DSO 505 — *Sustainable Supply Chain*

Section(s) – 16283

Professor
Christopher Gopal

Email
cgopal@marshall.usc.edu

When
ONLINE: Thursday, 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.

DSO 506 – *Sourcing and Supplier Management*

Section 16297/16299

Professor

Alireza Kabirian

Email

kabirian@marshall.usc.edu

When

16299: Tue, 3:30 PM – 4:50 PM

16297: Thu, 6:30 PM – 9:20 PM

Office	Units
BRI 307 E	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.

DSO 521 – *Smart City Tactics, Technologies, and Operations*

Professor
Ted Ross, MBA, CPA

Email
TedRoss@Marshall.USC.Edu

When
Mondays – 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.

DSO 522 – *Applied Time Series Analysis for Forecasting*

Professor
Inga Maslova
Email
imaslova@marshall.usc.edu
When
16240 – Tue/Thu: 11:00 AM – 12:20 PM
16241 – Tue/Thu: 12:30 PM – 1:50 PM

Office	**Units**
ACC 203	*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 stationary, 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.

DATA SCIENCES AND OPERATIONS

FALL 2024 SEMESTER

DSO 522 – Applied Time Series Analysis for Forecasting

Section: 16249

Professor
Richard W. Selby

Email
rselby@marshall.usc.edu

When
Tuesday 6:30pm-9:30pm

Office
TBD

Units
3.0

WHY TAKE THIS COURSE?

- In business forecasting, time series analysis and modeling are used to analyze data that are collected over time to develop forecasting methods for revenues, earnings, inventories, schedules, budgets, and new product developments.

- Time series data arise in many different business areas, and time series forecasting methods apply to problems in finance, marketing, product development, supply chain, operations, real estate, accounting, and international business.

- This course provides knowledge, skills, and expertise for business forecasting using time series analysis and modeling and opens career opportunities for forecasting management positions in leading businesses.

COURSE OBJECTIVES

The overall course goal is to develop sophisticated business professionals who are able to analyze business data deeply and create accurate business forecasts. Students learn foundational and advanced forecasting methods and acquire forecasting skills and experience by completing several projects. The course projects provide hands-on experience developing forecasting models using datasets for businesses.

KEY CONCEPTS

- Business Forecasting
- Forecasting Methods
- Time Series Models
- Regression and Box-Jenkins Models
- Statistical Process Control
- Neural Networks

COURSE DESCRIPTION

Course topics include concepts and techniques for business forecasting, forecasting methods, time series models, regression and Box-Jenkins models, statistical process control, and neural networks. Students apply forecasting methods to develop forecasting models using datasets for businesses. Students acquire knowledge, skills, and expertise for business forecasting and gain hands-on experience in several projects. This course is open to all USC graduate students from all schools and all disciplines.

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

Professor
Cosimo Arnesano

Email
arnesano@marshall.usc.edu
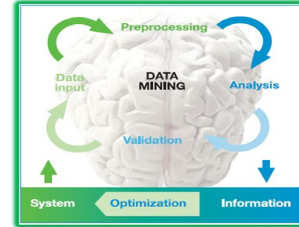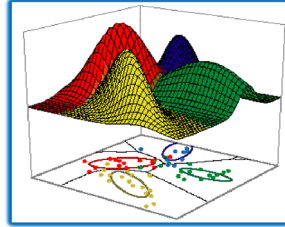
When
16269 – Wed: 6:40 PM – 9:30 PM

Office
BRI 401 O

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.

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

Section(s): 16221/16227

Professor

Feng Chen

Email

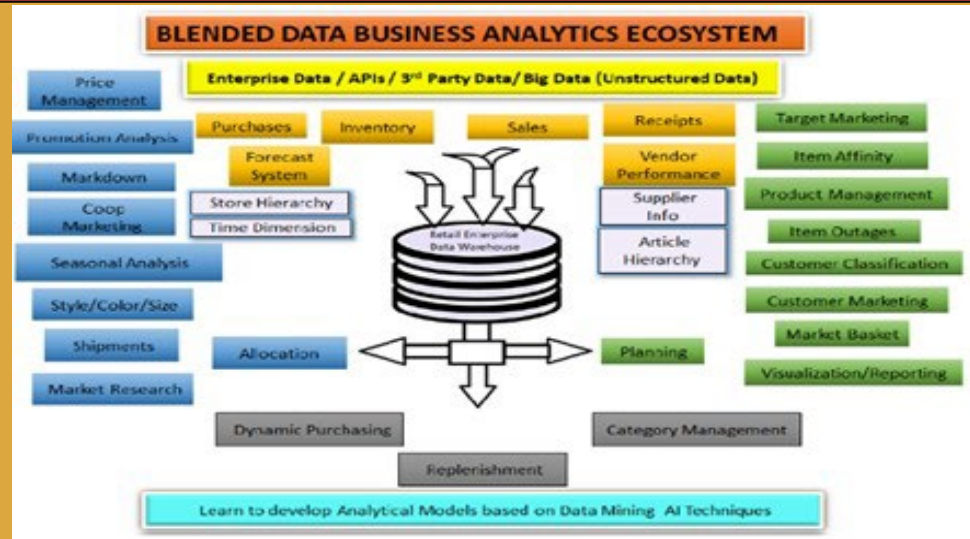*fchen@marshall.usc.edu*

When

16221 – Mon/Wed: 12:30 PM – 1:50 PM
16227 – Mon/Wed – 2:00 PM – 3:20 PM

Office

BRI 400 G

Units

3.0

BLENDED DATA BUSINESS ANALYTICS ECOSYSTEM

WHY TAKE THIS COURSE?

All Students who want to get ahead in the new AI and data rich world and those who plan to have a career in Business Analytics should take this class. Students. Today Analytics is in every field, knowing how interpret the Data, Dash Board and Model Report is critical for every employee. Learning how to solve business problems using Business Analytics is key to successful career. Learn how to build strategy driven models with Enterprise data & third party data for efficient decisions.

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.
- Provide End-to-End approach to solving Business Problems, Data Strategy -> Analytics -> Business Analytics -> Business Analysis

KEY CONCEPTS

- Data Mining/Business Intelligence/AI
- Blended data/Data Warehousing/Enrichment
- JMP Software for rapid model building
- JMP/R-studio comparison for better reporting
- Descriptive/Diagnostic/Predictive/Prescriptive /Investigative Analytics
- Prediction, Classification, Clustering & Association
- Decision Tree, Logistic Regression, KNN, Neural Network and Ensemble Model.
- Introduction to CNN/RNN/Generative AI/Random forest/ Naïve Bayesian/SVM
- Partitional and Hierarchical Clustering
- Search Engine Marketing (SEM)
- Star Schema, Dash Boards, Optimizer.

COURSE DESCRIPTION

The course focus is to give a Big Picture view of Business Analytics, its components and platforms. To build sophisticated strategy driven 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.

DSO 529 – *Advanced Regression Analysis*

Section - 16248

Professor
Dawn Porter

Email
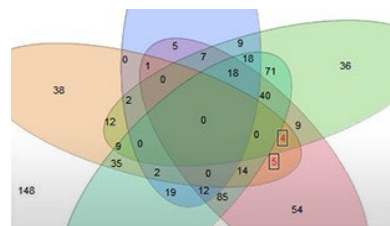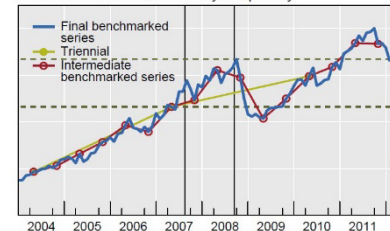*dcporter@marshall.usc.edu*

When
Mon/Wed: 9:30 PM – 10:50 AM

Office
BRI 307 C

Units
3.0

WHY SHOULD YOU TAKE THIS COURSE?

- Numerous real examples from finance, marketing, economics, accounting, politics, sports, etc., are used to illustrate applications of the material covered. Emphasis will be placed on the analysis of actual datasets.

- Knowledge of Regression Analysis is a skill in very high demand for students looking to work in either the private or public sector. This course develops those skills and opens possibilities for a business analyst/forecasting management position in business. There is a shortage of well-trained graduate business students for these types of positions.

- This course is intended for students working in the fields of Accounting, Economics, Finance, General Business, Human Resources, Marketing, Operations, etc., who want a practical introduction to Applied Statistics, Multivariate Analyses, and Econometrics.

COURSE OBJECTIVES

The course goals are for each student to understand regression methods and obtain hands-on experience using, analyzing, and developing multivariate models for business applications. This is a data analysis course that shows how to use the statistical package JMP to help solve both simple and complex real-life data problems.

KEY CONCEPTS

Regression analysis is performed in any organization working with quantifiable data.

- Marketing: using sales forecasts to for promotional budgets.
- Accounting: forecasting costs and revenues in tax planning.
- Finance: forecasting cash flows to maintain solvency.
- HR: forecasting and planning for recruitment of new employees, as well as other changes in the workforce.
- Production/Operations: forecasting raw material needs and desired inventory of finished products.

COURSE DESCRIPTION

This is a data-driven applied statistics course focusing on the analysis of data using Regression and Multivariate models. Topics include Multiple Linear Regression, Residual Analysis and Non- linear Model-building, Heteroscedasticity, Time Series Modeling, Categorical Predictors, Logistic Regression, Analysis of Variance, Clustering, and Panel Data Analysis.

DATA SCIENCES AND OPERATIONS

FALL 2024

DSO 547 *– Spreadsheet Modeling for Business Insights*

       Section(s) – 16267, 16276, 16304

Professor

Hiroshi Ochiumi

Email

ochiumi@marshall.usc.edu

When

16267 - Tue/Thu: 12:30 PM – 1:50 PM
16276 - Tue/Thu: 3:30 PM – 4:50 PM
16304 - Tue/Thu: 5:00 PM – 6:20 PM

Office	**Units**
BRI 303 H	*3.0*

WHO SHOULD TAKE THIS COURSE?

Aspiring operations/finance/marketing professionals, business analysts, quant-savvy entrepreneurs, and management consultants who want to build 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
- Optimization
- Sensitivity Analysis
- Monte Carlo simulation
- Applications in Operations, Finance, Marketing, etc.
- Decision analysis (decision trees)
- Data tables
- Risk Analysis

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.

DSO 547 – *Spreadsheet Modeling for Business Insights*

Sections – 16280

Professor
Murat Bayiz

Email
bayiz@marshall.usc.edu

When
Thu: 6:30 PM – 9:30 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 Excel as the platform, this course trains professionals to become effective modelers: to translate industry challenges into well-formulated models, and then use those models to drive decision-making. This course also teaches various tools for data modeling and visualization using large data sets. Finally it introduces how to write VBA macros to increase the power of Excel.

KEY CONCEPTS

- Data tables & Pivot Tables
- Data Visualization
- Spreadsheet Modeling
- Optimization
- Monte Carlo simulation
- @Risk
- Scenario and Risk Analysis
- Tableau
- Think-cell Applications
- Writing VBA Macros

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.

DSO 552 – *SQL Databases for Business Analysts*

Section – 16296

Professor
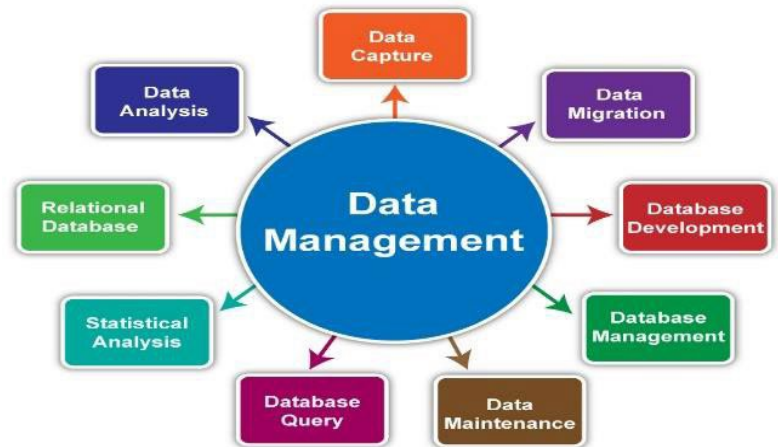*Joydeep Banerjee*

Email
joydeepb@marshall.usc.edu

When
Saturday, 9:00 AM – 11:50 AM

Office	**Units**
TBD	*1.5*

WHO SHOULD TAKE THIS COURSE?

Structured query language (SQL) is an extremely desirable skill for anyone in today's Workforce. It's becoming increasingly common for employers to require at least a basic knowledge of SQL in professions related to finance, operations management, supply chain, banking, economics, data science and business analytics. When you apply for a business analyst position, it is very likely you will also have to answer technical questions to demonstrate your knowledge. With SQL, data analysis can be performed more efficiently. SQL allows you to better understand and interpret your company's data that could be on premise or in the cloud, and it enables you to conduct a deeper analysis of the data stored in databases. If you want to learn how database management could give you a competitive edge, then this class is for you.

COURSE OBJECTIVES

The purpose of this course is to equip students with the foundational knowledge, skills, methods, tools, and resources needed to design a database and learn how to operate and interact with databases. In this course, the students will learn the essential structure of relational databases, how to read and write simple and complex SQL statements, as well as advanced database manipulation techniques.

KEY CONCEPTS

- Modeling and Designing Database
- Entity-Relationship Model
- Database structures
- From ER Diagram to SQL Tables
- Querying a Database Using SQL
- Google Big Query

COURSE DESCRIPTION

Structured query language (SQL) is the language for databases. Databases arguably store the vast majority of the world's data. Without accurate data, companies simply can't deliver the basic services they need to provide. Databases provide fast, safe and effective means to store this information, and databases are at the core of most information. This course provides a step-by-step introduction on how to query an SQL database. You will learn how to create SQL statements for data storage, data collection, data computation and reporting.

DSO 556 – *Business Models for Digital Platforms*

Section(s) – 16328/166331

Professor
Inge Lindholm

Email
ilindhol@marshall.usc.edu

When
16328: Tue/Thu - 9:30 AM – 10:50 AM
16331: Tue/Thu - 12:30 PM – 1:50 PM

Office 401-L	**Units**
BRI 401 L	3.0

WHY 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 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. Possible updates in December.
- 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.

DSO 556 – *Business Models for Digital Platforms*

Section(s) – 16330 and 16333

Professor

Grace Gu

Email

gracegu@marshall.usc.edu

When

16330: Mon/Wed – 12:30 PM – 1:50 PM
16333: Mon/Wed – 5:00 PM – 6:20 PM

Office

BRI 401 L

Units

3.0

WHY 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 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.
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- 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.

DSO 562 – *Fraud Analytics*

Professor: *Ash Pahwa*

Email: *ashpahwa@marshall.usc.edu*

When: Fall 2024
Entire Semester: Mon/Wed 2:00 – 3:20 PM

Office: *BRI-303E*   **Units:** *3*

WHY TAKE THIS COURSE?

Fraud analytics is the use of big data analysis techniques to prevent online financial fraud. It can help financial organizations predict future fraudulent behavior and help them apply fast detection and mitigation of fraudulent activity in real time. Almost all financial institutions are actively hiring people with Fraud Analytics background.

COURSE OBJECTIVES

- Explore the basic usage of fraud detection systems.
- Design a fraud algorithm approach derived from the problem statement.
- Apply the basic algorithmic approaches to both supervised and unsupervised fraud detection methods.
- Apply and tune mainline, advanced machine learning algorithms in a fraud detection system

KEY CONCEPTS

- Data Analysis
- Machine Learning for Fraud Detection
- Benford Law
- Imbalanced Datasets
- kNN + Logistic Regression
- Neural Networks
- Social Media Networks for Fraud

COURSE DESCRIPTION

In this course you will learn how to build the analytics side of fraud detection model systems. We will cover all algorithmic aspects of solving a fraud problem, how to approach and design the algorithmic solution. The course will cover:

- Diagnosing the fraud problem to be solved
- Critically examining the data around the problem
- Structure the organization of the data and create variables, using principles of fraud analytics.
- Build supervised and unsupervised fraud statistical models.
- Utilize multiple measures of model efficacy.

DSO 562 – *Fraud Analytics*

Section 372-16294R

Professor
Stephen Coggeshall

Email
scoggesh@marshall.usc.edu

When
Thursdays 2 – 4:50

Office   **Units**
TBD   *3.0*

WHY TAKE THIS COURSE?

This course provides a very good transition to a real-world working environment, taught in the context of building practical fraud models. In addition to describing all the required steps in building business predictive models we execute three very realistic business analytics problems for fraud detection.

COURSE OBJECTIVES

Prepare students to solve practical business analytics problems in a work environment; understand all steps required to build industry-standard fraud algorithms; overview of high-level machine learning steps for building predictive models.

KEY CONCEPTS

How businesses build and use fraud algorithms; all steps in building predictive models: data cleaning, feature creation, feature selection, model exploration and tuning, model evaluation, business report writing. Encoding categorical fields, trees (DT, RF, BT), neural nets, overfitting, PCA, distance measures, score scaling and calibration. Supervised and unsupervised model development.

COURSE DESCRIPTION

We cover all aspects of building practical business fraud algorithms. The students execute three projects starting from realistic, dirty data, through all steps to build realistic fraud models, and then write a professional model business report for each project. This course is less academic than most and we emulate developing practical business algorithmic solutions in a real-world working environment. At the completion of this course the students will be able to (1) knowledgeably converse with any fraud algorithmic expert, (2) build fraud algorithms on hard data sets, and (3) be better prepared to make the transition to a working business environment. Some Python require, but the course emphasis is on concepts rather than coding.

DSO 565 – *Supply Chain Analytics*

Section(s) – 16340

Professor
Das Dasgupta

Email
tdasgupt@marshall.usc.edu

When
ONLINE, Saturday - 9:00 AM – 11:50 AM

Office
ONLINE

Units
3.0

WHY TAKE THIS COURSE?

A general business understanding is no longer adequate in the workplace for students who plan to have a career in Modern Supply Chain Management. Most competitive companies expect advanced, in-depth skills from students entering the job market. With the advancement and adoption of Business Analytics, Data Science, and Artificial Intelligence, data-driven decision-making has become the modern approach to supply chain management.

COURSE OBJECTIVES

1. Evaluate a variety of business constraints and inputs in Supply Planning and develop a realistic constrained model to optimize the Master Production Schedule, perform sales forecasting, inventory optimization, and distribution planning
2. Assess various cost drivers for the supply chain network and develop a realistic model to optimize the supply chain network to minimize the total delivered costs

KEY CONCEPTS

- KPIs and Metrics for Supply Chain Analytics
- The Supply Chain Data Ecosystem
- Clustering and Supply Chain Segmentation Analytics
- Supply Chain Network Design Analytics
- Demand-sensing and forecasting analytics
- Procurement Optimization Analytics
- Capacity & Production Optimization
- Inventory, Distribution, and Logistics Analytics
- Supply Chain Sustainability Analytics
- SCA Technology Ecosystem

COURSE DESCRIPTION

While other courses currently offered may nominally focus on a similar topic, this course will provide students with unique, in-depth insight into four areas of Supply Chain Management: *Data Driven Decision Making, Solving Real-World Problems, Utilizing Scalable Technology,* and *Current Industry Best Practices*.

DSO 568 – *Healthcare Analytics*

Section – 16271

Professor
Cosimo Arnesano

Email
arnesano@marshall.usc.edu

When
Monday, 12:30 PM – 1:50 PM

Office
BRI 401 O

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.

DSO 573 – *Data Analytics Driven*

Dynamic Strategy & Execution

Section – 16303

Professor
Sid Mohasseb

Email
smohasse@marshall.usc.edu

When
Tuesday, 6:30 PM – 9:30 PM

Office   **Units**
TBD   3.0

Dynamic Strategy Powered By D&A

Connected View of
Planning to Execution

Strategic applications of Data
Analytics – beyond tools

WHY TAKE THIS 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 increasinglycompetitive 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 theirorganizations.

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.

DSO 575 – *Driving Business Transformation with GenAI and ML*
(ONLINE)

Professor
Sudi Bhattacharya

Email
sudibhat@marshall.usc.edu

When
Saturday: 12:30 PM – 1:50 PM (ONLINE)

Office	**Units**
TBD	*3.0*

WHO SHOULD TAKE THIS COURSE?

Directors, Senior Managers, Managers who are leading or going to lead initiatives to develop a business transformation strategy using Machine Learning and lead a team to develop machine learning models to enhance key business processes, save cost and improve customer engagement.

COURSE OBJECTIVES

1. Describe how machine learning (ML) can help businesses delight their customers
2. Build ML driven business transformation strategies and implementation roadmaps
3. Explain the strategic importance of Cloud and data platform modernization in an ML-driven transformation journey
4. Describe the technology components, team structure, skillsets and operating models required for a successful ML transformation
5. Using an appreciation for governance implications of ML and data, build a responsible and trusted ML platform
6. Demonstrate an understanding of epic, user story and backlog based "agile ways" of working

KEY CONCEPTS

1. Technology led Business Transformation
2. Transformative potential of Machine Learning
3. Cloud and Technology Modernization
4. Big Data Modernization in Cloud
5. Importance of Cloud and Big Data in Machine Learning
6. Agile way of working
7. Developing ML models embracing agile methods
8. Development Lifecycle of ML Models
9. Solution Architecture of ML Solutions
10. Production ML and Post deployment challenges
11. ML Operating Model
12. Building a high-performance team

COURSE DESCRIPTION

This course enables business and technology executives to successfully lead Machine Learning driven business transformation programs on the Cloud. Machine Learning has the potential to reshape, redefine, and transform business processes. Advances in Cloud Computing is making more processing power, unlimited storage, and elastic resources available to develop high-performance ML applications. Despite the promise, harnessing the power of Cloud and ML for long-term business benefit has turned out to be challenging.

Companies have struggled with how to successfully navigate long-term ML fueled transformation that requires identifying the appropriate use cases for ML, instituting agile ways of working, building a skilled team, establishing a new operating model, grasping the impact of technology and architecture choices while delivering on short term business goals. In many cases, business technology executives in charge of these programs are left to figure out these complexities on their own. This course is designed to bridge the gap.

This course will start with discussing how modern companies are successfully implementing ML in the Cloud to develop new ways of doing business, to increase efficiency of business processes and rapidly innovate in the face of competitive pressure. Armed with current industry use cases of ML, students will start building outlines of a roadmap of ML implementation for their own organizations. They will learn the common pitfalls and challenges faced by the implementors of an ML roadmap along with current industry best practices and implementation methodology that will improve their ability to execute a long-term strategy for ML-enabled business transformation.

Students will also gain a deep appreciation of the modern technology platforms such as Cloud Computing, Data Modernization in Cloud and ML in Cloud. The course will discuss how to build high-performance teams with the right skillsets and an efficient operating model that are essential to implement an ML-driven enterprise business transformation program successfully.

DSO 578 – *Fundamentals of Sports Performance Analytics*

Section(s) – 16288

Professor
Lorena Martin

Email
Lmartin1@marshall.usc.edu

When
Tue/Thu: 11:00 - 12:20 PM

Office
BRI 400 C

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.

DSO 579 – *Advanced Sports Performance Analytics*

Section(s) – 16301

Professor
Lorena Martin

Email
Lmartin1@marshall.usc.edu

When
Tue/Thu: 11:00 - 12:20 PM

Office
BRI 400 C

Units
1.5

WHY TAKE THIS COURSE?

Want to learn how to analyze sports performance KPIs using advanced machine learning algorithms? Want to learn how to implement the algorithms using Python? This course teaches you how to evaluate the dual performance of both ML algorithms in sports contexts and the on-field performances of players. With the rise of AI dramatically transforming athletes' and teams' strategies, our course ensures you are not just a part of the change – you are leading it. Step into the future of sports analytics and give yourself a competitive edge in this booming domain!

COURSE OBJECTIVES

- Enhance your subject matter expertise in sports performance KPIs
- Accurately assess physical and biomechanical movements for professional athletes in different sports.
- Establish validity and reliability in wearable technology implemented in professional sports through analyses.
- Meet experts working in sports analytics in the professional sports industry.

KEY CONCEPTS

- Analyze sports performance KPIs with Python
- Apply supervised machine learning to Sports Performance KPIs
- Apply unsupervised machine learning algorithms to discover relevant KPIs
- Evaluate not only the performance of ML algorithms in Sports but also players' performance on the field
- Learn about how AI is impacting athletes' and teams' sports performance

COURSE DESCRIPTION

This course will incorporate a hands-on wearable technology experience to gain understanding about how data is quantified and assessed by the most popular sports technology vendors in the industry. Real life scenarios and data from professional sports will be provided to prepare students entering the sports analytics industry. This course will culminate by learning how to develop interactive dashboards and presentation reports to effectively communicate with different audiences, such front office, coaches, support staff, and players.

DSO 580 – *Project Management*

Section(s) – 16286/16287

Professor
Murat Bayiz

Email
bayiz@marshall.usc.edu

When
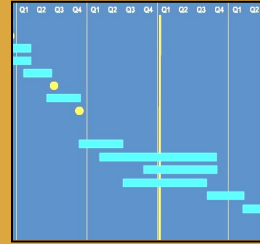*16286 – Tue/Thu: 5:00 PM – 6:20 PM*
16287 – Tue/Thu: 12:30 PM – 1:50 PM

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 (CPM/PERT)
- Resources management
- Time and cost trade-offs
- Risk management
- Product management
- Agile project management and Scrum
- Project monitoring with Earned Value analysis
- Microsoft Project applications
- 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.

DSO 581 – *Supply Chain Management*

Section(s) – 16329

Professor
Alireza Kabirian

Email
kabirian@marshall.usc.edu

When
Tue/Thu: 2:00 PM – 3:20 PM

Office
BRI 307 E

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.

Global Operations Management

USC Marshall School of Business

DATA SCIENCES AND OPERATIONS DEPARTMENT

Who should take this course?

Students who plan to work in the operations function (sourcing, procurement, manufacturing or service operations, customer delivery/ logistics, project managers, new product/service development and roll-out, acquisitions, joint-ventures) in a global environment. It should also be appropriate for those students whose jobs will interfaces with the global operations function:

global marketing	global human resources
global finance	global information technology
global consulting	global supply chain management

goals/objectives

To help students gain an exposure to the spectrum of issues which are crucial to the globalization of operations, describe successful operations management approaches in several countries and industries, give students an insight into the basic tradeoffs associated with making operations decisions in a global context and highlight the crucial role of inter-functional coordination in successful global operations. Some of the concepts addressed will include:

Operations in Global Strategy	Global Operations Strategy
Sourcing/Procurement	Outsourcing
Risk Management	Facilities Location
Operations Planning	Global Logistics
Developing New Products/Services	Technology Transfer

pedagogy

The course is built around lectures on the important concepts, a set of cases, encompassing strategic and tactical operations in several major industries and countries, as well as readings and published research articles. You are expected to have read the assigned readings and carefully analyzed the cases before coming to class, and to take an active role in the class discussion.

DSO **584**

Fall 2024
Thursday
3:30 pm – 6:20 pm

For further information please contact:

Dr. K. Ravi Kumar

ravi.kumar@marshall.usc.edu

(213) 740-2379

About the professor:

Dr. Ravi Kumar is an Emeritus Professor in the DSO Department and holds a PhD from Northwestern University. He has served as Dean of KAIST College of Business in Seoul, S. Korea and Dean Of Nanyang Business School in Singapore. He has also served as the Associate Dean and Vice Dean for International Programs at Marshall for many years. Prior to coming to Marshall in 1987, Dr. Kumar taught at University of Illinois at Urbana-Champaign. At both USC and UIUC, he has won Teaching Awards, including the Golden Apple Award at Marshall. He has worked on consulting projects with more than 50 companies in Europe, Asia and US over the last 20 years.

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.

DSO 599 — *Generative AI and Automation: Business and Societal Implications*

Section(s): 16313/16315

Professor

Georgios Petropoulos

Email

TBD

When

16313 – Mon/Wed: 3:30 – 4:50 PM
16315: Mon/Wed – 5:00 - 6:20

Office	**Units**
TBA	*3.0*

WHY TAKE THIS COURSE?

Get the full picture of the implications of Generative AI on business and managerial decisions. Work on real world cases of implementation of frontier digital technologies. Learn how AI should be applied in business context and its economic and social impact.

COURSE OBJECTIVES

- Understand and Calculate the exposure of automation at a firm and industry level.
- Assess the impact of Generative AI on different business models.
- Explain the major societal and regulatory concerns.
- Choose optimal managerial decisions based on firm level data regarding the adoption of automation and Generative AI in a variety of business models.

KEY CONCEPTS

Generative artificial intelligence, machine learning, automation, innovation strategies with AI, regulation of digital markets.

COURSE DESCRIPTION

Automation technologies such as Robotics, Machine Prediction, Artificial Intelligence (AI) and Generative AI have important implications for how companies stay competitive and how workers perform various tasks. Companies are currently undergoing digital transformations and becoming more data driven. This process incorporates a key consideration for how companies conduct their business and engage with consumers. This course will provide students with an overview of concepts from digital transformation, industrial economics and digitization research, that explains how companies have transformed using AI and automation technologies. The class will also look ahead to understand how the emergence of Generative AI can transform our economy, society, and business in the coming years.