**WAYNE STATE UNIVERSITY**

**DSB-6200: Supply Chain Analytics (3 Credits)**

**Course Syllabus - Winter 2019**

**Instructor:** Dr. Ali Taghavi, Llamasoft, Inc.

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**Course Objectives**: Supply chain management and logistics is unique and, to some degree, represents a paradox because it is concerned with one of the oldest and also the most newly discovered activities of business. Supply chain system activities – communication, inventory management, warehousing, transportation, facility location, and production - have been performed since the start of commercial activity. It is difficult to visualize any product that could reach a customer without logistical support. Yet it is only over the decade that firms have started focusing on logistics and supply chain management as a source of competitive advantage. Logistics and supply chain management today represents a great challenge as well as a tremendous opportunity for most firms.

After taking this course students will be able to

* Understand the definition and various applications of supply chain management
* Understand how supply chain optimization brings value to the enterprise
* Learn to apply analytical tools to solve supply chain design and planning problems
* Learn the impact of supply chain analytics on enterprise efficiency
* Learn to model and analyze large scale supply chain systems
* Be familiar with the broader trends in the area of supply chain analytics

**Recommended Books:**

* *Supply Chain Network Design: Applying Optimization and Analytics to the Global Supply Chain* by Michael Watson, Sara Lewis, Peter Cacciopi, Jay Jayaraman. 1st Edition*.* ISBN: 0133017370
* *Supply Chain Management: Strategy, Planning and Operations* by Sunil Chopra and Peter Meindl, Prentice Hall; 6th Edition (2015). ISBN: 0133800202

**Course Format:** Class will be a mix of lectures, in-class exercises, software demos, case discussions, and applications. Most of the class material will be posted on the course website.

**Mid-Term Projects:** Student groups are supposed to deliver two mid-term projects. The first mid-term project includes reviewing a white paper, summarizing the key points of the study and finally providing your insights and critics for the paper. The second mid-term project requires each group to study a raw output data of a typical network design study and propose various ways and aspects of producing information out of the raw data. Each of these presentations will be followed on with a written report not to exceed 4 typed pages (single spaced).

**Big Data Term Project:** This class requires the completion of a group term project focused on application of Big Data into Supply Chain Planning and Analytics. The project details will be posted during the semester and must be completed in teams of 2 or 3 students. The deliverables include a final report (approximately 10 to 12 pages, single-spaced, in length excluding graphics, due 3 days after in class presentation) and an in-class presentation.

You will be graded on both the quality and thoroughness of your work. Late reports will be assigned lower grades. Students caught plagiarizing in writing the term paper will be given a failing grade for the course.[[1]](#footnote-1)

**Deferred Grades Policy:**

A grade of 'I' can only be assigned if all of the following criteria are met:

1. The student is NOT currently failing the class and,
2. There is NOT a substantial quantity of work yet to be completed,
3. There is no extra work required of the instructor beyond the normal duties of grading the paper/exam,
4. There is no need for the student to attend the class in subsequent terms.

The final decision to assign an incomplete grade rests with the instructor. An 'I' grade MUST be made up within one year of assignment of the grade.

**Attendance Policy:** Students attending any given class are required to join the class within the first five minutes to minimize any class disruptions.

**Grading:** Grading will be "tentatively" based upon a maximum attainable point total of 140 points.

1st Mid-term Project: 40 pts

2nd Mid-term Project: 40 pts

Term Project:  60 pts

 Total 140 pts

* There is a maximum of 5 bonus points (0.5 points for each lecture) for participating in class discussions and bringing constructive and relevant topics to class lectures.

**TENTATIVE OUTLINE** (subject to change)

**Week 1:**

Lecture topic: Introduction to Supply Chain Management (Feb 8)

**Week 2:**

Lecture topic: Supply Chain Performance (Feb 15)

**Week 3:**

Lecture topic: Supply Chain Network Design; methodology (Feb 22)

**Week 4:**

Lecture topic: Supply Chain Network Design; Business problems (March 01)

**Week 5:**

Lecture topic: Art of Modeling (Modeling of Large-scale supply chains) Part 1 (March 08)

Spring break (March 15)

**Week 6:**

Lecture topic: Art of Modeling (Modeling of Large-scale supply chains) Part 2 (March 22)

**1st Mid-Term Presentations: A Network Optimization Study**

**Week 7:**

Lecture topics: Supply Chain Analysis in practice (baselining and multi-objective optimization) (March 31)

**Week 8:**

Lecture topics: Safety Stock & Vehicle Routing problems (April 5)

**2nd Mid-Term Presentations: Analyzing Results of a Network Optimization Study**

**Week 9:**

Lecture topic: Designing of Online and Omni-Channel Supply Chains (April 12)

**Week 10:**

Lecture topic: Role of Big Data and Artificial Intelligence in Supply Chain Analytics (April 19)

**Week 11: Term Project Presentation on Big Data (April 26)**

 Term Project Report Due (April 30)

1. [↑](#footnote-ref-1)