

**DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES
UNIVERSITY OF TORONTO MISSISSAUGA**

**STA431H5S LEC0101
Structural Equation Models
Course Outline - Winter 2023**

Class Location & Time	Tue, 04:00 PM - 06:00 PM MN 1170 Thu, 04:00 PM - 05:00 PM MN 1170
Instructor	Jerry Brunner
Office Location	3028 Deerfield Hall
Office Hours	Tuesday 2-3 and Thursday 1-3
Telephone	905-828-3816
E-mail Address	jerry.brunner@utoronto.ca
Course Web Site	http://www.utstat.toronto.edu/brunner/431s23
Teaching Assistant	Haris Majeed
Office Location	CC2110
Office Hours	Friday 4:10 - 5:00 p.m.
E-mail Address	haris.majeed@utoronto.ca

Course Description

Random vectors and matrices, univariate and multivariate regression with measurement error, latent variables, model identification, the LISREL model, path analysis, confirmatory factor analysis, longitudinal data analysis, robustness of the normal model. A statistical computing package will be used.

Prerequisite: STA302H5 or STA302H (SCI)

Distribution Requirement: SCI

Students who lack a pre/co-requisite can be removed at any time unless they have received an explicit waiver from the department. The waiver form can be downloaded from [here](#).

Textbooks and Other Materials

Structural equation models: An open textbook by J. Brunner. This is a draft. Chapters are posted on the course website as needed. Material in the text overlaps with lectures.

Assessment and Deadlines

Type	Description	Due Date	Weight
Quiz	Given in tutorial on January 20, 27, Feb. 3, 10, 17, March 3, 10, 17, 24, 31 The lowest quiz mark will be dropped.		50%
Quiz	Pop quizzes given in lecture. Lowest pop quiz mark will be dropped.		10%
Final Exam	Comprehensive, excluding review material in Assignment 1.	TBA	40%
Total			100%

More Details for Assessment and Deadlines

There will be an assignment for each regular quiz. The knowledge you need to do each quiz is a subset of the knowledge you need to do the corresponding assignment. Except for the first assignment (which is largely review), most assignments will include a computer part. You will bring printouts to the quiz and answer questions based on the printouts. Possibly, one of the quiz questions will be to hand in a printout. The non-computer parts of the assignments are just to prepare you for the quizzes; they will never be handed in.

Penalties for Lateness

No late work is accepted.

Procedures and Rules

Missed Term Work

In order to receive special consideration, you must email the course coordinator and declare your absence on ACORN. For more information, visit the Office of the Registrar website (<https://www.utm.utoronto.ca/registrar/utm-absence>).

To request special consideration, bring or email supporting documentation to Jerry at least one week in advance.

If you miss a quiz or pop quiz without a valid excuse, the mark is zero. However, your lowest quiz mark will be dropped.

If you miss a pop quiz with a valid excuse, the mean of the other pop quizzes will be substituted for the missing mark, and then your lowest pop quiz mark will be dropped.

If you miss up to three regular quizzes with a valid excuse, your mark on the final exam (out of 10) will be substituted for the missing quiz marks, and then the lowest mark, possibly one of the substituted marks, will be dropped. If you miss more than three quizzes with a valid excuse (this does happen sometimes), you will take a special make-up test, given on April 10, Make-up day. Your mark on this test will be substituted for all the missing regular quiz marks, and then the lowest mark, possibly one of the substituted marks, will be dropped. The make-up test will be comprehensive, excluding the review material in Chapter 1.

If you believe you have a valid excuse for missing term work, please see Jerry (not the TA) *in person* during office hours or before or after class. Note that according to university policy, your absence must be declared on Acorn on the day of the absence if your excuse is to be considered.

But what is a valid excuse? If you miss a quiz for medical reasons, that excuse is usually accepted. Bad family emergencies also qualify.

On the other extreme, automotive breakdown or other transportation problems are never valid excuses. If you miss term work because you are taking another class at the same time as this one, that is not a valid excuse. The printer jammed, my dog ate it, etc. fall into the same category. If the University is officially open, weather is a valid excuse only if more than 50% of the class miss the quiz.

Missed Final Exam

Students who cannot complete their final examination due to illness or other serious causes must file an [online petition](#) **within 72 hours of the missed examination**. Late petitions will **NOT** be considered. Students must also record their absence on ACORN on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of \$70 is required for each examination approved.

Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto Mississauga is a strong signal of each student's individual academic achievement. As a result, UTM treats cases of cheating and plagiarism very seriously. The University of Toronto's [Code of Behaviour on Academic Matters](#) outlines behaviours that constitute academic dishonesty and the process for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

1. Using someone else's ideas or words without appropriate acknowledgement.
2. Submitting your own work in more than one course, or more than once in the same course, without the permission of the instructor.
3. Making up sources or facts.
4. Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

1. Using or possessing unauthorized aids.
2. Looking at someone else's answers during an exam or test.
3. Misrepresenting your identity.

In academic work:

1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other [institutional resources](#).

It is an academic offence to present someone else's work as your own, or to allow your work to be copied for this purpose. To repeat: the person who allows her/his work to be copied is equally guilty, and subject to disciplinary action by the university.

It is fine to discuss the assignments and to learn from each other, but there are clear limits on what is acceptable. It is okay to discuss the meaning of the question. It is okay to discuss general principles related to the question. It is okay, and encouraged, to discuss examples from lecture or textbook that are similar to the question. It is okay to reveal your approach to solving a problem (not the details), but only to somebody who has tried the problem and is really stuck. Even then, it is better to ask questions (like "Well, what's the null hypothesis?" Or "The problem is asking whether this estimator is unbiased. So, what's an unbiased estimator?") instead of just giving your answer. A good rule is to never help someone who hasn't started yet.

Here are some guidelines that apply to the computer assignments. If there is a problem with plagiarism, it will probably happen here, since computer assignments may be handed in.

- In this course, it is always okay to use R program code that is presented in lecture or the textbook. Use it any way you like; you are responsible for the results.
- *The biggest danger is copying from other students in the class.* It is fine to discuss the assignments and to learn from each other, but don't copy. Never look at anyone else's program code or show anyone yours before the quiz or exam when they might be handed in. Above all, do not allow anyone to see your program file before a computer assignment is due, and do not look at anyone else's. *Never* photograph someone's homework or allow yours to be photographed.
- You *are* allowed to compare numerical answers. Suppose one person says "What did you get for beta-hat-4? My answer was 37.2." Three other people say "Yeah, that's what I got," and one person groans and opens his laptop. This is all good.
- It is acceptable to get help with your assignments from someone outside the class, but the help must be limited to general discussion and examples that are not the same as the assignment. *As soon as you get an outside person to actually start working on one of your assignments, you have committed an academic offense.*
- For some quizzes, you will be asked to bring your printouts to class; maybe you will hand them in, and maybe you will use them to answer some questions. Never, ever, bring a copy of somebody else's printout, or allow anyone to have a copy of yours. Your "friends" may ask you. You are expected to refuse.
- If you allow anyone to have an *electronic* copy of your computer work, for any reason, you are not only guilty of an academic offence, you have lost your mind.
- *Direct copying of computer code from the internet (other than from our class website) is prohibited* You are expected to do the work yourself.
- The main rule is don't copy, and don't let anyone copy from you. If we catch you, you will get in big trouble. Even if we do not catch you, you will live with a terrible feeling of guilt for the rest of your life.
- If this is not clear enough, the latest version of the student handout "How not to Plagiarize" is available at <http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize> The Academic Regulations of the University are outlined in the Code of Behaviour on Academic matters, which can be found in the Academic Calendar at <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>.

Informed Consent – Email Lists

As a student enrolled in this course, you understand that you are providing your implicit consent to be included in an email list for the department to send you non-essential information from time to time. If you do not wish to be included in such an email list, please request to be removed by contacting one of the Academic Advisors & Undergraduate Program Administrators. Their information can be found on the MCS Website Contact Us [page](#).

Final Exam Information

Duration: 3 hours
Aids Permitted: Calculator Model(s): Any calculator without wireless capability.
Formula sheet will be supplied.

Additional Information

Note: Jerry does not read his email every day. It is much more efficient to talk with him before or after class, or during office hours.

Piazza: This is good place to share information and insights with other students, as well as getting answers from the instructors and other students: <https://piazza.com/utoronto.ca/winter2023/sta431>. The average turnaround for an answer from Jerry may be about 12 hours.

Accessibility Needs: We are committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Jerry or Accessibility Services (visit <http://www.utm.utoronto.ca/accessibility> or email accessconfirm.utm@utoronto.ca) as soon as possible.

Last Date to drop course from Academic Record and GPA is March 19, 2023.