ISYE 3103

Introduction to Supply Chain Modeling: Logistics

Spring 2027 | 3 credit hours

Instructor: Tinghan (Joe) Ye	Email: joe.ye@gatech.edu
Class meetings / location: [TBD]	Office hours / TA: [TBD]

Course description

Logistics concerns the movement and storage of goods throughout a supply chain. In this course, we will use mathematical models to study inventory, transportation, distribution networks, and facility location. The emphasis is on understanding the decisions behind these models, solving them, and using the results to make practical recommendations.

What you should learn

By the end of the semester, you should be able to:

- Analyze cost and service tradeoffs in supply chain and logistics systems.
- Use deterministic and stochastic models to make inventory and replenishment decisions.
- Formulate and solve shortest-path, assignment, transportation, transshipment, and minimum-cost flow problems.
- Evaluate freight transportation, routing, and facility-location decisions.
- Recognize the limits of a model and explain its recommendations clearly.

Prerequisites and materials

Prerequisites. ISYE 3030 and ISYE 3133. Familiarity with basic probability will be helpful.

Course materials. Lecture notes, assignments, and any additional readings will be posted on Canvas.

Optional textbook. Ghiani, Laporte, and Musmanno, Introduction to Logistics Systems Management, 3rd ed., Wiley, 2022.

Software. We may use spreadsheets or Python for selected exercises and assignments. Any software requirements will be announced in advance.

Topics covered

Inventory and shipment sizing; inventory under uncertain demand; shortest paths and network flows; transportation and distribution; vehicle routing; and supply chain network design. The tentative weekly plan appears at the end of this syllabus.

Accessibility and accommodations

Students who need disability-related accommodations should work with the Georgia Tech Office of Disability Services (disabilityservices.gatech.edu; 404-894-2563). Please contact me early in the semester so we can make arrangements for any approved accommodations.

How the class will work

We will work through examples in class, with short exercises along the way. Sometimes I will ask you to solve a small problem on your own or discuss a modeling choice with a classmate before we compare approaches. The goal is to practice the reasoning, not just follow a solution on the board.

Grading

Your course grade will be based on approximately six homework assignments or cases, one midterm, and a comprehensive final exam.

Component	Weight
Homework and cases	30%
Midterm exam	25%
Final exam	45%

For instructor review: The Fall 2026 course allowed an eligible student to use the final-exam percentage as the course grade if it exceeded the weighted average. Eligibility required at least 50% on every homework and midterm component. Confirm whether to retain this option for Spring 2027.

Tentative letter-grade cutoffs are A: 90-100, B: 80-89, C: 70-79, D: 60-69, and F: below 60. Any adjustments to these thresholds will be communicated to the class.

Homework and collaboration

Assignments will be posted on Canvas, along with their due dates. You are welcome to discuss problem-solving approaches with classmates, but unless group work is expressly permitted, the solutions and code you submit must be your own. Please acknowledge collaborators and any external sources you use. Late assignments generally will not be accepted, except for approved accommodations or circumstances covered by Institute policy.

Exams

There will be one midterm and one cumulative final. Unless stated otherwise, exams will be closed book. The midterm date will be announced in class; the final exam will take place during the Registrar-assigned exam period. If you have an Institute-approved conflict, contact me as early as possible.

Attendance

I encourage you to attend regularly and take part in the in-class exercises. If you miss a class, you are responsible for catching up on the material. Approved absences and accommodations will be honored.

Academic integrity and AI tools

Your submitted work should show your own understanding. You may use generative AI tools to study course concepts or help debug code when an assignment permits it, but you may not submit AI-generated solutions as your own. If a tool makes a substantial contribution to an assignment, briefly disclose how you used it. AI tools are not permitted during exams unless I explicitly authorize them. Georgia Tech’s Academic Honor Code applies to all coursework.

Tentative weekly schedule

The sequence below is a working plan. We may adjust the pace as the semester progresses. Assignment deadlines, exam dates, and the Spring Break schedule will be added once the class timetable is finalized.

Week	Topic
1	Introduction to logistics; supply chain costs and service
2	Economic order quantity and basic replenishment models
3	Shipment sizing, mode selection, and backorders
4	Inventory under uncertainty; the newsvendor model
5	Continuous-review policies and safety stock
6	Periodic-review and base-stock policies
7	Networks, flow conservation, and shortest paths
8	Shortest-path algorithms; midterm review and exam (tentative)
9	Transportation models and minimum-cost flows
10	Transshipment, assignment, and shipment consolidation
11	Freight transportation and service networks
12	Last-mile delivery and vehicle routing
13	Facility location and supply chain network design
14	Integrated logistics applications and case discussion
15	Review and synthesis

Final exam. Date and time to be determined by the Registrar.

Before distribution. Confirm the section and meeting times, room, office hours, TA information, midterm date, grading exception, and final exam information. Remove this note from the published syllabus.