering statistical and modeling techniques.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 578 – *Fundamentals of Sports Performance Analytics*

Section(s) – 16301R

Professor

Lorena Martin

Email

Lmartin1@marshall.usc.edu

When

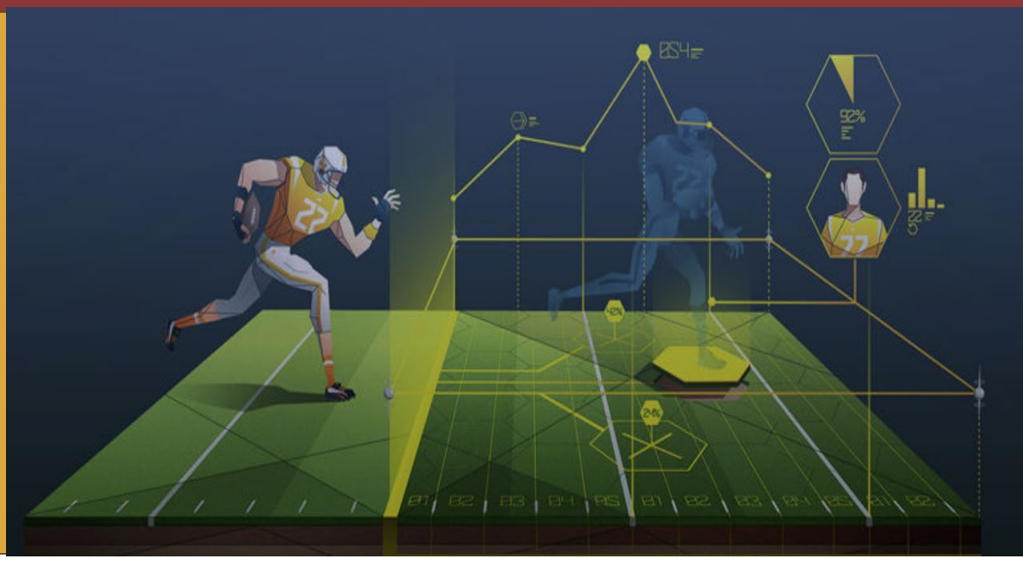
Wednesdays 12:30-1:50 PM

Office

BRI 400c

Units

1.5



WHY TAKE THIS COURSE?

This course will prepare you for a career in the sports industry. You will learn how to apply statistical and analytical concepts to sports performance. Learn about the behind-the-scenes inner workings of being in the field of sports analytics department in professional sports.

COURSE OBJECTIVES

- Learn how to code
- Apply statistical knowledge to sports
- Gain knowledge about the sports science data protocol implemented in pro sports teams.
- Evaluate performance, player drafting, load management, and market value of athletes.
- Meet experts working in sports analytics in the professional sports industry.

KEY CONCEPTS

- Principles of the measurement model for sports
- Exploratory analysis, correlations, ANOVA, regression models
- Key Performance Indicators in Sports
- Load Management
- Sports Science Data Collection in Pro Sports

COURSE DESCRIPTION

This course will provide you with the fundamental of sports analytics which entails a basic understanding of the different major sports, analytics departments within operations and how to implement and convey the findings to key stakeholders in professional sports.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 580 – *Project Management*

Section(s) – 16286/16287

Professor

Murat Bayiz

Email

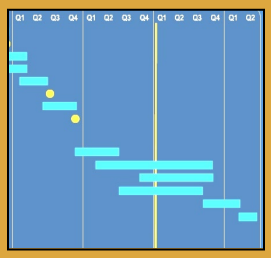
bayiz@marshall.usc.edu

When

16286 – Tue/Thu: 3:30 PM – 4:50 PM
16287 – Tue/Thu: 5:00 PM – 6:20 PM

Office *BRI 307 A*

Units *3.0*



WHY TAKE THIS COURSE?

In any position, our graduates will work in projects either as a project manager or a team member. It is important that they know effective project management methodologies. This course provides them with necessary formal project management skills that can be applied all industries

COURSE OBJECTIVES

To provide students with tools and skills needed in planning, managing, monitoring and controlling complex projects with numerous uncertainties. Also, to teach Microsoft Project, Excel and simulation models to make quantitative trade-offs while managing projects

KEY CONCEPTS

- Project organization structures
- Work Break Down structures
- Project evaluation and selection
- Planning and budgeting
- Project scheduling
- Critical Chain method
- Resources management
- Time and cost trade-offs
- Risk management
- Agile and Scrum project management
- Project monitoring with Earned Value analysis
- Microsoft Project
- Excel and Monte-Carlo Simulation models

COURSE DESCRIPTION

This course begins with project definition and organization concepts. Then it moves on to planning, estimation, scheduling methodologies projects. It will also cover risk and resource management and Earned Value Analysis. Course materials are enriched with guest speakers, games, software tutorials in MS Project, Excel and Crystal Ball, and case discussions

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 581 – *Supply Chain Management*

Section(s) – 16329

Professor

Bala Subramanian

Email

psbalasu@marshall.usc.edu

When

Monday, 6:30 PM – 9:30 PM

Office

TBD

Units

3.0

WHY TAKE THIS COURSE?

Anybody interested in consulting, marketing, operations, manufacturing, or entrepreneurship. Firms need a sound knowledge of how supply chains work, what are the key metrics, and what incentives must be provided for the systems to work well. And expertise in Supply Chain Management is becoming crucial if you aspire to leadership positions, regardless of career track.

COURSE DESCRIPTION

Supply chains have been in the news a lot since the pandemic … from shortage of PPE/toilet paper to the more recent backup in the port of LA. We explore important supply chain metrics, the primary tradeoffs in making supply chain decisions, and the basic tools for effective and efficient supply chain management, production planning and inventory control, order fulfillment and supply chain coordination. Several recent trends such as mass-customization, sustainability & supply chain resiliency, and influential innovations such as revenue management, fast fashion, reverse logistics, RFID and SaaS will be discussed. Instructor has 40-year leadership experience leading global companies.

KEY CONCEPTS

- Inventory management
- Cycle and safety inventory
- Newsvendor model
- Distribution system design
- Supply chain coordination
- Logistics
- Forecasting
- Network design
- Aggregate planning
- Enterprise resources planning
- Just-in-time manufacturing
- Supplier management
- IT in supply chains
- Sustainability and supply chains

COURSE OBJECTIVES

To provide students with an understanding of the intricacies of supply chains. To learn tools for management and improvement of supply chain processes and performance.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 582 – *Service Management: Economics and Operations*

Section(s) – 16334

Professor

Bala Subramanian

Email

psbalasu@marshall.usc.edu

When

Wednesday, 3:30 PM – 6:20 PM

Office

TBD

Units

3.0

WHY TAKE THIS COURSE?

Anybody interested in general management, consulting, financial services, operations or entrepreneurship. The service sector dominates today's economy (75% of GDP; 80% of jobs in the US). Increasingly every business is a service business, and it has become mission critical for every firm to be service oriented. Hence expertise in Services Management is crucial for any career track, if you aspire to leadership positions.

COURSE OBJECTIVES

To provide students with an understanding of operations management in services. To learn tools for resource planning, influencing customer behavior, managing quality & recovery, and improving profits in service firms. To utilize analytic tools and an integrated viewpoint towards managing service firms.

COURSE DESCRIPTION

The goal of this course is to equip you with the tools and knowledge to effectively manage services (whether in the "pure" service sector or in manufacturing. Through several landmark cases we explore service strategy, efficient delivery, quality assurance, and yield management. Examples are drawn from several industries incl. healthcare, information-driven services, financial services, restaurants, retail, and transportation. Team project to diagnose/solve a real service problem, or to analyze key operational challenges in a service industry, or to develop an operations plan for a new service business, will make all concepts come alive. Instructor has 40-year leadership experience is Service Industries.

KEY CONCEPTS

- Service Management Issues
  - *Nature of Services*
  - *Service Process Design*
  - *Managing Customer Behavior*
- Managing Demand & Resources
  - *Queueing*
  - *Capacity Management*
- Managing Quality
  - *Empowering Frontline Workers*
  - *Service Recovery*
  - *Statistical Process Control*
- Evaluating Productivity
  - *Data Envelopment Analysis*
- Pricing Theory
  - *Demand Models*
- Pricing & Revenue Optimization
  - *Markdown Management*
  - *Quantitative Demand Models*
  - *Consumer Choice Models*
  - *Capacity Control*
  - *Capacity Control with Demand Uncertainty*

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

FALL 2023

DSO 588 – *Supply Chain Finance*

Section(s) – 16326

Professor

Christopher Gopal

Email

cgopal@marshall.usc.edu

When

ONLINE: Tuesdays, 6:30 PM – 9:30 PM

Office

ONLINE

Units

3.0

WHY TAKE THIS COURSE?

Graduate students in Engineering, Marketing, Strategy, Finance and Operations who aspire to executive and operations roles in the company.

COURSE OBJECTIVES

This course is designed to provide insights into supply chain financing and finance, and provides a unique view of finance within supply chain management. It is intended to help develop supply chain and operations executives with "business acumen", who have an integrated finance-oriented understanding of the operations of a company. It will give students an understanding of the supply chain impacts on shareholder value and the financial statements, and provide a grasp of the financial levers and financing methods for the global supply chain.

KEY CONCEPTS

- The supply chain, its functions, and the impacts that it has on the strategic success, shareholder value and financials of a company
- analyzing the operations and supply chain performance of a company through its financials
- approaches to optimizing working capital, cash and operational costs, and
- financing the supply chain, and the instruments that help finance the operations of the company while taking risk management in supply chain into account.

COURSE DESCRIPTION

Today's business environment is uncertain, competitive and risky. More than ever, it is obvious that individual companies do not compete with each other – supply chains compete. The focus of a company is usually to integrate and optimize the flow of goods and information from point of first supply to the end consumer and back. However, a critical component of the supply chain - the flow of cash and finance - is typically fragmented. The supply chain typically accounts for 60 – 80% (and sometimes more) of a company's costs, while free cash flow from operations is a primary indicator of business success and sustainability. We will address operational finance (the issues related to the performance and financials of a company in terms of cash flow, cost and capital), the costs of financing, the various methods and instruments used in financing supply chain & operations, while considering the major risks involved.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

Will not be available for bidding. Students may register during Open Registration via WebReg

DSO 599 – *Fall 2023*

Data Analytics for the Games Industry

Professors *Section(s) – 16237/16239*

Vic Bekarian & Clovy Meng

Emails

Vicken.Bekarian@marshall.usc.edu (Vic)

Hongxiam@usc.edu (Clovy)

When

Mondays, 6:30 – 9:30 PM

Office *TBD*

Units *1.5 Units*

WHY TAKE THIS COURSE?

Build your understanding of how most games industry leaders build, test, and launch their products through the data and analytics required to succeed in these steps. Learn and exercise the skills required to manage and grow any digital product, but especially learn the analytical craft in the context of making successful video games. This course is especially valuable for pursuing roles as Analysts, Data Scientists, and Product Managers.

COURSE OBJECTIVES

Upon successful completion of this course, you will be able to:

- Clearly explain metrics needed for the business operation of most live products, with a focus on games
- Explain the unique aspects of game data analysis used for customer acquisition, retention, and monetization
- Analyze real game data and formulate business recommendations from insights you discover
- Build awareness of how segmentation of players can advance insights and actions framed among types of statistical modeling that support game development
- Build awareness of the most imminent challenges faced by the games industry that require innovative approaches to data analytics to overcome them

KEY CONCEPTS

Examples of topics that will be covered throughout this course are:

- Product Metrics and KPIs
- A/B Testing
- Game Design and Operations
- Player Segmentation
- Player Lifecycle Management
- Games-as-a-Service (SaaS)
- Lifetime Value (LTV)
- Python (for data analysis)
- Predictive Modeling

COURSE DESCRIPTION

The global games industry generated nearly $200 billion in 2022, with over half of this revenue generated on mobile devices alone. On its path to becoming the dominant business in entertainment, the games industry has been evolving the way it tracks, analyzes, and reacts to the data it collects on player behavior. Evolutions in data analytics have enabled more data-informed decision-making, as well as ongoing marketing and product optimizations that create tremendous results.

This course will help graduate students understand the basics of data analytics as it is used in the games industry. You'll learn how business leaders in this space use data analytics to overcome industry challenges. This course will build practical skills by connecting analytics methodology to the ways we measure and report the business performance of games. Students will analyze game data, draw insights, and practice thoughtful communication of recommendations according to their findings. Students will also play and describe games to build an understanding of how player experience and the data generated are connected, becoming more empathetic and understanding analysts for the products they could eventually work on.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

Fall 2023

DSO 599 – *Smart City Tactics, Technologies, and Operations*

Professor
Ted Ross, MBA, CPA

Email
TedRoss@Marshall.USC.Edu

When
Wednesdays – 6:30 to 9:30PM

Office
TBD

Units
3

WHY TAKE THIS COURSE?

Learn to apply digital strategy, modern technologies, and organizational change to the real-world using smart cities! Whether looking to work in private sector, government, or a nonprofit, this multi-disciplinary course combines modern best practices across IT, digital strategy, data analytics, operations, organizational change, urban planning, and emerging tech with global city challenges. No programming or technical prerequisites.

COURSE OBJECTIVES

1. Define what a Smart City is, including its various technology components & integrations.
2. Apply modern digital transformation techniques to large, complex ecosystems and organizations.
3. Describe national and global Smart City use cases for modern urban challenges, such as public safety, transportation, utilities, sustainability, etc.
4. Work as a team to identify, analyze, and solve an urban problem using Smart City technologies.
5. Develop personal skills in consulting, marketing, or building tech in the global smart city industry.

KEY CONCEPTS

- Smart cities provide unparalleled tools to improve quality of life, equality, democracy, and economic prosperity.
- Smart cities transform citizen experiences through smart infrastructure, data, digital services, digital inclusion, and governance.
- More than just technology, smart cities require strategy and organizational change.
- Los Angeles is transforming itself to host the 2028 Summer Olympics.
- Smart cities spend *$124+ Billion a year globally* on tech & consulting (IDC, 2020).

COURSE DESCRIPTION

This class is about the tactical planning, implementation, and digital transformation of the communities where we live, work, and play (aka the Smart City). This class will dissect the various components of Smart City technologies (infrastructure, data, digital services, etc), review Smart City technology use cases, discuss strategies for digital transformation in large ecosystems, and detail organizational change methods necessary to navigate complex political and organizational challenges. As smart city technology spending is more than $124 Billion per year globally, this class will also cover practical opportunities for students on how to consult, market, or sell to smart cities. This interdisciplinary class is a real-world intersection of technology, digital strategy, and the world in which we live, making it applicable to multiple student industries and areas of interest. No programming or technical prerequisites required.

USC Marshall
School of Business

DSO-599: SMART CITY TACTICS, TECHNOLOGIES, AND OPERATIONS
Fall 2022

3 Units - Meets every Wednesday from 6:30PM to 9:30PM

Instructor: *Ted Ross*
Office: *BRI 401 T*
Office Hours: *One hour per week or by appointment. Wednesdays, 5:00-6:00PM*
Email: *TedRoss@marshall.usc.edu*

COURSE DESCRIPTION

This is a class about the tactical planning, implementation, and digital transformation of the communities where we live, work, and play (aka the Smart City). This class will dissect the various components of Smart City technologies (infrastructure, data, digital services, etc.), review a series of Smart City technology use cases in areas such as public safety, transportation, and sustainability, discuss strategies for digital transformation in large ecosystems, and detail the organizational change methods necessary to navigate complex political and organizational challenges. As smart city technology spending is more than $124 Billion per year globally, this class will also cover practical opportunities for students on how to consult, market, or sell to smart cities (International Data Corporation - 2020 Worldwide Smart Cities Spending Guide). This interdisciplinary class is a real-world intersection of technology, data, digital strategy, and the world in which we live, making it applicable to many student industries and areas of interest.

COURSE OBJECTIVES

Upon successful completion of this course, students will be able to:

1) Define what a Smart City is, including its various technology components and the interactions of those technologies with urban stakeholders (residents, businesses, tourists, government).

2) Apply modern digital transformation techniques to large, complex ecosystems and organizations.

3) Describe various national and international use cases of smart city technologies for modern urban challenges, including public safety, transportation, sustainability, public works, and digital inclusion/equity

4) Work as a team to identify, analyze, and solve an existing urban problem using current and emerging Smart City technologies

5) Develop and demonstrate personal skills in consulting, marketing, selling to, implementing, or building technologies in the large, global smart city industry

COURSE MATERIALS

Required Text/Readings:

1. "Smart Cities: Foundations, Principles, and Applications," First Edition, by Houbing Song, Ravi Srinivasan, Tamim Sookoor, Sabina Jeschke, Wiley Publishing, ISBN 9781119226390

2. "Smart Cities: The Internet of Things, People and Systems," First Edition, by Schahram Dustdar, Stefan Nastić. Ognjen Šćekić, Springer Publishing, ISBN 9783319600307

Blackboard Files:

- This course utilizes additional articles, videos, and publications to enhance your learning. These resources are listed in the Course Outline below and will also be posted on Blackboard.

GRADING

Grading is based on adding up the number of points obtained in each of the following assignments, weighted according to the percentage proportion given in the third column below (% of Overall Grade). A final letter grade will be assigned to you based on both your total number of points and how it compares to other students in the course. The target average GPA for this course is 3.5.

Grading Summary

Assignments	***Points***	***% of Overall Grade***
Class Contribution & Professionalism	*100*	*10%*
Homework	*150*	*15%*
Team Project	*210*	*21%*
Mid-Term Exam	*240*	*24%*
Final Exam	*300*	*30%*
TOTAL	*1000*	*100%*

CLASS CONTRIBUTION & PROFESSIONALISM

Class contributions are extremely important as it greatly improves the learning experience for you and your classmates. Professionally voicing your individual perspective and understanding in class will help you both practice the terminology used in the course and reinforce learning of its topics. In addition, your input can greatly help other students (and the professor) view the content in new and meaningful ways. For this reason, class participation counts 10% of your course grade. It requires that you do the assigned readings before class, participate actively in class with questions and comments, communicate in a respectful and professional manner, and participate in any interactive class activities, such as surveys or polls.

In-class participation grading is based on your demonstrated willingness to participate, the quality of the comments expressed (rather than quantity), and professional behavior demonstrated during the course. While some students are more comfortable than others with class participation, *all* students should make an effort to contribute meaningfully. Students will be "cold called" on from time to time to ensure inclusive student contributions.

For each in-class session ten (10) points will be awarded to a student for relevant, meaningful, and professional participation, five (5) points for modest contributions and professionalism in the class, and zero (0) points for no participation, absence, or highly unprofessional course behavior (up to 100 points maximum for the semester).

Class Participation—Behavioral Anchor Rating Scale:

Meaningful Contributions and Professionalism in Class

- Initiates information relative to topics discussed
- Accurately exhibits knowledge of assignment content
- Clarifies points that others may not understand
- Shares personal experiences or opinions related to topic
- Offers relevant / succinct input to class
- Actively participates in class exercises
- Demonstrates ability to apply, analyze, evaluate & synthesize course material.
- Demonstrates willingness to attempt to answer unpopular questions
- Builds on other students' contributions
- Exemplifies professional behavior typical for a business or graduate course environment, such as arriving on time, not using smartphone or laptop for non-course related content in class, dressing appropriately, respectful communication with the professor and other students, a positive attitude, etc.

Modest Contributions and Professionalism in Class

- Participates in group discussions when asked
- Demonstrates knowledge of course material
- Offers clear, concise, "good" information on class assignments
- Offers input, but tends to reiterate the intuitive
- Attends class regularly
- Mostly professional behavior typical for a business or graduate course environment

Unacceptable Contributions and Professionalism in Class

- Fails to participate even when directly asked
- Gives no input to discussions
- Does not demonstrate knowledge of the readings
- Shows up to class: does nothing
- Distracts group / class
- Irrelevant discussion
- Unprofessional behavior not conducive for a business or graduate course environment

HOMEWORK

Homework assignments count for 15% of your course grade. A typical assignment will consist of 2-3 short essay questions related to the readings for the week. Student responses that are thoughtful, thorough, and reference the week's reading or lectures will be given full points (15 points per homework assignment). Incomplete answers will receive partial credit. Unanswered questions will receive zero (0) points.

You will submit homework assignments through Blackboard by 6:30PM on Wednesday of each assigned week. In other words, your homework assignment is due in Blackboard by the start of each

new class session so we can discuss those homework questions and answers as a group at the beginning of each class.

SMART CITY SOLUTION TEAM PROJECT

In Week 8 (after mid-term), I will form teams of five to eight students each (dependent on class size). These teams will draft, submit, and present a group PowerPoint presentation project to the class in weeks 14 and 15 (aka Smart City Solution Team Project).

Your team will serve as consultants for the City of Los Angeles (the nation's second largest city), analyzing a significant urban issue and providing recommendations for a Smart City technology solution. A list of urban issues will be provided to your team. Your team's job is to:

1. Select an urban issue from the provided list,
2. Research the issue using available online resources,
3. Detail a Smart City technology solution that would substantially benefit stakeholders impacted by the issue
4. Submit the completed presentation online in Blackboard in week 13. PowerPoint presentation template will be provided and includes:
    a. Executive Overview
    b. Definition of Problem/Issue
    c. List of Impacted Stakeholders
    d. Proposed Smart City Technology Solution
        i. Detail how the solution would work
        ii. Describe the technologies used to make up the solution (should reference technologies discussed in this class)
        iii. Summarize how the chosen technologies relate to each other to make a unified solution
    e. Brief Benefit Analysis to Impacted Stakeholders
    f. Expected Agents of Action
    g. Brief Stakeholder Engagement Plan
    h. Methods to Fund or Sustain the Proposed Smart City Solution, etc.
5. Present findings to class via concise 20-minute presentation and answer other student's questions in weeks 15 or 16

Include what you believe are the most important factors of the issue and how the Smart City technology solution will improve the lives of your stakeholders. Specify wherever possible. General solutions will get little credit. Provide both quantitative (when applicable) and qualitative analysis where possible. Practicality of solution, creativity in approach, ability to "sell" the proposal during the class presentation, and clear application of what is taught in this course will be given high credit.

Minimal time will be provided in class to form teams, discuss approved topics, and take a progress checkpoint (week 12). Researching and drafting the assignment is expected to be completed outside of class hours.

With the submission of your group assignment, you will be asked to rank your teammates using the Peer Evaluation Form as far as their relative contribution to the assignment with the intention that this will encourage all team members to do their best to contribute to the team assignment. Your presentation and peer reviews must be submitted on Blackboard by the due date.

EXAMS

There will be one midterm exam worth 24% of your course grade and one final exam worth 30% of your course grade. Both exams will be closed book/notes, taken in-class on Blackboard using your own computer, and include questions based on the assigned readings or lecture. The midterm exam will be on October 5th (Wednesday) during normal class hours and the final exam will be online between December 1st and 7th (your choice). Both midterm and final review will be provided the class before to highlight areas of study and preparation.

EXAM RESCHEDULING

If you have a medical or family emergency, I can work with you to create a makeup exam to be completed at another date. For all other reasons, including travel for non-emergencies, oversleeping, or forgetfulness about the exam date, you will not be allowed to reschedule and will receive a zero for the exam.

ASSIGNMENT SUBMISSION

All homework and group presentation assignments must be submitted via Blackboard before the time it is due. If your computer, Internet access, or Blackboard have issues, then you can email the assignment to me as soon as you regain web access, along with a screenshot verifying the latest date of modification of the attached file. Unless you can document that you completed the assignment before the deadline or have a documented medical or family emergency, no late submissions will be considered for grading. This policy is strict, and the Blackboard system will not accept submissions after the given timestamp.

THE IMPORTANCE OF COURSE EVALUATIONS

Like a Smart City, this course is continuously being improved! Feedback from students through the midpoint and final course evaluations is invaluable.

EMERGENCY PREPAREDNESS

In case of a declared emergency if travel to campus is not feasible, the USC Emergency Information web site (https://emergency.usc.edu/) will provide safety and other information, including electronic means by which instructors will conduct class using a combination of USC's Blackboard learning management system (blackboard.usc.edu), teleconferencing, and other technologies.

USE OF RECORDINGS

Pursuant to the USC Student Handbook (www.usc.edu/scampus, Part B, 11.12), students may not record a university class without the express permission of the instructor and announcement to the class. In addition, students may not distribute or use notes or recordings based on University classes or lectures without the express permission of the instructor for purposes other than personal or class-related group study by students registered for the class. This restriction on unauthorized use applies to all information that is distributed or displayed for use in relationship to the class.

COURSE OUTLINE AND ASSIGNMENTS

	Topics/Daily Activities	Readings and Videos (*must complete before class*)	Deliverables with Due Dates
Week 1 August 24	**What is a Smart City?** **&** **Course Expectations** ● Course Expectations ● The Smart City Vision & Opportunity ● How Technology Makes Us "Smarter" ● The Smart City Defined ● Components of Smart City ● Smart City Stakeholders ● Cyber-Physical Systems & Cyber-Human Planning	*Smart Cities: Foundations, Principles, and Applications* (Chapter 1) ~18 pages *Smart Cities: The Internet of Things, People and Systems* (Chapter 1) ~11 pages Read City of Los Angeles' "SmartLA 2028 Smart City Strategy" (https://ita.lacity.org/sites/g/files/wph1626/files/2021-05/SmartLA2028%20-%20Smart%20City%20Strategy.pdf) ~48 pages Watch City of Los Angeles' "SmartLA 2028 Introduction" Video (5 minutes, 18 seconds) (https://www.youtube.com/watch?v=23NaWMzkkSU)	Homework #1 (8/31, 6:30PM)

Week 2 August 31	**Smart Infrastructure** • Smart City Infrastructure Defined • Strategic Infrastructure Opportunities • Strategic Infrastructure Challenges • Infrastructure Use Cases (Mobility, Smart Grid)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 7 and 15) ~46 pages *Smart Cities: The Internet of Things, People and Systems* (Chapter 2, 3, and 5) ~53 pages Watch Volvo's "Smart Cities - Infrastructure & Transportation of the Future" Video (2 minutes, 34 seconds) (https://www.youtube.com/watch?v=d1DndVz9dAs) Watch U.S. Dept of Energy "Smart Grid Video" (5 minutes, 18 seconds) (https://www.youtube.com/watch?v=JwRTpWZReJk)	Homework #2 (9/07, 6:30PM)
Week 3 September 07	**Smart Data Tools & Practices** • Smart Data Tools & Practices Defined • Strategic Data Opportunities • Strategic Data Challenges • Data Use Cases (Public Safety, Open Data)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 2 and 9) ~56 pages Watch City of Los Angeles' "ShakeAlertLA Earthquake Early Warning App" Video (2 minutes, 9 seconds) (https://www.youtube.com/watch?v=3G4H3t3QQDo&t=87s) Watch City of New York "Open Data" Video (50 seconds) (https://www.youtube.com/watch?v=l4undH4y0Ws)	Homework #3 (9/14, 6:30PM)

Week 4 September 14	**Smart Digital Services & Apps** ● Smart Digital Services Defined ● Strategic Digital Services Opportunities ● Strategic Digital Services Challenges ● COVID-19 Pandemic as a Catalyst ● Digital Services Use Cases (Citizen Service Requests, Parking Availability)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 11) ~22 pages *Smart Cities: The Internet of Things, People and Systems* (Chapter 7) ~35 pages Watch City of Los Angeles' "MyLA 311 Mobile App" Video (4 minutes) (https://www.youtube.com/watch?v=95eLlfRCarU) Watch MobiDev's "Smart Parking" Video (2 minutes, 12 seconds) (https://www.youtube.com/watch?v=-9s9QkpRzWs)	Homework #4 (9/21, 6:30PM)
Week 5 September 21	**Smart City Governance** ● Smart City Governance Defined ● Strategic Governance Opportunities ● Strategic Governance Challenges ● Smart City Governance Use Cases (City of Amsterdam, City of Los Angeles, Republic of Korea)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 12 and 21) ~52 pages *Smart Cities: The Internet of Things, People and Systems* (Chapter 9) ~18 pages Watch CIGI's "How to Build a Democratic Smart City" Video (7 minutes, 36 seconds) (https://www.youtube.com/watch?v=4z0fVAsHFro)	Homework #5 (9/28, 6:30PM)

Week 6 September 28	**Digital Inclusion & Connectivity and Midterm Review** ● Digital Inclusion Defined ● Strategic Digital Inclusion Opportunities ● Strategic Digital Inclusion Challenges ● Digital Inclusion Use Cases (United Kingdom, City of Louisville) ● Midterm Review	Read UK's "Government Digital Inclusion Strategy" (https://www.gov.uk/government/publications/government-digital-inclusion-strategy/government-digital-inclusion-strategy) ~35 pages Read City of Louisville's "Digital Inclusion Plan" (https://digitalinclusion.louisvilleky.gov/sites/default/files/Louisville_Metro_Digital%20Inclusion_Plan_May%202017.pdf) ~9 pages Study for Midterm	Homework #6 (10/05, 6:30PM)
Week 7 **October 5**	**MIDTERM**		
Week 8 October 12	**Securing the Smart City & Smart City Solution Team Project (Team Formation)** ● Cyber Threats ● Cyber Security Challenges ● Cyber Security Lifecycle of Smart Cities ● Group Presentation (Team Formation & Assignment Review)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 14 and 19) ~45 pages MIT Cybersecurity Clinic's "Social Cyber Defense of Urban Critical Infrastructure" Video (2 minutes, 31 seconds) (https://www.youtube.com/watch?v=fMmfVJv8b-o) Watch Forrester's "Keeping Smart Cities Safe from Hackers" Video (9 minutes, 25 seconds) (https://www.youtube.com/watch?v=ktZ8HUkFj1M&t=51s) Work on Group Presentation Topic Proposal (due 10/19) ~2-3 hours of work	Group Presentation Topic Proposal Due (10/19, 6:30PM)

Week 9 October 19	**Innovating the Smart City - Part 1 (Emerging Technologies) & Smart City Solution Team Project (Topic Approval)** ● Evolution of Smart City Through Emerging Tech ● Emerging Technologies Review ● Importance of Integration (Smart City 2.0) ● Emerging Technology Use Cases (Smart Lighting, Smart Health Monitoring) ● Group Presentation (Topic Approval & Discussion)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 24 and 27) ~38 pages Read Tomorrow City's "Technology for Smart Cities: The Pillars of Urban Planning of the Future" ~11 pages (https://tomorrow.city/a/technology-for-smart-cities-the-pillars-of-urban-planning-of-the-future) Work on Group Presentation PowerPoint (due 11/20) ~2 hours	Homework #7 (10/26, 6:30PM)
Week 10 October 26	**Innovating the Smart City - Part 2 (Digital Transformation)** ● Evolution of Smart City Through Digital Initiatives ● Key Digital Transformation Practices ● Engaging & Navigating Stakeholders ● Smart City Measurements and Key Performance Indicators (KPIs)	*Smart Cities: Foundations, Principles, and Applications* (Chapter 5) ~24 pages Read Deloitte's "Seven Pivots for Government's Digital Transformation" ~13 pages (https://www2.deloitte.com/us/en/insights/industry/public-sector/government-digital-transformation-strategy.html) Work on Group Presentation PowerPoint (due 11/20) ~2 hours	Homework #8 (11/02, 6:30PM)

Week 11 November 02	**Sustaining & Funding Smart Cities** ● Sustainability as an Opportunity ● Sustainability as a Climate Imperative ● Sustainability Use Cases ● Funding Models for Smart City Investments	*Smart Cities: Foundations, Principles, and Applications* (Chapter 17 and 18) ~39 pages Read Deloitte's "The Challenges of Paying for Smart Cities Projects" ~22 pages (https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-ps-the-challenge-of-paying-for-smart-cities-projects1.pdf) Watch City of Amsterdam's "How Amsterdam Revolutionizes Energy" Video (11 minutes, 39 seconds) (https://www.youtube.com/watch?v=pkTBjMGKPK8) Work on Group Presentation PowerPoint (due 11/20) ~2 hours	Homework #9 (11/09, 6:30PM)

Week 12 November 09	**Global Smart City Perspectives** **&** **Smart City Solution Team Project (Progress Checkpoint)** ● Smart Cities & Cultural Context ● Culture as a Technology Driver ● Culture as a Technology Detractor ● Variations in Smart City Focus & Strategies (Dubai, Paris, New York, Amsterdam, Korea)	Read City of Paris' "Smart & Sustainable Strategy" ~60 pages (https://cdn.paris.fr/paris/2020/02/26/f7dc822a66de6000cd910a145c7fca39.ai) Read City of New York's "Building a Smart & Equitable City" ~24 pages (https://www1.nyc.gov/assets/forward/documents/NYC-Smart-Equitable-City-Final.pdf) Read Dubai's 2021 Smart City Plan ~24 pages (https://www.dubaiplan2021.ae/c/document_library/get_file?uuid=14167c30-550d-546c-5b72-587a3d1e5c7a&groupId=1028358) Read City of Amsterdam's "Amsterdam Smart City: A World Leader in Smart City Development" Strategy Summary ~9 pages (https://hub.beesmart.city/city-portraits/smart-city-portrait-amsterdam) Read Korea's "Korean Smart Cities" Strategy Summary ~13 pages (https://smartcity.go.kr/wp-content/uploads/2019/08/Smart-city-broschureENGLISH.pdf) Work on Group Presentation PowerPoint (due 11/20) ~1 hour	Homework #10 (11/16, 6:30PM)

Week 13 November 16	**Consulting or Selling to a Smart City** ● The Smart City Market ● Types of Smart City Customers ● Who to Sell to? ● What to Sell? ● Navigating Government Procurement & Budgeting	Read TechTarget's "Develop a Channel Sales Strategy for Smart City Projects" ~4 pages (https://searchitchannel.techtarget.com/feature/Develop-a-channel-sales-strategy-for-smart-city-projects) Read NewCo's "How to Sell to a Smart City" ~3 pages (https://shift.newco.co/2016/09/23/how-to-sell-the-smart-city/) Read City of Boston's "Smart City Playbook" ~4 pages (https://monum.github.io/playbook/) Finalize Group Presentation PowerPoint (due 11/28) ~2 hours Prepare to Give Group Presentation to Class (presentation date will be assigned to team) ~2 hours	
Week 14 November 23 (Thanksgiving Week)	Thanksgiving Break (no class)		Group Presentation PowerPoint Due (11/28, 11:59PM) Peer Evaluation Form Due (11/28, 11:59PM)
Week 15 November 30	Group Presentations & Final Review Session	Prepare for Final Exam	Take online Final Exam through Blackboard (available 12/01 at 9:00AM through 12/07 at 6:30PM)

FINAL WEEK **December 07**	Group Presentations (7:00 - 9:00PM)		

OPEN EXPRESSION AND RESPECT FOR ALL

An important goal of the educational experience at USC Marshall is to be exposed to and discuss diverse, thought-provoking, and sometimes controversial ideas that challenge one's beliefs. In this course we will support the values articulated in the USC Marshall "Open Expression Statement."

STATEMENT ON ACADEMIC CONDUCT AND SUPPORT SYSTEMS

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on Research and Scholarship Misconduct.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
eeotix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
osas.usc.edu
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

*Occupational Therapy Faculty Practice - (323) 442-33*40 or otfp@med.usc.educhan.usc.edu/otfp
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS

(Fall 2023 – first half of the semester)

DSO 599 – *Healthcare Analytics*

Section – TBD

Professor

Cosimo Arnesano

Email

arnesano@marshall.usc.edu

When

Monday, 6:30 PM – 9:30 PM

Office **BRI 303E**

Units *1.5*

WHY TAKE THIS COURSE?

Students who plan to have a career in Business Analytics and interested in knowing more about how to apply analytics skillset and methodologies to solve challenging problems in the healthcare industry should take this course. Students who want to learn how to identify innovative uses of data to solve healthcare management problems, understand key industry metrics, and guide professional decision-making should take this course.

COURSE OBJECTIVES

1. Introduce the basics of healthcare analysis related to clinical and health outcomes, research and development, value vs. cost, financial performance, risk analysis, and more.
2. Describe the basics of the healthcare ecosystem including key constituents and shareholders, and their goals from the perspective of various disciplines.
3. Empower students to research and analyze real healthcare data using a variety of software platforms and formulate business recommendations.

KEY CONCEPTS

Business Analytics
US Healthcare ecosystem
R programming
Phyton programming
JMP and Excel analytics tools
Machine Learning
Artificial Intelligence in Medicine
Financial Performance
Risk Management
Research and Development
Consumer Insights
Fee-for-service approach
Value-based care approach

COURSE DESCRIPTION

The healthcare industry is changing rapidly due to technological changes, regulatory changes, demographic shifts, and changes in consumer expectations. This course helps graduate students understand the basics of healthcare analytics, the challenges, the opportunities, and separate what is real and what is speculation and hype. This is a hands-on class where students will be analyzing real healthcare data and then presenting their actionable business strategy insights and recommendations. Students will be working on projects and other assignments both individually and in groups.