MSE515 – ENGINEERING SUPPLY CHAIN & ANALYTICS (3 units)

CSUN – Fall 2023; Ticket # 17283; Wednesday: 7:00-9:45 p.m., Room: JD-3508

Instructor ***Ghassan "Gus" H. Elias***: BS/MS; Industrial/Manufacturing Systems Engineering
- **Expertise:** Engineering Consulting, Decision-Making/Risk Analysis and Facility Planning. Quality Assurance & Control, Industrial Safety & Material Control - global certification programs for installing & commissioning electronic & pneumatic devices in General (Non-Hazardous) Locations, Hazardous 'Classified' Areas & Potentially Explosive Atmospheres.
- Email address: **Gus.Elias@csun.edu**
- Website: **http://www.csun.edu/~ghe59995/**
- MSEM Department Office: JD-4510; (818) 677-2167
- Faculty Office: JD-3308
- Office hours: Wednesday, 6:00 – 6:50 p.m.

Textbooks (required)
1- **"Supply Chain Management" – 7th edition / Pearson 2019 ---** By Sunil Chupra
ISBN-10: 0-13-473188-3 / ISBN-13: 978-0-13-473188-9
2- **"Logistics 4.0: Digital Transformation of Supply Chain Management"**
CRC Press, 2020. Authors: Paksoy, T., Kochan, C.G., & Ali, S.S.
ISBN: 978-0-367-634428-5 /// ISBN-13: 978-0-3673-4003-2

Additional References:

- Ahmadi, E., Mosadegh, H., Maihami, R., Ghalehkhondabi, I., Sun, M., & Süer, G. A. (2022). Intelligent inventory management approaches for perishable pharmaceutical products in a healthcare supply chain. Computers & Operations Research, 147, 105968.
- Guan, W., Ding, W., Zhang, B., Verny, J., & Hao, R. (2023). Do supply chain related factors enhance the prediction accuracy of blockchain adoption? A machine learning approach. Technological Forecasting and Social Change, 192, 122552.
- Meena, P. L., Kumar, G., & Ramkumar, M. (2023). Supply chain sustainability in emerging economy: A negative relationship conditions' perspective. International Journal of Production Economics, 108865.
- Peng, J., Chen, L., & Zhang, B. (2022). Transportation planning for sustainable supply chain network using big data technology. Information Sciences, 609, 781-798.
- Tsang, Y. P., Yang, T. T., Chen, Z. S., Wu, C. H., & Tan, K. H. (2022). How is Extended Reality Bridging Human and Cyber-Physical Systems in the IoT-Empowered Logistics and Supply Chain Management?. Internet of Things, 100623.
- Zhao, N., Hong, J., & Lau, K. H. (2023). Impact of supply chain digitalization on supply chain resilience and performance: A multi-mediation model. International Journal of Production Economics, 259, 108817

Catalog Description - This course examines the technical aspects of supply chain design and integrated distribution networks, with a data analytics and system's coordinated approach in the global environment. While using systems engineering practices to focus support on channel alignment within operations and supply management, the course emphasizes the planning, modeling, and analysis of integrated engineering supply chain systems through design, sourcing, machine learning, digital transformation, location modeling, risk pooling, and the 'internet of things' (IoT), along with sustainability and social justice aspects of modern supply chain management (SCM).

Course Objectives

- Develop an understanding of the technical aspects of supply chain design and integrated distribution networks, including their interdependencies and the role of data analytics in coordinating these systems.
- Learn how to use systems engineering practices to plan, model, and analyze integrated engineering supply chain systems across the design, sourcing, and implementation phases.
- Explore key tools and techniques used in modern supply chain management and understand how digital technologies can be used to optimize supply chain operations.
- Consider the ethical and social justice implications of supply chain management, and how sustainability can be integrated into supply chain design and management practices.
- Develop critical thinking and problem-solving skills by analyzing real-world case studies of supply chain systems, identifying their strengths and weaknesses, and proposing solutions to improve their performance and sustainability.

STANDARD OPERATING PROCEDURES:

1. Class members are expected to maintain personal and professional standards consistent with the Code of Ethics of the national Society of Professional Engineers, the Preamble and Fundamental Canons of which are as follows:

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct. Engineers, in the fulfillment of their professional duties, shall:

- ***Hold paramount the safety, health and welfare of the public.***
- ***Perform services only in areas of their competence.***
- ***Issue public statements only in an objective and truthful manner.***
- ***Act for each employer or client as faithful agents or trustees.***
- ***Avoid deceptive acts.***
- ***Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.***

2. Students must submit **ORIGINAL WORK** only.
3. Students are expected to participate in **ALL discussion threads on CANVAS**.
4. Class members are **responsible** for the course material, reading assignments, presentations and discussions.
5. ***Tardy/Late submissions are unacceptable*** ….. **NO EXCEPTIONS!**
6. Class members **MUST** always be **considerate & respectful** to their colleagues and to the instructor.

***** This course syllabus is your contract with the CECS, MSEM and the instructor. Students must read the syllabus thoroughly and adhere fully to ALL of the stated terms and listed guidelines. No Exceptions! *****

NOTE #1: Activate **and** use your CSUN email address for ALL academic correspondences. Do not use your personal email address to communicate with the instructor. Messages from non-CSUN email addresses will **NOT** be acknowledged. Instructor will only utilize SOLAR's email database to communicate with class.

NOTE #2: **The last day to drop classes is 15-Sep-2023. Students must initiate this process; not faculty. Failure to formally drop a course will result in a "WU" grade which is equivalent to an "F" grade; affecting your cumulative GPA detrimentally.**

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Academic Dishonesty:

Academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form at California State University Northridge. All students involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension and/or expulsion from the University.

"Cheating or plagiarism in connection with an academic program at a CSU campus is listed in Section 41301, Title 5, California Code of Regulations as an offense for which a student may be expelled, suspended or given a less severe disciplinary sanction.

Academic dishonesty is an especially serious offense and diminishes the quality of scholarship and defrauds those who depend on the integrity of the University's programs." Please consult university policy regarding plagiarism and the consequences.

https://catalog.csun.edu/policies/academic-dishonesty/

Any student caught cheating or plagiarizing in this class will receive a zero for the assignment and may be referred to the dean's office for additional consequences.

Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person. The instructor reserves the right to submit your papers to turnitin.com for identifying papers containing unoriginal material.

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Proposed Schedule/Plan

This is a ***TENTATIVE*** syllabus. Depending on the progress of the course material, the syllabus (dates, topics, assignments & exams) ***may change*** if deemed necessary.

Date	Topics	Reading Assignments
Wk. 1	Course Introduction: Basics & Outline	
Wk. 2	Building a strategic framework to analyze supply chains (parts I, II)	
Wk. 3	Building a strategic framework to analyze supply chains (parts I, II)	
Wk. 4	Designing the supply chain network (parts I, II)	
Wk. 5	Designing the supply chain network (parts I, II)	
Wk. 6	Designing the supply chain network (part III)	
Wk. 7	Planning and coordinating demand in a supply chain (part I)	
Wk. 8	Midterm Exam (30%) // **REVIEW All material covered in weeks 1-7** **Due: Term Project Status Report -- Each group will give a brief presentation (10 minutes)**	
Wk. 9	Midterm Exam (30%) // **All material covered in weeks 1-7, the weekly lectures & CANVAS discussion threads.** // **Format: T/F, M.C., Essays** **OPEN BOOK & OPEN NOTES**	
Wk. 10	Midterm Exam: Outcome & Review Planning and coordinating demand in a supply chain (parts II, III, IV)	
Wk. 11	Planning and managing inventories in a supply chain (part I)	
Wk. 12	Planning and managing inventories in a supply chain (parts II, III)	
Wk. 13	Designing and planning transportation networks	
Wk. 14	Managing cross-functional drivers in a supply chain	
Wk. 15	**Term Project --- Group Showcase Presentations**	
Wk. 16	**Term Project --- Group Showcase Presentations /// Course Review & Wrap-Up**	
Wk. 17	FINAL EXAM (35%) // **COMPREHENSIVE** // **Format: T/F, M.C., Essays** **Both books, the weekly lectures & CANVAS discussion threads.** **OPEN BOOK & OPEN NOTES** **13-Dec-2023, 8:00 – 10:00 pm**	

COURSE EVALUATION / GRADE SCALE

(Refer to the last page of the syllabus for more information on grades)

(15 pts) – Attendance of the weekly lectures (**5%**) and **participation** in the discussion threads (**10%**) on CANVAS. The weekly discussions threads are locked in a 1-week period – If you miss it, you lose it. ***PLEASE DO NOT ASK FOR AN EXTENSION!!!***

(30 pts) – Midterm Exam – Selected Material. Format: True/False, Multiple Choice & Essays. Open book and open notes.

(20 pts) – **Group Term Project:**
PPT file and in-class presentation: 18 points
Self & Peer Evaluation Form (SPEF) - Mandatory: 2 points

You can download the form via CANVAS.
Important Note: By not submitting the SPEF, students will forfeit the +/- sign for the course grade.

(**35 pts**) Final Exam / **Comprehensive** - ALL material covered --- Both textbooks, the weekly lectures & CANVAS discussions. Format: True/False, Multiple Choice & Essays. Open book and open notes.

Letter-Grade Scale (*NO CURVING!*):
((Refer to the last page for more information on the grading criteria.))

A ≥ 92	**88 ≤ A- < 92**	**85 ≤ B+ < 88**	
80 ≤ B < 85	**78 ≤ B- < 80**	**75 ≤ C+ < 78**	
70 ≤ C < 75	**68 ≤ C- < 70**	**60 ≤ D < 68**	**F < 60**

***** Course grades are due by 22-Dec-2023 *****

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Note:

By the third-fourth week into the semester, groups consisting of 4-to-6 members will be formed on a random basis. Group research assignments will be given throughout the semester along with a final term project.
Class presentations should be expected.
Attend ALL lectures promptly --- Be motivated.

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GROUP TERM PROJECT GUIDELINES:

- Groups of 4-6 members will be chosen randomly by the instructor.

- Topics for the group term project will be assigned by the instructor. The term project is worth **20%** of the course overall grade.

- All class members **must** participate in the research task & in-class presentation.

- The **mandatory** "Self & Peer Evaluation Form" (posted on CANVAS and the course website) is due on the announced day of the in-class presentations. Submitting the form is 100% required by all class members. The form should be "**typed**" and **not** hand-written or scanned. Students will individually and confidentially submit the form in **PDF** via a special link made available in the course module on CANVAS.

- The professionally-done PPT file (one upload per group leader!) is due on the announced day of the in-class presentations. A complete write-up report is **not** required. Each group leader/facilitator shall upload the PPT file via s special link to be made available in the course module on CANVAS. **The PPT** must contain **30-33** slides (excluding the cover page, appendix and references page) an and should be done professionally. **The presentation must be informative, creative, rich, insightful and reader-friendly.** Each group will have 20-25 minutes to present their case, followed by a 15-minute question & answers session. The presentation should be comprehensive covering **all** aspects of the assigned topic/project. Follow the "Oral Presentations Rubric" that is posted on the course webpage and on CANVAS. Submissions that do not conform to the above format will not be accepted.

It is a fundamental principle of academic integrity that the authorship of the intellectual content of works submitted as part of a class assignment must be fairly represented. Contributions of language and thought must be appropriately credited.

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For Your Information: Grade Evaluation Criterion

* A grade range of A to A- is reserved for work that is exceptional. This means that it (1) is professional and reflects the writer's/s' careful consideration of audience and purpose; (2) shows perfect to near-perfect understanding of the necessary concepts and analytical tasks; (3) where appropriate, it shows the capacity to think creatively or to see implications beyond the immediate scope of the question; (4) contains all necessary information (invention); (5) is arranged in a logical manner (6), is memorable; (7) delivery is visually appealing; and (8) is free of mechanical errors and is formatted as specified. Work must be flawless to attain an A/A-. Work with minor flaws that is nonetheless excellent in other ways will earn an A-.

* A grade in the B range means that the work is acceptable at the graduate level (B- range) to very good (B/B+). This work satisfies all (B+) or most (B/B-) of the requirements of the question & research tasks, shows the capability to think beyond the task by relating it to other areas of knowledge in or outside of the course; is neatly presented and shows above-average use of academic English. If the work is decently written, is formatted basically correctly, and covers most of the required content, but has several minor flaws or one major flaw, the grade is B-.

* A grade in the C range means that the work, while covering much of the required ground, does not show graduate-level analytic and expressive ability. That is, major and minor items may be missing or incorrect; and while the language may communicate most points adequately, it does not qualify as above-average academic work.

* A grade in the D range shows that the work does not, overall, achieve an acceptable level of coverage of the requirements AND/OR the language is insufficient to make the writer's points understandable to the reader. The content may be either incorrect to an unacceptable degree, or very incomplete.

* A grade of F indicates that so little of the required content is covered that grading the paper is an exercise in futility. It may mean that very major points have clearly not been grasped or have been misunderstood by the student. An F may also indicate that the ideas are expressed in such a way that they are not at all understandable to the reader. A grade of F is also awarded when assigned work is not handed in, or not handed in by the set deadline.

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