Faculty of Applied Science and Engineering - Department of Mechanical & Industrial Engineering

MIE1727H1 F

Statistical Methods of Quality Assurance

Fall 2024 Syllabus

Course Meetings

Section	Day & Time	Delivery Mode & Location
LEC0101	Monday, 12:10 PM - 1:00 PM	In Person: SU 444
	Wednesday, 10:10 AM - 12:00 PM	In Person: BA 2165

Refer to ACORN for the most up-to-date information about the location of the course meetings.

Course Contacts

Course Website: q.utoronto.ca

Instructor: Janet Lam
Email: jy.lam@utoronto.ca
Phone: 4169782890
Office Hours and Location: Tuesdays 4 p.m. - 6 p.m., MC306A

Teaching Assistants:
Zeineb Ben Rejeb   zeineb.benrejeb@mail.utoronto.ca

Course Overview
Course Learning Outcomes

By the end of this course, students should be able to:

- Develop a statistical process control program for variables and attributes
- Assess the capability of a system based on its ratios
- Differentiate from Shewhart and develop time-weighted control charts
- Analyse production data to make statistical inferences on the capability of production.

Prerequisites: Undergraduate course in statistics
Credit Value: 0.5

Course Materials

Required: Fundamentals of Quality Control and Improvement, 5th edition, A. Mitra ISBN: 9781119692331

Suggested: Introduction to Statistical Quality Control, 8th edition, D. C. Montgomery. ISBN: 9781119723097

Marking Scheme

Assessment	Percent	Due Date
Assignment 1	20%	Fri. Oct. 11
Assignment 2	20%	Fri. Nov. 22
Midterm	20%	Wed. Oct. 23 10:10am-12pm GB144
Final Exam	40%	Wed. Nov. 27 10:10am-12pm GB144

Re-grade requests

Petitions for grading must be submitted within one week of the assessment being returned.

Exceptional circumstances

Sometimes, things do not go as planned. If you are unable to complete an assignment on time, write a midterm, or write the final exam due to illness, disability, or other extenuating circumstances, please contact Prof. Lam

Late Assessment Submissions Policy

Assignment due dates are set to allow for solutions release in advance of the midterm and final exam. Therefore, late assignments cannot be accepted.

Course Schedule

Week	Description	Text reference	Deliverables
Week 1	Introduction to quality control	1	
Week 2	Philosophies on quality Quality management	2, 3.2	
Week 3	Tools for quality improvement Review of probability & statistics	3.6 4.1-4.5, 4A	
Week 4	Named probability distributions Statistical inference & data analysis	4.6-4.7	
Week 5	Data visualization and analyses	5.1-5.4	
Week 6	Sampling methods Introduction to control charts	5.6-5.9 6.1-6.3	A1 due Oct 11
Week 7	No class on Monday (Thanksgiving) Statistical basis of control charts	6.3-6.6	
Week 8	Midterm review Midterm		Midterm in-class Oct 23
Reading week			
Week 9	Control charts for variables	7.1-7.7	
Week 10	Control charts for attributes	8	
Week 11	Process capability analysis	9.1-9.6	A2 due Nov 22
Week 12	Final exam review Final exam		Final exam in-class Nov 27
Week 13	No class on Monday		

Policies & Statements

University Land Acknowledgement

I wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

Learn more about Canada's relationship with Indigenous Peoples here.

Indigenous Students' Supports

If you are an Indigenous engineering student, you are invited to join a private Discord channel to meet other Indigenous students, professors, and staff, chat about scholarships, awards, work opportunities, Indigenous-related events, and receive mentorship. Email Professor Bazylak or Darlee Gerrard if you are interested.

Indigenous students at U of T are also invited to visit First Nations House's (FNH) Indigenous Student Services for culturally relevant programs and services. If you want more information on how to apply for Indigenous specific funding opportunities, cultural programs, traditional medicines, academic support, monthly social events or receive the weekly newsletter, go to the FNH website, email or follow FNH on social media: Facebook, Instagram, or TikTok. A full event calendar is on the CLNX platform. Check CLNX often to see what new events are added!

Wellness and Mental Health Support

As a university student, you may experience a range of health and/or mental health challenges that could result in significant barriers to achieving your personal and academic goals. The University of Toronto and the Faculty of Applied Science & Engineering offer a wide range of free and confidential services that could assist you during these times.

As a U of T Engineering student, you have a Departmental Undergraduate Advisor or a Departmental Graduate Administrator who can support you by advising on personal matters that impact your academics. Other resources that you may find helpful are listed on the U of T Engineering Mental Health & Wellness webpage, and a small selection are also included here:

- U of T Engineering's Mental Health Programs Officer
- Accessibility Services & the On-Location Advisor
- Health & Wellness and the On-Location Health & Wellness Engineering Counsellor
- Graduate Engineering Council of Students' Mental Wellness Commission
- SKULE Mental Wellness
- U of T Engineering's Learning Strategist and Academic Success
- Registrar's Office and Scholarships & Financial Aid Office & Advisor

We encourage you to access these resources as soon as you feel you need support; no issue is too small.

If you find yourself feeling distressed and in need of more immediate support, consider reaching out to the counsellors at [U of T Telus Health Student Support](#) or visiting U of T Engineering's [Urgent Support – Talk to Someone Right Now](#).

Accommodations

The University of Toronto supports accommodations for students with diverse learning needs, which may be associated with mental health conditions, learning disabilities, autism spectrum, ADHD, mobility impairments, functional/fine motor impairments, concussion or head injury, visual impairments, chronic health conditions, addictions, D/deaf, deafened or hard of hearing, communication disorders and/or temporary disabilities, such as fractures and severe sprains, or recovery from an operation.

If you have a learning need requiring an accommodation the University of Toronto recommends that students [register with Accessibility Services](#) as soon as possible.

We know that many students may be hesitant to reach out to Accessibility Services for accommodations. The purpose of academic accommodations is to support students in accessing their academics by helping to remove unfair disadvantages. We can assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. The process of accommodation is private; we will not share details of your needs or condition with any instructor.

If you feel hesitant to register with us, we encourage you to reach out for further information and resources on how we can support. It may feel difficult to ask for help, but it can make all the difference during your time here.

Phone: 416-978-8060
Email: accessibility.services@utoronto.ca

Equity, Diversity and Inclusion

Looking for community? Feeling isolated? Not being understood or heard?

You are not alone. You can talk to anyone in the Faculty that you feel comfortable approaching, anytime – professors, instructors, teaching assistants, [first-year](#) or [upper years](#) academic advisors, student leaders or the [Assistant Dean of Diversity, Inclusion and Professionalism](#).

You belong here. In this class, the participation and perspectives of everyone is invited and encouraged. The broad range of identities and the intersections of those identities are valued and create an inclusive team environment that will help you achieve academic success. You can read the evidence for this approach [here](#).

You have rights. The [University Code of Student Conduct](#) and the [Ontario Human Rights Code](#) protect you against all forms of harassment or discrimination, including but not limited to acts of

racism, sexism, Islamophobia, antisemitism, homophobia, transphobia, ableism, classism and ageism. Engineering denounces unprofessionalism or intolerance in language, actions or interactions, in person or online, on- or off-campus. Engineering takes these concerns extremely seriously and you can confidentially disclose directly to the Assistant Dean for help here.

Resource List:

- Engineering Equity, Diversity & Inclusion Groups, Initiatives & Student Resources
- Engineering Positive Space Resources
- Request a religious-based accommodation here
- Email Marisa Sterling, P.Eng, the Assistant Dean, Diversity, Inclusion & Professionalism here
- Make a confidential disclosure of harassment, discrimination or unprofessionalism here or email engineering@utoronto.ca or call 416.946.3986
- Email the Engineering Society Equity & Inclusivity Director here
- U of T Equity Offices & First Nations House Resources

Academic Integrity

All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments, collaborating with fellow students, and writing tests and exams. Ensure that the work you submit for grading represents your own honest efforts. Representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program is a serious offence that can result in sanctions. Speak to me or your TA for advice on anything that you find unclear. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see the U of T Academic Integrity website.

The knowing use of generative artificial intelligence tools, including ChatGPT and other AI writing and coding assistants, for the completion of, or to support the completion of, an examination, term test, assignment, or any other form of academic assessment is prohibited.