ISyE 3039 A – Methods for Quality Improvement
Georgia Tech – Spring 2027

Lecture Time: TBD
Lecture Room: TBD

Modality:

- In person on campus, lecture presentation files will be posted in Canvas before each lecture.
- Virtual office hours are optional.

Instructor Information

Instructor	Email	Office Hours & Meeting Link
Jan Shi	jianjun.shi@isye.gatech.edu	Time: by appointment (or immediately after lecture) Office: Room 820, George Tower
TA TBD		

Communication and Students/Instructor/TA Interactions

- This term we will use Piazza in Canvas for class discussion. The system is highly catered to get help fast and efficiently from classmates, the TA, and instructor. Rather than emailing questions to the teaching staff, we strongly encourage you to post your questions on Piazza. It is recommended to check Piazza at least weekly so that you can learn from questions from other peer students. Besides, please review posted questions before posting a new one. Sometimes, they have already been addressed. If you have further questions regarding the same one, please feel free to post your follow-up questions under the same page. For non-Piazza communications, please e-mail your course-related questions to both TA and instructor simultaneously to ensure a timely response. Find our class signup link at: https://piazza.com/gatech/fall2026/isye3039aLinks to an external site.
- If TA Office Hours do not work for your schedule, please email the TA to set up an individual appointment.
- Please schedule individual appointments with the TA for grading inquiries within 5 working days after the grade posting.

Textbook:
"Introduction to Statistical Quality Control", 8th edition, Douglas C. Montgomery, Wiley, ISBN: 978-1-118-98915-9 *(Note: It is fine if you have an early edition of this book. The key contents are the same. No need to purchase the 8th edition if you have an early edition of this book.)*
Website: Canvas
Prerequisite: ISyE 3030
Software: Python (or any software you familiar with to do the homework or project, such as R and Matlab)
Catalog Course Description:
An introductory course on statistical quality control and improvement, which covers a variety of topics including statistical process control, measurement system analysis, acceptance sampling, design of experiments, etc.
Course Outcomes:
By the end of the semester, you will be able to:

- Perform preliminary data analysis and suggest improvement plans
- Develop control charts for monitoring continuous and discrete quality characteristics

- Assess statistical process capability
- Assess product specifications and tolerances
- Implement CUSUM and EWMA charts
- Design and analysis of factorial experiments
- Design and implement acceptance sampling plans

Grading Policy:

Attendance and Quiz	(in class)	15%
Homework	(as assigned)	10%
Exam 1	(Date: March 4, 2027)	25%
Exam 2	(Date April 20, 2027)	25%
Term Project	(report due: April 27, 2027; presentations: April 22 and 27, 2027)	25%

Course Policy:

1. Homework
   - Homework should be submitted through Canvas. We accept one single PDF file of solutions. Please (1) show your calculation procedure step by step (only the final result is NOT acceptable); (2) do not submit .doc, .xls or .jpg or other formats. However, you can attach screenshots of your codes or any necessary figures in the PDF file; (3) circle or highlight your final solution for each question.
   - It is not necessary to type the solutions; you can even submit the scanned version of your handwritten copy. It just needs to be neat and organized. For scanning documents, we recommend the following apps for handwritten homework: Download "Adobe Scan Digital Pdf Scanner" or "DocuScan - PDF Document Cam Scanner & Scan Converter App" on your phone or tablet to scan and upload your handwritten work. The app can scan multiple pages and save it as pdf for you automatically. You will then need to send that pdf document to your laptop and upload it through Canvas.
   - The solution key will be provided after the deadline on Canvas.
   - We will use Piazza for class discussion. The system is highly catered to get help fast and efficiently from classmates, the TA, and the instructor. Rather than emailing questions to the teaching staff, we encourage you to post your questions related to the homework content on Piazza.
2. Attendance and Quiz
   - There are sign-up sheets for attendance check.
   - There are a few in-class quizzes given to assess your understanding of basic concepts and methods.
   - The quiz also serves as attendance checking. Thus, no make-up quizzes will be offered.
   - A student will not lose quiz or attendance points if the student informed the instructor for missing a class with justified reasons BEFORE the class (quiz).
3. Exam
   - Two exams are given in class on the dates listed in this syllabus. Each exam is 1 hour and 15 minutes total. Exam I covers the first half of teaching material, and Exam II covers the 2nd half of teaching material (e.g. not accumulative in the 2nd exam).
   - The exam will be closed book and closed notes. Students are allowed to have one double-sided sheet note for exam I and two double-sided sheets of equations for exam II. A calculator is needed for each exam.
   - No make-up exams will be given unless prior arrangement is made with the instructor (with written documentation BEFORE the exam, e.g., a note from Dean's office).
4. Project
   - Final project instead of final exam.

- Detailed information about the group project can be found on Canvas. Here are some important dates:
- Determine Group Members: 2/19, 2026, at 11:59 pm ET
- Abstract: 3/19, 2027, at 11:59 pm ET
- Report due: 4/27, 2027, at 11:59 pm ET
- Presentations: 4/22 and 4/27, 2027
- Please select a representative of your group. ONLY the representative needs to submit the above four materials to on Canvas corresponding to the timeline. (NO bonus for the representative)

5. Regrade Requests
   - Regrade requests for assignments must be submitted within 5 working days after you receive the grade/feedback. Only written complaints (Email "Regrade Request ISYE 3039" to Instructor and TA) will be accepted. The rule for regrades is like the NFL's rule for replay challenges: there must be "indisputable visual evidence" that the original grade was incorrect. For instance, scores were added incorrectly, or a correct answer was marked wrong. The regrade procedure is intended to correct errors in grading. It is not intended as an opportunity to maximize your personal grade when there is a judgment call made by the graders. To be fair to every student in the class, the graders should maintain the original "judgment call" while grading all the papers.
   - Mode of regrade request: If there is a regrade request, we will have written exchange first. If necessary, in person discussion will be followed, determined by the grader.
   - Looking to improve your grade: If you are working hard in this course but feel that your assignment grades don't reflect your work, please come to see the TA and Instructor first. If you cannot make office hours, please email the TA to make an appointment for another time. You may be spending a lot of time on the wrong things and redirecting your efforts may really pay off.
6. Further notes on Grading/Assignments
   - There will be homework assignments approximately every other week.
   - There will also be a project that is a multi-week endeavor – please make sure that you will complete part of the project each week, so you do not fall behind and need to rush at the end.
   - There will be no extra assignments to bump up your grade.
   - There will be two exams. All exams are in class, and there will be no make-up exams. Only absences approved by the Division of Student Life, or Dean of Students, or official approval from the registrar are valid excuses for missing an exam and you will be given a make-up exam.

Academic Honor Code: It is your responsibility to get familiar with the Georgia Tech Honor Code and you are bound by its requirements.
Use of any previous semester course materials is allowed for this course; however, I remind you that while they may serve as examples for you, they are not guidelines for any tests, quizzes, homework, projects, or any other coursework that may be assigned during the semester. For any questions involving these or any other Academic Honor Code issues, please visit www.honor.gatech.edu.Links to an external site., or consult with instructor, or the teaching assistant.

Tentative Lectures Schedule:

Week	Date	Topics	Ref.	
1	1/12, 1/14	Course overview + Introduction	Ch1	**First Lecture**

2	1/19, 1/21	Review of Modeling Process Quality	Ch3	
3	1/26, 1/28	Review of Inferences About Quality	Ch4	1/29 HW1 Due
4	2/2, 2/4	Methods and Philosophies	Ch5	
5	2/9, 2/11	Methods and Philosophies, Factorial and Fractional Factorial Design	Ch5, Ch13	2/12 HW2 Due
6	2/16, 2/18	Factorial and Fractional Factorial Design, Charting Variables	Ch13, Ch6	**2/19 Project Team Members**
7	2/23, 2/25	Charting Variables, Charting Attributes	Ch7	2/26 HW3 Due
8	3/2, 3/4	Exam 1 Review, **Exam 1 (3/4)**	Ch7	**3/4 Exam 1**
9	No Class	**Spring Break (3/8 – 3/12)**		
10	3/16, 3/18	Python Implementation, Charting Attributes	Ch13	3/19 HW4 Due **3/19 Project Proposal Due**
11	3/23, 3/25	Charting Attributes, CUSUM	Ch9	
12	3/30, 4/1	EWMA, Process Capability	Ch9, CH8	4/2 HW5 Due
13	4/6, 4/8	Gage R&R, Specification/Tolerances	Ch8	
14	4/13, 4/15	Specification/Tolerances, Exam 2 review	Ch8	4/16 HW6 Due
15	4/20, 4/22	**Exam 2 (4/20)**, Final Project Presentation		**4/20 Exam 2** **4/27 Final Project Report Due**
16	4/27	Final Project Presentation		