

THE UNIVERSITY OF SOUTHERN CALIFORNIA
Marshall School of Business
DSO 581 – Supply Chain Management– Spring 2018

Time:	T/Th, 5:00--6:20 pm	Room:	JKP 204
Instructor:	Dr. Robert Wang	Office:	BRI 307E
E-mail:	wangrobe@marshall.usc.edu	Telephone:	TBD
Office hours:	T/Th 4:00--5:00 pm, and by appointment		

COURSE SCOPE AND TEACHING APPROACH

With the advancement and adoption of Business Analytics, Data Science, and Artificial Intelligence, data-driven decision making has become the modern approach of supply chain management. Because of this new development, a general business understanding is no longer adequate in the workspace. Most competitive companies expect advanced, in-depth skills from students entering to the job market. This course has been completely redesigned to meet the market need of such approach, and to provide you with the opportunity to learn the critical skills necessary to position yourself well for the modern supply chain career.

The course is designed with a great emphasis on the practical aspect of supply chain management, balanced with key theoretical principles and concepts. We will investigate the following main functions and processes of Supply Chain in details:

- Demand Planning
- Inventory Management
- Supply Planning or MPS
- Distribution Requirement Planning (DRP)
- Transportation
- Supply Chain Network Design

The approach used in covering these areas will be a bit different from a typical course you may have taken in the past. It will focus on the development of problem solving skills, and use of the latest technology in Data Visualization, Optimization Solver Engine, Database, and high-level Programming Language, etc. You will learn to use the following tools and software in depth throughout the course:

- Tableau Data Visualization
- Python (Jupyter Notebook)
- Gurobi Solver
- Relational Database
- Excel Solver
- Excel Pivot Table
- Interactive Inventory Calculator

The supply chain problems discussed in the class and in many projects and exercises you will be working on are all real-world problems and issues. To achieve the goals for this course, we will provide a large real dataset in a database that covers

- Demand Forecast

- Order History
- Shipment History
- Inventory History
- Material Master
- Customer Master
- Location Master

Throughout the course of the semester, you will be exposed to and learn to solve a variety of common problems and improvement projects that are faced by supply chain professionals in large manufacturing and retail companies. You will learn and use the tools and software that are being used in industries. Everything you learn from this course, from supply chain principles to software tools, will be a significant addition to your current resume. The exposure, learning and insight you get from the realistic problems and issues discussed in the class would be equivalent to 1-2 years of working experience in a large manufacturing and distribution company. Yet we have packed everything up for you in just one course in one semester.

The great benefits of the course come with a steep price tag – you will need to put a lot of work into it. The course is not a passive knowledge feeder. It requires your commitment, and initiative on your part to do well. The most effective way of learning is by doing. There will be many tutorials, and hands-on exercises that you may need to work through outside the classroom, particularly if you do not have an extensive database or technical background. The course is designed to be an invitation, an inspiration, and a discipline to keep you focused, and to learn highly in-demand skills that you would not likely to acquire otherwise on your own in a short amount of time.

COURSE OBJECTIVES

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

- Understand the philosophy and approach in data-driven Supply Chain Management.
- Understand the key principles of Supply Chain Planning, and a typical planning process flow
- Understand different types of planning models, select and develop an appropriate model for any given business environment to achieve business objectives
- Understand the main inputs that affect the inventory level, perform inventory optimization, and set inventory targets
- Understand a variety of business constraints and inputs in Supply Planning, and develop a realistic constrained model to optimize Master Production Schedule
- Understand various cost drivers for supply chain network, and develop a realistic model to optimize supply chain network to minimize the total delivered costs
- Utilize advanced analytic tools such as Python, Gurobi Optimization, Tableau Visualization, Access Database to develop solutions for supply chain problems

COURSE MATERIALS

Recommended:

Supply Chain Management: Strategy, Planning, and Operation (6th Edition) by S. Chopra and P. Meindl, Prentice Hall, 2017.

Truckload Transportation: Economics, Pricing & Analysis by Leo J. Lazarus, Monument Press, 2010.

Software

- Microsoft Office (Access and Excel)
- Tableau Desktop: [Full Version for Student](#)

- Tableau Reader: [Latest Version](#)
- Excel OpenSolver: [Latest Version](#)
- Gurobi Solver: [For Academic User](#)
- Gurobi Python: [Latest](#)

Other Learning Resources:

- YouTube Videos
- Online Tutorials

It is recommended that you install all the software as soon as you decided to take the course, as it may take some time to setup the academic licenses. To ensure your smooth installation, [it is very important to choose the same bit version consistently across all the software for the class](#). If you decided to use 32-bit software for example, please make sure that all your software (Access, Tableau, Gurobi, and Python) are in 32-bit. The ODBC data connection between the software requires the consistency, and otherwise it won't work. You may get help from the software vendors directly for technical issues. There will be no help desk support for the course.

COURSE POLICIES

Active participation in class is important throughout the course. To ensure everyone's participation, I will be providing random, specific students the opportunity to demonstrate their understanding throughout each class.

You should arrive to classroom on time. If you have conflicting schedules that prevent you from that, please let me know at the beginning of the semester.

GRADING

Homework Projects (6)	60%
Tests (2)	30%
Class participation	10%

Homework projects are evaluated based on the following 4 criteria:

- | | |
|---------------|-----|
| ▪ Effort | 20% |
| ▪ Approach | 40% |
| ▪ Creativity | 20% |
| ▪ Correctness | 20% |

For each project assignment, you need to outline your thinking process and your approach in solving the problem. As you can see this is the most important part of evaluation. To obtain the highest score in Approach, you need to demonstrate clarity and logic. There may be different approaches to solve a problem, a simplest and most creative method will get you the highest score on Creativity. Not all the assignments have a standard answer, but some quantitative analyses do have a correct answer. You will still get credit even if you failed on Approach, Creativity, and Correctness as long as you have demonstrated your effort. Your attention to detail, thoroughness, and willingness in trying are what I am looking for on the Effort category. Failure to submit an assignment will result in score of zero for the assignment.

Due to the technical nature of the material, helping each other within the class is highly encouraged. Helping is showing how to perform a task, not performing the task on another's behalf. You can provide support via discussion board where everyone can benefit, or you can help in a one-on-one base. As a courtesy, anyone who received significant help should acknowledge the contributors in their

homework. Making a public recognition of the specific contributions of colleagues is a professional practice that displays the recognizer in the best light as an appreciative team player.

PROJECTS AND EXERCISES

Learning is a direct function of the number of hours you put in. The most effective way of learning is by doing. It is particularly true for this course as the nature of the course is hands-on. Since nobody can learn for you, we give the project submission the highest percentage in grade evaluation. The project in this course maybe unlike your typical assignments in your other courses. They are drawn from real projects. In some cases, you are asked to prepare a presentation. To do well for the course, you must take each project seriously.

We can only cover some basic software features or functions in the classroom. To maximize your learning experience and to do well for the class, you are expected to spend at least 4 - 6 hours per week outside of the classroom learning the software. The more work you do outside of the classroom, the more you will learn, and get out from this course. A list of recommended software tutorials, YouTube videos, reading materials and exercises will be provided to you. You are not required to submit the exercises, but without the effort you made on these exercises you may not be able to complete the homework projects, and worst of all, to keep up with the class.

RECOMMENDED TUTORIALS AND SELF STUDIES

Here we provide you with a list of recommended tutorials, YouTube videos, and other materials. You don't have to go through them all if you are already comfortable with some of topics. On the other hand, you should not limit yourselves to the list if you find them inadequate or you want to learn more. Everyone's background is different, and therefore you should adjust your learning process to your own situation. Thanks to the Internet, there are innumerable resources for learning at hand. Identifying your learning needs, and acquiring the knowledge yourself using the resources available to you has become an essential capability of a successful professional. You don't need to time the tutorials with the progress of the course. In fact, I would highly recommend that you go through the list ahead whenever you have time for two good reasons. Your learning would be more effective when you prepare the subject prior to the class session. You also can manage your time much more effectively by spreading your work load. You will find that some tutorials worth going over multiple times.

Access Database:

Relational Database Concept (5 mins): [Relational Database Concepts](#)

Database Design Basics: [Database design basics](#)

Access Database Basics 01 (23mins): [How to create tables](#)

Access Database Basics 02 (16mins): [How to link tables and field](#)

Access Database Basics 03 (14mins): [How to create a query: Part 1](#)

Access Database Basics 04 (21mins): [How to create a query: Part 2](#)

Access Database Basics 05 (63mins): [More advanced query](#)

Access Functions: [A Comprehensive List](#)

Excel Pivot Table:

Excel Pivot Table Tutorial (6mins): [Basic](#)

Tableau Tutorials (Recommended List): [Latest Link](#)

- Getting Started
 - Getting Started (25 mins)

- The Tableau Interface (4 mins)
- Connecting to Data
 - Getting Started with Data (6 mins)
 - Managing Metadata (4 mins)
 - Managing Extracts (4 mins)
- Visual Analytics (115 mins)
 - Go over as many as you can
- Mapping
 - Getting Started with Mapping (3 mins)
 - Maps in Tableau (4 mins)
- Calculations
 - Getting Started with Calculation (3 mins)
 - Calculation Syntax (4 mins)
 - Introduction to LOD Expressions (6 mins)
 - Intro to Table Calculations
 - Aggregate Calculation (4 mins)
- Why is Tableau Doing That?
 - Understanding Pill Types (5 mins)
 - Aggregation, Granularity ... (4 mins)
- Dashboards (36 mins)
 - Go over as many as you can

Optimization Overview:

Math Programming Modeling Basics: [A Short Introduction](#)

Python and Gurobi Solver:

Python Introduction (34 mins): [How did Python become data science powerhouse?](#)

Python Basics 01 (38 mins): [Learn Python in one video](#)

Python Basics 02: [An Informal Introduction to Python: part 1](#)

Python Basics 03: [Flow Control: part 2](#)

Python Basics 04: [Data Structure: Part 3](#)

Gurobi with Python (54 mins): [Introduction](#)

Gurobi with Python (59 mins): [Advanced](#)

Gurobi with Python (53 mins): [A very inspiring show case](#)

EXAMS

There will be two exams, and they will contain both qualitative and quantitative questions. The questions are formulated to evaluate the level of your understanding about the key concepts and insights we developed over the course. The best way to prepare for the exams is to review what we have covered in the classroom and homework, and make sure that you fully understand them. The exams will be closed book, and no “cheat-sheet” is allowed. Again, the exam is not designed to test your memorization, rather to evaluate your understanding of the subject.

According to the USC Final Exam Schedule, the final exam is scheduled for **Thursday, May 3rd, at 5 pm**. If there are extenuating circumstances that prevent you from taking an exam, you must discuss the reason with me before the time of the exam. You will not be given a make-up exam unless you obtain a permission from me in advance. In addition, you must be able to document the extenuating circumstance. If you miss the exam due to a medical emergency that can be documented and verified,

then a make-up exam will be given. Otherwise, a grade of zero will be given for the missed exam. Note that a make-up exam cannot be taken before the actual exam date!

CLASS PARTICIPATION

Class participation requires that you study the tutorials, do exercises, and prepare yourselves well before each session of the class. For the nature of this course, keeping up or even trying to be ahead of the curve will be important for doing well in class participation. You don't have to be right to get participation credit, your preparation and willingness is what matters most.

Individual participation will be based on attendance in class and the quality of each student's contribution to class discussion. "Quality" reflects many factors – for example, occasional thoughtful comments and questions that reflect effort are far more important in determining "quality" than are continual comments and questions that do not reflect thoughtfulness. I will take roll at the beginning of each class. Coming to class on time will result in a daily participation score of 1.5 points. No participation points will be given on the days of exams. Absence from class results in a daily participation score of zero. If you contribute quality, as defined above, to the class discussion or present answers to homework or other problems to the class, you can earn additional points.

I reserve the right to lower your participation points for unprofessional conduct in class or not being prepared to discuss homework problems assigned. Unprofessional conduct includes, but is not limited to, coming to class late; leaving during the class, interrupting class with talking, a buzzing or ringing cell phone or pager; using a laptop or PDA (e.g. iPhone, Blackberry, Watch, etc.) to text or email, or engaging in activities related to other classes; and so forth. (See section of the syllabus on "Technology Policy" on page 7.) If I have a concern about unprofessional conduct, I will talk with you individually.

GETTING HELP

If you have questions about any aspect of the course, you can always talk to me. If it is a quick question, you can contact me before or after the class. If you need more time or privacy, you can come to my office hours. If you cannot make my office hours, you can contact me and we can arrange for an alternative time. The best way to reach me is by e-mail.

GRADING

Graded work will be posted on the Blackboard. Disputes over graded material should be brought to my attention as soon as possible.

NOTICE ON ACADEMIC INTEGRITY

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tensions accompanying examinations. Where a clear violation has occurred, however, the instructor may disqualify the student's work as unacceptable and assign a failing mark on the paper.

Academic dishonesty includes: (*Faculty Handbook*, 1994: 21---22):

- ❖ Examination behavior --- any use of external assistance during an examination shall be considered academically dishonest unless expressly permitted by the teacher.

- ❖ Plagiarism --- the appropriation and subsequent passing off of another's ideas or words as one's own. If the words or ideas of another are used, acknowledgment of the original source must be made through recognized referencing practices.
- ❖ Other types of academic dishonesty --- submitting a paper written by or obtained from another, using a paper in more than one class without the teacher's express permission, obtaining a copy of an examination in advance without the knowledge and consent of the teacher, changing academic records outside of normal procedures and/or petitions, using another person to complete homework assignments without the knowledge or consent of the teacher.

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" <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

SUPPORT SYSTEMS

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

Student Support & Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC – <https://diversity.usc.edu/>

Tabs for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students

STUDENTS WITH DISABILITIES

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs (www.usc.edu/disability). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: ability@usc.edu.

STATEMENT ON TECHNOLOGY USE

Please note that communication devices such as cell phones, smart phones, tablets, etc. capable of sending and/or receiving electronic communication and all entertainment devices are to be turned off and kept off throughout the class session. Receiving or sending communication or entertainment during class disrupts the learning environment and is rude to those around you.

Detailed Course Plan (Tentative)

Week 01 (1/7 –1/13): Introduction

- ❖ Course Introduction
 - Course Overview
 - Rules and Policy
 - Expectations
- ❖ Supply Chain Process Overview
 - Organization Structure
 - Planning Process
 - Network Visualization
- ❖ Software Installation
 - See links in the Course Materials section
- ❖ Access Database and Pivot Table
 - Supply Chain Dataset Walk-Through
 - Table, Query
 - Link data to Excel Pivot Table

Week 02 (1/14 –1/20): Newsvendor Model

- ❖ Newsvendor Model
 - Solve the problem using Excel
 - Identify solution mathematically
 - Discuss business insights from the model
- ❖ Learn Supply Chain Network through Data
 - Plant, DC, and Customer Ship-To
 - Product Hierarchy
 - Customer Hierarchy
 - Shipment Payload
- ❖ Project 01 (Demo): Dynamic Payload Report
 - Payload by Plant
 - Payload by Customer Ship-To

Week 03 (1/21 –1/27): Demand Planning

- ❖ Demand Planning Overview
 - Forecast Principles
 - Key Components of Forecasting
 - Types of Forecasting
 - Forecasting Approach
 - Forecast Accuracy
- ❖ Introduction to Tableau Visualization
 - Tableau Interface Overview
 - Connection to Database
 - Classroom Demo: Sales by Week
- ❖ Tableau Tutorials
 - Getting Started

- Connecting to Data
- ❖ Project 02: Forecast Accuracy Visualization
 - Dynamic Forecast Accuracy
 - By Product Hierarchy
 - By Network
 - Drill-down to Product

Week 04 (1/28 –2/3): Time-Series

- ❖ Time-Series Models
 - Static Model
 - Moving Average
 - Simple Exponential Smoothing
 - Forecast Accuracy Measurements
 - Bias Measurement
 - Forecast in real-world practice
- ❖ Tableau Visualization
 - Develop Simple Visualization
 - Aggregation and Filter
 - Geo Mapping
- ❖ Exercises: Time-Series Models
 - Hands-on development of 3 forecast models
- ❖ Tutorials
 - More Tableau Tutorials and Exercises

Week 05 (2/4 –2/10): Inventory Optimization

- ❖ Inventory Management Introduction
 - Types of Inventory
 - Drivers for Each Inventory Type
 - Dive into Safety Stock
- ❖ Interactive Inventory Calculator
 - Calculate all 4 types of Inventory Interactively
 - Understand all Input Parameters and their Impact to Inventory
 - Weeks Cover Calculation
- ❖ Inventory Simulation Model
 - Identify all 10 Parameters that can Influence Inventory Decision
 - Understand the Impact of each Parameter to Different Inventories
- ❖ Project 03: Supply Chain Network Visualization
 - Network Locations: Plants, DCs, and Customers
 - Supply and Delivery Move
 - Volume Visualization

Week 06 (2/11 –2/17): A Deep Dive to Safety Stock

- ❖ In Depth Discussions about Safety Stock
 - Various Service Level Measurements
 - Service Level and Safety Stock Impact
 - How to Set Service Level Target

- We Create Our Own Forecast Errors
- ❖ Tableau Skills
 - Use of Product Hierarchy for Roll-Up and Drill-Down
 - Combine Multiple Data sources
 - Calculation
- ❖ Project 04: Inventory Visualization
 - Develop an Inventory Visualization Report
 - Visualize Current Inventory Level and Cost

Week 07 (2/18 –2/24): A Data-Driven Approach for Inventory Management

- ❖ A Data-Driven Approach for Inventory Management
 - Inventory Management System
 - How to Manage Input Data
 - System Architecture
 - Organization Structure
- ❖ Project 04: Expand to Inventory Reduction
 - Conduct an Inventory Reduction Pilot (POC) for a Group of 40 Products
 - Using the data provided to calculate optimal inventory level
 - Estimate savings based on your calculation
 - Prepare a presentation to give your CSO an update for your findings

Week 08 (2/25 –3/3):Wrap Up Inventory and Mid-Term

- ❖ Additional Optional Topics and Wrap-Up
 - Salvage Inventory Model
 - On-going Inventory Management Process
 - Inventory Reduction Approach
- ❖ Mid-Term: Close-Book
 - March 1st, 2018, 5:00 PM to 6:00 PM
 - Closed Notes/Book
 - No Cheat Sheet
- ❖ Project 04: Inventory Reduction
 - Finish Up

Week 09 (3/4 –3/10): Supply Planning: A Realistic Approach

- ❖ Supply Planning
 - Master Production Schedule (MPS)
 - Short-term Production Scheduling
 - Business Environment and Key Constraints
 - Interactions with other Planning Functions
 - Basic EPQ Model
- ❖ Realistic MPS Optimization Model
 - Understand Key Concepts: Production Line, Setup Cost, Run-Rate, Line Capacity, Min/Max Inventory Targets, Inventory Cost, and Production Cost
 - Learn to use OpenSolver to develop a realistic MPSO model using Excel
 - Simulate and Understand various parameters and their impact to the production plan and costs
 - Compare the model with EPQ
- ❖ Understand the Insights from the MPSO model

- Production Resources Shared by Multiple Products
- Seasonal vs Regular Products
- Impact of Change-Over cost

Week 10 (3/11 –3/17): Spring Break

Week 11 (3/18 –3/24): A Data-Driven Approach for Supply Planning

- ❖ Role of Supply Planning
 - Traditional vs Data-Driven Approach
 - Develop a MPS Optimization System
 - System Architecture
 - Organization Structure
- ❖ Additional Topics in Supply Planning
 - Multi-Production Sourcing
 - Production Sourcing and its Impact to Supply Chain Network
 - Plant Direct
- ❖ Project 05: Develop Your Own Supply Planning Models
 - Two Products share a production line with capacity constraint
 - Develop a Production Plan using EPQ model
 - Develop Optimization model using Open-Solver to generate a plan
 - Compare the two plans, and draw insights

Week 12 (3/25 –3/31): DRP

- ❖ Business Objective and Constraints
 - Business Objectives
 - Inventory Strategy: Push vs Pull
 - Multi-Production Sourcing
 - Inventory Target
 - Managing DC Storage Capacity
 - Load Optimization
 - Managing Salvage
- ❖ Introducing Python: A Powerful Language for Data Science
 - Jupyter Interface Overview
 - Language Basic
- ❖ Tutorials
 - Python Introduction
 - Learn Python in One Video
 - Python Basics

Week 13 (4/1 –4/7): Transportation and Network Modeling

- ❖ Transportation: A Practical Overview
 - Transportation Modes
 - Common Carriers
 - Private vs Dedicated vs Regular Fleets
 - Route Guide
 - Truck Equipment

- Transportation Economics and Costs
- Carrier Management
- ❖ Network Model Overview
 - Strategic vs Operational Models
 - Scope of the Model
 - Costs Included in the Model
- ❖ Gurobi Solver and Python Tutorials
 - Python Basics
 - Gurobi with Python Introduction

Week 14 (4/8 –4/14): A Boundary Realignment Model

- ❖ Develop a Conceptual Model
 - Model Dimensions and Index Set
 - Input Data
 - Decision Variables
 - Objective Functions
 - Constraints
- ❖ Develop Data Model
 - Data Model Design in Access Database
 - Input Data Preparation
 - Output Data
- ❖ Introduce Python Gurobi Data Structure
 - Multi-Dictionary
 - Dictionary
 - Tuplelist
- ❖ Convert the Conceptual Model into a Python Model
 - ODBC Data Connection
 - Input Data Preparation in Database
 -

Week 15 (4/15 –4/21): Develop Model Result Visualization

- ❖ Develop Model Report
 - Access Macro for Model Result Refresh
 - Design Model Result Visualization
 - Prepare Data feed for Visualization
- ❖ Project 06: Develop A Model Result Visualization
 - Scenario Summary
 - By Storage View
 - Boundary Map View
 - Presentation Part 1

Week 16 (4/22 –4/28): Expand the Model for Network Design

- ❖ Expand the Model for Network Design
 - Scenario Management Data Model Design
 - Expand Python Model
 - Add Greenfield Scenarios
 - Add Fixed Cost Scenarios
 - Run Models and Manage Results

- ❖ Project 06: Prepare Final Presentation for Network Design Insights
 - Understand Transportation Cost as Number of DCs increases
 - Understand Total Costs as Fixed Cost Introduced
 - Prepare a Presentation for Final Recommendation

Week 17 (4/29 -5/4): Final Exam

- ❖ Wrap-Up and Course Review
- ❖ Final Exam
 - May 3rd, 2018, 5:00 to 6:00 PM
 - Closed Notes/Book
 - No Cheat Sheet