COURSE SYLLABUS

Course No.: IET 671
Section: H001 (Online)
Title of Course: Supply Chain Modeling & Analysis

Instructor: Mohammad A. Rahman, PhD.
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Email: mohammad.rahman@usm.edu
Office Tel: 601-266-4902
Cell phone: 225-436-5300
Fax: 601-266-5717
Office Hours: [Day & Hour] 248 @ TEC (Chain) building or appointment by e-mail

Bulletin Description: Supply Chain Modeling, Forecast Analysis, Aggregate planning, Inventory planning, and supply chain operation planning.
Prerequisites: None (Recommended IET 405/505, IET 570/571).
Credit Hours: 3 hours

I. COURSE DESCRIPTION:
The course focuses on the designing and operations of contemporary supply chains. In the global market competition, faster response, high productivity, cost minimization and qualitative analysis are crucial. Using various optimization methods and advance technological tools, the course is intended to cover a wider domain of the supply chain modeling and in-depth analysis. This course harmonizes concepts from diverse management disciplines to develop supply chain models and performance analysis.

II. COURSE OBJECTIVES:
Successful design and management of a supply chain is critical for global competition, involves activities and relationships to maximize customer value to achieve a sustainable competitive advantage. This course introduces contemporary issues of supply chain management, models and operational management. The goal is to provide a framework for understanding how supply chain systems behave, and thereby, provide a basis for better decision making in designing and management.
Students should learn how to

- Address tools and techniques to develop supply chain models at hand
- Apply concepts and methods related to supply chains planning and operations
- Develop mathematical formulation of the supply chain problems
- Deal with current academic researches on supply chain models and innovations
- Identify data inputs, forecasting, inventory, transportation, information, sourcing, and pricing as the key drivers of supply chain performance
- Use techniques, skills, and modern engineering tools necessary for industrial practice, through modeling exercises and application of standard software tools.

The objectives of this course is to take systematic approach to

- Attain knowledge of analytic methodologies for supply chain modeling and analysis
- Make better supply chain decision, planning and operation
- Analyze the costs impacts at every level of a supply chain
- Analyze decisions in terms of their impact on supply chain performance
- Achieve efficiency and cost-effectiveness across the entire system.

III. COURSE COMMUNICATION:
All class lecture notes and video lectures will be uploaded to course webpage via Blackboard. Course communication will be via USM e-mail, Blackboard e-mail, and discussion board. Students can meet the instructor during office hour or by making appointment as needed.

Who Should Attend
The primary target audience is students in Industrial Technology, Logistics Technology, MBA degree programs (daytime, weekend or executive). We find that these students are capable of mastering this material and they appreciate that the course. The course emphasizes models and the qualitative insights covered in the course modules. Finally, we suspect that the course will work quite well with students possess science or other engineering knowledge and degree.

IV. CLASS PROCEDURES AND REQUIREMENTS:
Case Study
Participants will solve/review several case studies and assignments on diverse operational domains and emerging global trade and technology. Through the real-life cases and research, participant will know how to enhance the performance of a global supply chain.

Research Paper / Term Project
The objective of the term projects is to train participants to think independently in terms of performing research and potential extensions of current practice that are critical for improvement and align with their businesses.
- Instructor will provide a research topic and related journal papers to write a short (3-4 pages) research project. Research project must contain mathematical impact in the analysis.
- All submissions required for term project must be in MS Word/ PDF format.
- Term project must be submitted by each student with Student’s last name, first name, MI should appear in the cover page.

V. TEXT BOOK:

Reference Text (optional)

Technology Requirements
Students require a computer, internet connection, and headphones/speaker. Students also require software including Microsoft Word, Excel, Power Point and scientific calculator to complete the assignments and course exams.

VI. METHODS OF STUDENT EVALUATION:

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<tbody>
<tr>
<td>4 Assignments / Case studies</td>
<td>40</td>
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<tr>
<td>Midterm</td>
<td>20</td>
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<td>Research paper/Project</td>
<td>20</td>
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<td>Final Exam</td>
<td>20</td>
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<td>Total</td>
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Grading Scale
Total 100-point scale below:

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<td>90-100</td>
<td>A</td>
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<td>80-89</td>
<td>B</td>
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<td>70-79</td>
<td>C</td>
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<td>60-69</td>
<td>D</td>
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<td>0-60</td>
<td>F</td>
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VIII. COURSE SCHEDULE:

<table>
<thead>
<tr>
<th>Module</th>
<th>Course Topics</th>
<th>Text</th>
<th>Case Studies</th>
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<tbody>
<tr>
<td>1</td>
<td>Process design</td>
<td></td>
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<tr>
<td></td>
<td>i. Analysis of Assembly operation</td>
<td>Chapter 4</td>
<td>Case Study 1 (10 points)</td>
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<td></td>
<td>ii. System utilization, line balancing</td>
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<td>2</td>
<td>Process analysis (with batching)</td>
<td>Chapter 6</td>
<td>Case Study 2 (12 points)</td>
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<td></td>
<td>i. Batch size, setup costs,</td>
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<td></td>
<td>ii. Inventory model, transfer batches</td>
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<tr>
<td>3</td>
<td>Variability and its impact on process performance</td>
<td>Chapter 7</td>
<td>Case Study 3 (13 points)</td>
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<tr>
<td></td>
<td>i. Analysis of arrival process,</td>
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<td></td>
<td>ii. Service time variability</td>
<td></td>
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<tr>
<td>4</td>
<td>Uncertainty demand</td>
<td>Chapter 11.1 - 11.4</td>
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<tr>
<td></td>
<td>i. Profit maximizing order</td>
<td></td>
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<td></td>
<td>ii. Performance measure</td>
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<td>5</td>
<td>The Newsvendor Model</td>
<td>Chapter 11.5 - 11.7</td>
<td>Case Study 4 (20 points)</td>
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<td>i. Outsourcing to emerging markets,</td>
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<td>ii. Make or buy evaluation process</td>
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<td>6</td>
<td>Mass Customization and Make-to-order</td>
<td>Chapter 12</td>
<td>Case Study 5 (15 points)</td>
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<td>Quick response with reactive capacity</td>
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<td>i. Case: Sport Obermeyer</td>
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<tr>
<td>7</td>
<td>The Order Up-To Model</td>
<td>Chapter 13.1-13.5</td>
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<tr>
<td></td>
<td>i. Demand distribution</td>
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<td></td>
<td>ii. Performance measure</td>
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<tr>
<td>8</td>
<td>The Order Up-To level</td>
<td>Chapter 13.6-13.10</td>
<td>Case Study 6 (20 points)</td>
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<tr>
<td></td>
<td>i. Service level target</td>
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<td></td>
<td>ii. Controlling ordering cost</td>
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<td></td>
<td>Article review / Research projects</td>
<td>Project (10 points)</td>
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*Schedule may be revised if necessary. Students will be notified if this is the case.*
IX. GENERAL POLICIES/GUIDELINES:
- If a student requires an accommodation based on disability, please meet me in my office, during the first week of the semester. Student makes sure for proper accommodation.
- Students must work alone on tests and quizzes.
- Assignment and Case Studies post in ‘Assignment Box’ must be graded. Students need to turn in these assignments within the due date.
- Recommendation: Do the homework – it will help you learn.
- Each student individually turns in homework assignments. Term paper may be done in a group (as suggests). Each assignment/case study must be turned with a title page that should contain student’s name, course name and assignment number on it.
- Generally, NO makeup for quizzes, home works, and tests.

USM RESOURCES

WRITING CENTER
The Writing Center is a free tutorial service available to any USM student who wants assistance with a writing project. The center offers one-to-one writing instruction that’s designed to help students become a more effective writer. The center offers tutorial service on a walk-in basis or by appointment (on the hour for an hour). In each session, a tutor talks with students about their writing project, asking them questions that will help students clarify their thoughts, specify their purpose, and decide how to proceed. Tutors do not write papers for students but they will help students find ways to develop their ideas more fully and express them more effectively.

Sites of Operation

The Hattiesburg Writing Center
Location: Cook Library, Room 112
Phone: (601) 266-4821
E-mail: writing.center@usm.edu
Web site: www.usm.edu/writingcenter

The Gulf Coast Writing Center
Location: Gulf Park Library, Room 107
Phone: (228) 214-3411
E-mail: coastwritingcenter@usm.edu
Web site: www.usm.edu/gulfcoast/gcwc/index.php
SPEAKING CENTER

The University of Southern Mississippi offers a Speaking Center, with consultations available at no cost to all students, faculty, and staff. The Speaking Center at the USM could be a great help for the students of Industrial Engineering Technology to prepare, organize, and delivery of their presentations. I consider the Center to be an extension of the class. The center is a space to refine your skills, address questions, and practice your speeches. The tutors of the speaking Center are there to help you with your speeches. Students who make regular use of this resource become better speakers and do better on their assignments. You can visit the center website to access tips on various areas of improving your presentation, making appointments with tutors, and arranging mock presentation at www.usm.edu/speakingcenter

Sites of Operation

The Speaking Center
Hattiesburg Campus
Cook Library, Room 114
601-266-4965
speakingcenter@usm.edu

The Speaking Center
Gulf Park Campus
Gulf Park Library, Suite 107
228-214-3413
Casey.Maugh@usm.edu

USM STUDENT HANDBOOK

Academic Dishonesty
It is the philosophy of The University of Southern Mississippi that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. The following is from the USM Undergraduate Bulletin:

“When cheating is discovered, the faculty member may give the student an F on the work involved or in the course. If further disciplinary action is deemed appropriate, the student should be reported to the Dean of Students. In addition to being a violation of academic honesty, cheating violates the Code of Student Conduct and may be grounds for probation, suspension, and/or expulsion. Students on disciplinary suspension may not enroll in any courses offered by The University of Southern Mississippi.”
This is optional: Students must send the instructor an e-mail using the course web site e-mail stating that they understand USM’s academic honesty policy and also understand that if they do not uphold the standards of academic honesty, the instructor will enforce all applicable punishment.

Plagiarism

Plagiarism is the act of taking another person's writing, conversation, song, or even idea and passing it off as your own. This includes information from web pages, books, songs, television shows, email messages, interviews, articles, artworks or any other medium. Whenever you paraphrase, summarize, or take words, phrases, or sentences from another person's work, it is necessary to indicate the source of the information within your paper using an internal citation. It is not enough to just list the source in a bibliography at the end of your paper. Failing to properly quote, cite or acknowledge someone else's words or ideas with an internal citation is plagiarism.

Students are highly recommended to complete the Plagiarism Tutorial accessible to the USM Libraries, at http://www.lib.usm.edu/legacy/plag/plagiarismtutorial.php within the second week of their classes.

Statement of “Turnitin” Use

Turnitin is recognized worldwide as the standard in online plagiarism prevention. Turnitin’s comprehensive plagiarism prevention system lets instructors quickly and effectively checks all students’ work or a few suspect papers using a search engine. The University of Southern Mississippi is using this software to detect, deter, and reduce plagiarisms in students’ writing assignments.

Students are required to turn their project report/ research paper electronically in MS word or PDF format which is compatible to check against plagiarisms using Turnitin software. Plagiarism checks for student assignments are done randomly.
ADA Syllabus Statement for the Hattiesburg Campus

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:
The University of Southern Mississippi
Office for Disability Accommodations
118 College Drive # 8586
Hattiesburg, MS    39406-0001
Voice Telephone: (601) 266-5024 or (228) 214-3232    Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.

ADA Syllabus Statement for the Gulf Coast Campus

Address:
The University of Southern Mississippi on the Gulf Coast
Office for Disability Accommodations
730 East Beach Blvd
Long Beach, MS    39560
Voice Telephone: (228) 214-3232 or (601) 266-5024    Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.
## Grading Rubric for Technical Writing Assignments

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Distinguished - 4pts</th>
<th>Proficient - 3pts</th>
<th>Limited - 2pts</th>
<th>Unsatisfactory - 1pt</th>
<th>Weights</th>
<th>Score</th>
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<tbody>
<tr>
<td><strong>Content</strong></td>
<td>• Clearly stated objectives and methodologies</td>
<td>• Interesting, sophisticated, insightful idea development</td>
<td>• Presented adequate information</td>
<td>• Provided enough supporting illustrations</td>
<td>• Detailed, accurate, and convincing evidence</td>
<td>• No misleading information</td>
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<tr>
<td><strong>Organization</strong></td>
<td>• Presented information in a comprehensive and logical manner</td>
<td>• Writing was focused to intended audience</td>
<td>• Started with clear objectives and finished with clear conclusion</td>
<td>• Smooth and effective transitions</td>
<td>• Presented information in a logical manner</td>
<td>• Writing was not focused to intended audience</td>
</tr>
<tr>
<td><strong>Style</strong></td>
<td>• Clear, concise, to the point but comprehensive writing</td>
<td>• Free from grammatical and spelling errors</td>
<td>• Used words appropriate to the intended readers</td>
<td>• Used proper punctuation, proper spacing, and short sentences</td>
<td>• Distinctive voice, appropriate to task and audience</td>
<td>• Clear, concise but comprehensive writing</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td>• Followed all IEEE standard formatting guidelines</td>
<td>• Report did not exceed 20 pages</td>
<td>• Report meets or exceeds all aspects of the assignment</td>
<td>• Submitted on or before the deadline</td>
<td>• Followed all but one IEEE standard formatting guidelines</td>
<td>• Report did not exceed 20 pages</td>
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