

**DIVISION OF ECONOMICS AND BUSINESS
COLORADO SCHOOL OF MINES**

EBGN-559 / EBGN-459

**SUPPLY CHAIN MANAGEMENT
SPRING 2009**

Professor C. Z. Gurgur

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Class Hours: M/W 4:00 -- 5:15 p.m. – EH211

Office Hours: M/W 2:30 - 3:45 p.m.;
M/W: 5:15 – 5:45 p.m.
Thursdays: 4:00 - 5:30 p.m.

or By Appointment at other times

(Please send an email to cgurgur@mines.edu to confirm my availability - one day prior to the meeting time in the case of appointment request)

Course Website: <http://inside.mines.edu/~cgurgur>

Course/Learning Objectives

- a. Students will learn how firms can **better organize their operations** so that they more effectively align **their supply with the demand for their products and services.**
- b. Students will learn how a firm can achieve better “supply-demand matching” through the implementation of **quantitative (analytical and simulation models)** and **various qualitative (operational and tactical) strategies.**
- c. Students will learn **how to handle “uncertainty” in the supply-chain.**

As a quantitative managerial course, the course will explore how firms can better organize their operations so that they more effectively align their supply with the demand for their products and services.

Supply Chain Management (SCM) is concerned with the efficient integration of suppliers, factories, warehouses and retail-stores (or other forms of distribution channels) so that products are provided to customers in the right quantity and at the right time.

Co-requisite/Pre-requisite: A course in Basic Probability and Statistics

Course Theme:

Matching Supply with Demand

Matching supply with demand is an enormous challenge for firms: excess supply is too costly, inadequate supply irritates customers. We will explore how firms can better organize their operations so that they more effectively align their supply with the demand for their products and services.

Supply Chain Management (SCM) is concerned with the efficient integration of suppliers, factories, warehouses and retail-stores (or other forms of distribution channels) so that products are provided to customers in the right quantity and at the right time.

SCM draws ideas from management, engineering, and applied mathematics to contribute to a wide variety of application domains; the field is closely related several other fields in the "decision sciences".

Learning Objectives:

- Look at organizations as entities that must match the supply of what they produce with the demand for their products and services.
- Introduce **quantitative (analytical models)** and **qualitative strategies** to inform managers about relevant performance measures and to help them what to do.

Course Material:

- Course Website
- Lecture Notes/Slides/
- Handouts (Articles and Reading Material)/ Case-Studies
- Ms Excel Implementation for Quantitative Modeling
- Course Dossier
- Please check your emails and course website on a regular basis for announcements and to keep up with the progress in the course

Grading:

- Class Attendance/Participation: 5 %
- Assignments: 25%
- Paper/Project: 15%
- Exam 1: 15 %
- Exam 2: 15 %
- Final Exam: 25 %

Assignments: Assignments are given to help you understand the concepts and practice the taught material. Typically, you will have one week to complete each assignment and most assignments will involve computer work. Solutions will be provided. There is absolutely no credit for late homework (although I may make exceptions in **documented** cases of **medical** or **family** emergency). Please do not hesitate to reach me accordingly for an extension.

Honor Code and Integrity: You **are allowed** to seek or give help to other students on **homework** assignments. However, unless I instruct otherwise, you must actually work through each problem yourself and hand in your own work. Students who submit correct homework solutions without fully understanding

them can expect substantial difficulty in the exams / assigned project work and consequently lower grades.

Academic Dishonesty:

Your reputation as an honest person is one of the most valuable qualities you possess. As such, you are expected that any submission of work in the course constitutes your own work, whether it be on homework assignments or exams. Academic dishonesty includes, among other things, plagiarizing, cheating, enabling others to cheat, falsification of data, failure to acknowledge substantial assistance from others, and submitting your work or others did for another course as original work for this course. A student found committing any such act will be penalized and potentially expelled from the University in accordance with the University's general regulations on ethics and honesty. **If you are unclear as to what constitutes academic dishonesty, please come and see me before proceeding.** Any copying from or use of past assignments or answer keys without acknowledgement will be considered plagiarism.

Civility in the Classroom:

Students are expected to assist in maintaining a classroom environment which is conducive to learning. In order to assure that all students have an opportunity to gain time-spent in class, please make sure your cell-phones are turned off and avoid engaging any other form of distraction and disrespect to others. Inappropriate classroom behavior shall result in, minimally, a request to leave the classroom.

Tentative Topics include:

1. **Supply Chain Management Goals, Complexities, and Drivers**
2. **Inventory Management I**
Minimizing Physical Costs: Production, Transportation and Inventory Storage
Managing Economies of Scale in the Supply Chain - Cycle Stock Management
Managing Uncertainty in the Supply Chain - Safety Stock Management
3. **Inventory Management II**
Minimizing Market-Mediation Costs
"Newsvendor Modeling"
Determining Optimal Level of Product Availability - Theory of "Critical Ratio"
Balancing Understocking with Overstocking Costs
4. **Make-to-Order vs. Make-to-Stock Systems**
Quick Response - Reactive Capacity Modeling
5. **Risk-Pooling and Distribution Strategies**
Location Pooling
Product Pooling
Consolidated Differentiation
Delayed Differentiation
Capacity Pooling
6. **Supply Chain Contracts**
Incentive Conflicts/Linkage between Channel Incentives
Allocation of Decision Rights and Channel Performance
7. **Pricing and Revenue Management in the Supply Chain**
8. **Value of Information and Coordination in the Supply Chain**
Bullwhip Effect
9. **Capacity Management, Investment and Hedging in the Supply Chain**
10. **Reverse Logistics in the Supply Chain**

Delivery Mode/Pedagogy:

Delivery is primarily via lectures and homework assignments. Computer work with Excel is required. **Most implementations will be covered in Ms. Excel with various add-in tools.**

There will be case-studies to do group work from time to time and article readings from practice journals such as *Harvard Business Review*, *MIT Sloan Management Review*, and *Interfaces*.

A “hot topic” in the supply chain arena will be presented to the students to explore and write a paper. The instructor will provide the sources to begin with.

Students can also choose to work on a project (i.e. quantitative modeling for a company facing “supply-demand matching situation”). The instructor will specify various business scenarios to choose from.