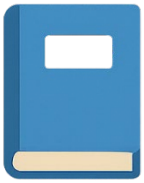
ISYE 474/574 Scheduling and Logistics (Spring 2026)
Monday & Wednesday 12:30 – 1:45 pm in EB 311

Instructor: Dr. Purush Damodaran
Contact Info: EB 230A, Phone: (815) 753-3172, E-mail: pdamodaran@niu.edu
Office hours: Tuesday 1:00 – 3:00 pm or by appointment

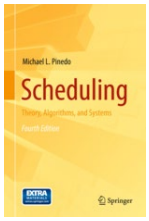
Catalog Description: Special topics on applied operations research with focus on theory of scheduling and logistics. Major topics include: single- and multiple-stage scheduling problems, vehicle routing and scheduling problems, bin packing problems, concepts of supply chain, heuristics, modern tools to solve these problems, solution implementation issues, and work at the graduate level.

Prerequisites: ISYE 440 or CSCI 240



TEXTBOOK

Pinedo, M.L., Scheduling – Theory, Algorithms, and Systems, 4th edition, Springer, NY.



Instructional Goals: Students will learn different scheduling and logistics problems; learn different solution approaches to solve these problems.

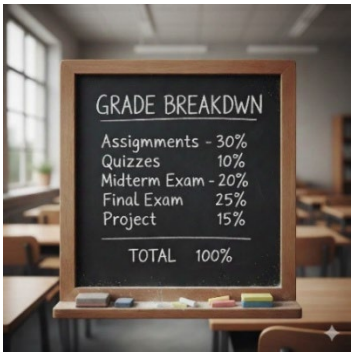
Course Objectives: Upon completion of this course, the students should be able to:
1. Solve machine scheduling problems with different machine configurations and job characteristics.
2. Develop heuristic solution approaches for problems in scheduling and logistics.

Topics: The following are the list of topics planned to be covered.
- Scheduling
    a. Single machine models
    b. Parallel machine models
    c. Flow shops
    d. Job shops
- Meta-heuristics
    a. Simulated annealing
    b. Genetic algorithms
    c. Particle Swarm Optimization (if time permits)
    d. GRASP (if time permits)
- Programming in MATLAB/Python
- Logistics
    a. Bin Packing problem

b. Routing problems

Note: Topics listed above are subject to change based on the pace at which the lectures can be delivered.

All course related material will be posted in Blackboard. Regularly check Blackboard for announcements, lecture notes, and any other instructions.



Your letter grade depends on the overall performance of all the above. The following table will be used as a guideline when assigning the letter grades.

Weighted Score	<50	50-69	70-74	75-79	80-83	84-86	87-90	91-94	95-100
Letter Grade	F	D	C	C+	B-	B	B+	A-	A
Grade Points	0	1	2	2.33	2.67	3	3.33	3.67	4

- All assignments should be completed individually, unless stated otherwise by the instructor.
- The assignments are due at the beginning of the class (before the lecture starts) on the scheduled due date.
- Late assignments will not be accepted.
- You do not have to type your assignments. Write legibly and staple all the pages.

Quizzes: Makeup quizzes are not allowed unless your absence was excused by the instructor at least 24 hours before the class. If you experience medical or family emergencies and cannot intimate me ahead of time, then proper documentation is required to be considered for a makeup quiz. The makeup quizzes (if approved) should be taken before the next class meets. If you come late to my class while a quiz is being administered, you will not be allowed to take the quiz and a makeup quiz will not be approved.

- The group project is to research a scheduling problem from the literature, develop solution approaches to solve the problem, implement the approach in MATLAB or other programming languages, and make a presentation.
- Each team should consist of **two members**. Exceptions can be made only under rare circumstances with my approval.
- Each team should first write a **one-page proposal** on what problem they plan to work on, the solution approach, programming language to use, etc. Upon getting approval from me, the team can proceed to complete their project.

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- Students in ISYE 574 should review at least five journal papers relevant to the problem chosen for the project and write a detailed literature review in the report.
- Project report and presentation are due on **April 27, 2026**. The deadlines set for the report and presentation cannot be negotiated.

Project Report: The report should be neatly typewritten in MS Word or LaTeX. Leave one-inch margin on each side. Use 12 pt. Times New Roman font. Each table and figure should be appropriately numbered with a caption. The report should describe the problem studied, include a brief literature review, present the solution approach, and discuss the results and conclusions. A reference section should be included. Follow APA guidelines for references and citations. An appendix can include all other relevant information.

Each team should make a 10-15 min project presentation on April 27, 2026 or April 29, 2026 during the class on their project.

Good academic work must be based on honesty. The attempt of any student to present as his or her own work that which he or she has not produced is regarded by the faculty and administration as a serious offense. Students are considered to have cheated if they copy the work of another during an examination or turn in a paper or an assignment written, in whole or in part, by someone else. Students are guilty of plagiarism, intentional or not, if they copy material from books, magazines, or other sources without identifying and acknowledging those sources or if they paraphrase ideas from such sources without acknowledging them. Students guilty of, or assisting others in, either cheating or plagiarism on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university.

Services and Accommodations for Students with Disabilities: If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located in the Campus Life Building, Suite 180, and can be reached at 815-753-1303 or drc@niu.edu. Also, please contact me privately as soon as possible so we can discuss your accommodations. Please note that you will not be required to disclose your disability, only your accommodations. The sooner you let me know your needs, the sooner I can assist you in achieving your learning goals in this course.

Contacting Me: I am easy to approach. If you have any questions, feel free to write to me (pdamodaran@niu.edu), call (815-753-3172), or see me in my office (EB230A). When writing an email please **mention ISYE 474/574 in the subject line** to draw my attention. Do not use texting language when sending emails.

Good luck with the semester!