

Supply Chain Management
Course Number: 22:799:601
Course Title: Supply Chain Analytics MS

COURSE OVERVIEW

This course showcases real life applications of analytics in various domains of supply chain management, from competitive analysis and benchmarking, to selling, distribution and logistics, inventory management, sourcing and supply management, and to supply chain integration in a variety of industries. Students learn to define the right data set, ask the right questions to drive supply chain efficiency and business value, and use the right models and tools to develop data driven decisions.

COURSE MATERIALS

Textbook

A **Course-pack** is required for the course, which includes required cases, games and reading materials. Instructions and ordering information will be announced in Week 1 of the semester.

Software

In this course, we will use *Microsoft Excel*, either *Excel 2003*, *2007* or *2010* will be fine, and Tableau and Python, as well as others. Please install the following [Excel Add-Ins](#) before class starts:

“Analysis ToolPak” and “Solver Add-in”.

TEACHING METHOD

The course will be taught using PowerPoint presentations, case studies and simulations. In each week, we will complete one lecture and all the associated readings, case studies, exercises and homework (see attached weekly schedule). Class-related material (lecture notes, videos, homework and solutions, etc.) will be posted on Canvas. Students should be enrolled in Canvas to access the posted materials. The URL is: <http://canvas.rutgers.edu>.

ACADEMIC INTEGRITY

I do NOT tolerate cheating. Students are responsible for understanding the RU Academic Integrity Policy <http://academicintegrity.rutgers.edu/>

I will strongly enforce this Policy and pursue *all* violations. On all examinations and assignments, students must sign the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment.” I will screen all written assignments through *SafeAssign* or *Turnitin*, plagiarism detection services that compare the work against a large database of past work. Don’t let cheating destroy your hard-earned opportunity to learn. See business.rutgers.edu/ai for more details.

HOMEWORK ASSIGNMENTS

Homework assignments should be typed and handed in paper copies in class (for web-based homework, submitting a link (URL) to the project is sufficient). Be sure to put your name and contact information (email and optional telephone) on all homework submitted. Teamwork is expected for *some* assignments (to be specified in lectures), but team members must specify on the homework the percentage of work done by each of its members (for example, if everyone contributes equally in a 4-student team, then the percentage of work done by each student is 25%).

Assignments of a class are due by the next class, unless otherwise stated. Penalty for late submission (within one week) is 40% of the points allocated to the assignment. **Submission will not be accepted if it is more than one week late.**

TERM PROJECT

A term project on a supply chain analytics-related topic is a necessary part of the course. Each project should be a team effort of 4-5 people assigned by the instructor in the first two weeks. Each project team will select a topic of interest (following the guidelines listed below), make a proposal (on the story, the problem, and your solution approach) and make a thorough presentation for about 10-15 minutes towards the end of the semester (see weekly schedule for dates). Every team member must present (detailed requirements for the project are noted below). **Each team member must specify his/her percentage of contribution on the final submitted work. The project will be graded as a whole but each team member’s grade also depends on his/her contribution.**

Select one of the two formats below (an analytics-case or technology) and follow carefully the reporting instructions. If you want to do a project that does not obviously fall within the suggested categories, please contact me for permission. In any event, please select a topic that will be a benefit to the class. You may be as original and creative about the topic as you can be, but please keep your fellow classmates in mind.

I. Supply Chain Analytics-Case

Describe the application of analytics to a real-life supply chain problem by presenting the story, data and facts, and applying the methods/tools of this class. Please also include and be prepared to discuss implementation issues. You can draw on your own work experience (that would likely be most interesting to the class) or study a case appeared in the literature or press. Avoid the very popular press or a shallow source. Rather, look for a serious professional article, such as a financial magazine (Wall Street Journal, New York Times, BusinessWeek), economics magazine, or a trade magazine (Sloan Management Review, Supply Chain Management Review, Inbound Logistics, etc.).

II. Supply Chain Analytics-Technology

First, select novel data analytics and/or science technology, software or platform (for short, technology), and describes its contribution (or projected contribution) to the current state of art. It would be most useful if you have been exposed to the technology on your job, and can report on first hand. Examples of interest are big-data collection, processing, analyzing and visualization tools, software packages and platform, new practices of applying data analytics to supply chain operations, or anything else that is of interest to you and would likely interest class members, but within the domain of supply chain analytics. If in doubt, contact me.

Second, **research the current state of the chosen technology** and summarize it in your report. Find out the current or emerging commercial “players” and look at their future technological directions. Based on at least three sources (ordinary articles or Web pages, to be referenced in your report), address at least the following points using **data and facts**:

- What are the key technical and economical aspects of the technology which benefit the marketplace (consumers of this technology, both individual and corporation)?
- Who are the current “movers and shakers” in this area? Compare and contrast their technological and business approaches, products, etc.
- What are the current impediments to their approaches for acceptance in the marketplace? Examples are functionality, ease of use, price, technological longevity, etc.

Third, based on the current state of the technology, **express your personal opinion and conclusions on the future** of the chosen technology and its applications. Make sure your arguments are logical and backed by your research; you are encouraged, however, to voice opinions gleaned from your personal “crystal ball” (convictions and intuition), but be reasonable (and brief...). You may attach to your report supporting material, such as graphs and charts. Remember, anybody can collate material from the Web, but it is more difficult to analyze such material and reach conclusions. Analysis and conclusions will be the components of your term project most heavily weighted.

Note: You should *not* cut-and-paste verbatim material from Web pages or copy verbatim material from any other sources, unless you use that material as exact quotes. In that case be sure to enclose any pasted text material in double quotes and to provide an exact reference for it! All pasted graphs and charts should also be properly referenced. If you are unsure about referencing materials, please see the Academic Integrity information on Canvas and/or the [Academic Integrity at Rutgers webpage](#).

III. Submission

The project is due in the last week of the course (see weekly schedule). We will have in-class presentations so that teams can learn from each other. Prior to the presentation, each team should submit three (3) documents through Canvas:

- (1) A PowerPoint file for the presentation.
- (2) A Word document that includes background, assumptions, models / plans, the analysis and solution / estimates, the interpretation and citations.
- (3) An Excel file, Tableau files or R/Python code with all data and calculations.

A space will be created in the Assignment area of Canvas where your project documents are to be submitted.

GRADING

There will be homework assignments, simulation assignments and a term project with presentations (see term project). The weights for course work components are given below.

Simulation assignment	10%
Midterm exam	20%
Project & presentation	30%
Homework assignments	40%
=====	
TOTAL:	100%

COURSE SCHEDULE

Sessions	Topics covered	Assignments
1	<u>Introduction (Module 1)</u> Course policy and overview. SCM domains and pain points. Impact of supply chain management and analytics	<ul style="list-style-type: none"> • Readings to be assigned • Coursera SCAE
2	<u>Operations vs. Financial Performance</u> KPIs (e.g., cash cycle), key ratios and financial performance; ROIC, Productivity Ratios	<ul style="list-style-type: none"> <input type="checkbox"/> HW 1 assigned

3	<p><u>Business Intelligence: Benchmarking & Competitive Analysis (Module 2)</u></p> <p>Business geographic information system, industry analysis, job opportunity analysis. Competition positioning and company diagnosis for problem discovery, value driver analysis. Tools - <i>GCPS</i></p>	<ul style="list-style-type: none"> • <i>Global Competition Positioning System</i> • HW 1 due • HW 2 assigned
4	<p><u>Sell Analytics</u></p> <p>Customer profiling, segmentation, and relations</p>	<input type="checkbox"/> HW 2 due
5	<p><u>Distribution Analytics (Module 4)</u></p> <p>Integrated distribution strategies, store vs. showroom models. Case study - <i>VASTA Wireless</i></p>	<ul style="list-style-type: none"> • Reading: <i>VASTA Wireless</i> • HW 3 assigned
6	<p><u>Inventory Management (Module 6)</u></p> <p>Inventory management overview, measures, and trend. Benchmarking and problem discovery. ABC classification and corresponding inventory strategies. Tools – <i>GCPS</i>.</p>	<ul style="list-style-type: none"> • HW 3 due • HW 4 assigned
7	<p><u>Natural Language Processing</u></p> <p>Buyer process, human factors, supplier / customer profiling</p>	<ul style="list-style-type: none"> • HW 4 due • HW 5 assigned
8	<p><u>Midterm</u></p>	
9	<p><u>Sourcing Analytics (Module 7)</u></p> <p>Spend analysis, classification and sourcing strategies, buyer management, visualization and IT.</p>	<input type="checkbox"/> HW 5 due
10	<p><u>Student project proposals</u></p>	<input type="checkbox"/> Project proposal due
11	<p><u>Collaborative & Competitive Supply Chain Simulation I (Module 10 I)</u></p> <p>Strategic thinking, joint supply chain and marketing decisions. Game – the “<i>FloraPark</i>” simulation.</p>	<input type="checkbox"/> Reading <i>FloraPark simulation</i>
12	<p><u>Collaborative & Competitive Supply Chain Simulation II (Module 10 II)</u></p> <p>Supply chain collaboration and contracts, supply chain competition. Game – the “<i>FloraPark</i>” simulation</p>	<input type="checkbox"/> Play 3 rd round off-class
13	<p><u>Reality show (Module 10 III)</u></p> <p>Student present experiences and learnings from the simulation, reality show, from game to practice</p>	<input type="checkbox"/> Simulation assignment due
14	<p><u>Student project presentation</u></p>	<input type="checkbox"/> Project due

SUPPORT SERVICES

If you need accommodation for a *disability*, obtain a Letter of Accommodation from the Office of Disability Services. The Office of Disability Services at Rutgers, The State University of New Jersey, provides student-centered and student-inclusive programming in compliance with the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments of 2008, Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1998, and the New Jersey Law Against Discrimination. More information can be found at ods.rutgers.edu.

[Rutgers University-New Brunswick ODS phone (848)445-6800 or email dsoffice@echo.rutgers.edu]

[Rutgers University-Newark ODS phone (973)353-5375 or email ods@newark.rutgers.edu]

If you are *pregnant*, the Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy.

[Rutgers University-New Brunswick Title IX Coordinator phone (848)932-8200 or email jackie.moran@rutgers.edu]

[Rutgers University-Newark Office of Title IX and ADA Compliance phone (973)353-1906 or email TitleIX@newark.rutgers.edu]

If you seek *religious accommodations*, the Office of the Dean of Students is available to verify absences for religious observance, as needed.

[Rutgers University-New Brunswick Dean of Students phone (848)932-2300 or email deanofstudents@echo.rutgers.edu]

[Rutgers University-Newark Dean of Students phone (973)353-5063 or email DeanofStudents@newark.rutgers.edu]

If you have experienced any form of *gender or sex-based discrimination or harassment*, including sexual assault, sexual harassment, relationship violence, or stalking, the Office for Violence Prevention and Victim Assistance provides help and support. More information can be found at <http://vpva.rutgers.edu/>.

[Rutgers University-New Brunswick incident report link: <http://studentconduct.rutgers.edu/concern/>. You may contact the Office for Violence Prevention and Victim Assistance at (848)932-1181]

[Rutgers University-Newark incident report link: https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=7 . You may also contact the Office of Title IX and ADA Compliance at (973)353-1906 or email at TitleIX@newark.rutgers.edu. If you wish to speak with a staff member who is confidential and does **not** have a reporting responsibility, you may contact the Office for Violence Prevention and Victim Assistance at (973)353-1918 or email run.vpva@rutgers.edu]

If students who have experienced a temporary condition or injury that is adversely affecting their ability to fully participate, you should submit a request via <https://temporaryconditions.rutgers.edu>.

If you are a military *veteran* or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. <http://veterans.rutgers.edu/>

If you are in need of *mental health* services, please use our readily available services.

[Rutgers University-Newark Counseling Center: <http://counseling.newark.rutgers.edu/>]

[Rutgers Counseling and Psychological Services–New Brunswick: <http://rhscaps.rutgers.edu/>]

If you are in need of *physical health* services, please use our readily available services.

[Rutgers Health Services – Newark: <http://health.newark.rutgers.edu/>]

[Rutgers Health Services – New Brunswick: <http://health.rutgers.edu/>]

If you are in need of *legal* services, please use our readily available services: <http://rusls.rutgers.edu/>

Students experiencing difficulty in courses due to *English as a second language (ESL)* should contact the Program in American Language Studies for supports.

[Rutgers–Newark: PALS@newark.rutgers.edu]

[Rutgers–New Brunswick: eslpals@english.rutgers.edu]

If you are in need of additional *academic assistance*, please use our readily available services.

[Rutgers University-Newark Learning Center: <http://www.ncas.rutgers.edu/rlc>]

[Rutgers University-Newark Writing Center: <http://www.ncas.rutgers.edu/writingcenter>]

[Rutgers University-New Brunswick Learning Center: <https://rlc.rutgers.edu/>]

[Optional items that many faculty include:

- Students must sign, date, and return a statement declaring that they understand the RU Academic Integrity Policy.

- Students must sign, date, and return a statement declaring that they understand this syllabus.]