

## Course Syllabus - CHL 5228H Y 2024-2025

### STATISTICAL METHODS FOR GENETICS & GENOMICS - RESEARCH SEMINAR AND JOURNAL CLUB

#### TIME and PLACE:

**Fall term** 10am – 12noon Friday (In Person)

**Room: TBA**

**Winter term** 10am - 12noon Friday (in Person)

**Room: TBA**

Seminar: 1 hour; Small Group Discussion: 1 hour.

<http://www.dlsph.utoronto.ca/students/current-students/timetables/>

<https://www.dlsph.utoronto.ca/course/statistical-methods-for-genetics-genomics-research-seminar-and-journal-club/>

#### Co-INSTRUCTORS:

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**Acknowledgement of Territory:** *“We 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.”*

#### A. COURSE DESCRIPTION

##### Goals and Objectives:

- To understand current developments in statistical genetic/genomic methods and current analytic issues in genetic epidemiology.
- To become familiar with sources of methodology literature for the design and analysis of investigations in statistical genetics, statistical genomics, and genetic epidemiology.
- To develop critical evaluation skills for underlying theory and/or applications of current study designs and statistical analysis methods.
- To develop skills in communication and presentation in an inter-disciplinary setting.

**Audience:** Senior Graduate students in Biostatistics, Epidemiology or Statistics

**Pre-requisites:** Biostatistics/Statistics coursework at the graduate level  
and instructor permission

**Pre/Co-requisite:** STA480/2080 or equivalent (with permission of the course instructors)

**For graduate students/post-doctoral fellows interested in registering in the course for credit/audit, please send an email to both co-instructors and include a brief description of your program, background and pre/co-requisite status, and purpose in registering in the course.**

##### Special features about course delivery:

One hour **Research Seminar/Journal Club** session, held 2-3 times per month, September through April with faculty participation.

Topics from previous years: <https://stage.utoronto.ca/smagg/>

Seminar sessions will be followed by one hour small-group discussion for registered students and other participants, with faculty discussion leaders

Co-ordinated with the monthly **International Speaker Seminar Series** (ISSS) organized as part of the STAGE Training Program in Advanced Genetic Epidemiology.

<https://canssiontario.utoronto.ca/events/stage-iss/>

ISSS held Friday at 12 noon usually followed by Informal post seminar Q&A with guest speaker. There will be opportunities for a guest speaker-trainee group meeting.

**Group size for discussion:** 5-10 trainees (PhD students, post-doctoral fellows).

**Faculty Discussion leaders:**

Shelley Bull, Dalla Lana School of Public Health & Lunenfeld-Tanenbaum Research Institute

Andrew Paterson, Dalla Lana School of Public Health & SickKids Research Institute

**Academic deadlines:**

Deadline for scheduling student presentations: 4 November 2024.

Deadline to submit a one page paper outline: no later than 7 February 2025.

Due date for the Final paper: 4 April 2025.

**B. ASSIGNMENTS AND EVALUATION**

Students are expected to:

- (1) Participate in Friday journal club sessions & seminars, including CANSSI STAGE ISSS
- (2) Present in one journal club session, and
- (3) Submit a short paper.

*Pass/Fail* according to

Participation in Seminars and Discussion Groups (Fall 2024 & Winter 2025)

Presentation (Late Fall term 2024 or early Winter term 2025)

Final paper (end of the Winter term 2025)

*A pass is required in all three components*

**Some guidelines for the paper**

Set up a meeting with course faculty to help formulate the research question that you want to consider in the paper, and discuss how to address it. This is required to be new work.

Submit a one page outline no later than 7 February 2025.

Final paper is due 4 April 2025.

Formatting and Length:

Any standard journal style is acceptable, see for example guidelines for authors in *Genetic Epidemiology*, *Statistics in Medicine*, *Amer J of Human Genetics*.

Please submit with 12 pt font, and 1.5 line spacing.

Length of 10-15 (max) manuscript pages, excluding references, tables and figures.

**C. POLICY STATEMENTS**

1. **Respect for classmates:** The University of Toronto is committed to equity, human rights, and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

2. **Academic Integrity:** Students must adhere to the [Code of Behaviour on Academic Matters](#). It is your responsibility to know what constitutes appropriate academic behaviour. You are responsible for ensuring that you do not act in such a way that would constitute cheating, misrepresentation, or unfairness, including but not limited to, using unauthorized aids and assistance, personating another person, and committing plagiarism. For more information see [U of T Academic Integrity](#) website. Academic integrity includes understanding appropriate research and citation methods. If you are uncertain about this, please seek out additional information from the instructors or from other institutional resources including the following:
- This tip sheet provides clear and helpful information about appropriate academic citation: <http://guides.library.utoronto.ca/citing>
  - This site offers a series of scenarios to help students understand how to prevent themselves from being subject to academic offence allegations <https://www.utm.utoronto.ca/academic-integrity/students/scenarios>
  - Before handing in assignments students can also review this [academic integrity checklist](#) provided by the UofT Centre of Teaching Support & Innovation:
    - I have acknowledged the use of another's ideas with accurate citations.
    - If I used the words of another (e.g., author, instructor, information source), I have acknowledged this with quotation marks (or appropriate indentation) and proper citation.
    - When paraphrasing the work of others, I put the idea into my own words and did not just change a few words or rearrange the sentence structure
    - I have checked my work against my notes to be sure I have correctly referenced all direct quotes or borrowed ideas.
    - My references include only the sources used to complete this assignment.
    - This is the first time I have submitted this assignment (in whole or in part) for credit.
    - Any proofreading by another was limited to indicating areas of concern which I then corrected myself.
    - This is the final version of my assignment and not a draft.
    - I have kept my work to myself and did not share answers/content with others, unless otherwise directed by my instructor.
    - I understand the consequences of violating the University's Academic Integrity policies as outlined in the [Code of Behaviour on Academic Matters](#).
3. **Statement re use of generative AI tools:** Students may use artificial intelligence tools, including generative AI, in this course as learning aids or to help produce assignments. However, students are ultimately accountable for the work they submit. Students must submit, as an appendix with their assignments, any content produced by an artificial intelligence tool, and the prompt used to generate the content. Any content produced by an artificial intelligence tool must be cited appropriately. Many organizations that publish standard citation formats are now providing information on citing generative AI (e.g., MLA: <https://style.mla.org/citing-generative-ai/> ). Students may choose to use generative artificial intelligence tools as they work through the assignments in this course; this use must be documented in an appendix for each assignment. The documentation should include what tool(s) were used, how they were used, and how the results from the AI were incorporated into the submitted work.

July 2024: The School of Graduate Studies (SGS) provides [Guidance on the Appropriate Use of Generative Artificial Intelligence in Graduate Theses](#) which will be of interest to graduate students, supervisors, supervisory committee members, Graduate Chairs and Graduate Units. Example of guidance from peer-review journal: <https://jamanetwork.com/journals/jama/fullarticle/2807956>

4. **Accessibility:** Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration that may require accommodations, please feel free to approach me/us and/or the Accessibility Services Office as soon as possible. The Accessibility Services staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let them and me know your needs, the quicker we can assist you in achieving your learning goals in this course. For more information, or to register with Accessibility Services, please visit: <http://studentlife.utoronto.ca/as>.

#### D. Other Resources and Supports for DSLPH Graduate Students

Resource	Summary Description
<a href="#">The Office of Graduate Affairs</a>	Provides a variety of services, including academic, program and personal advising. DSLPH students that require any assistance or information regarding coursework extension, program requirements, etc..
<a href="#">Graduate Department of Public Health Sciences Student (GDPHS) Handbook</a>	This resource provides comprehensive information on getting started, enrolment, policies and procedures, financial matters, awards and funding opportunities, student services and more.
<a href="#">DLSPH Student Resources</a>	This resource site includes information for incoming students, the GDPHS Student Handbook, program requirements, policies and forms, online learning resources, timetables, course database, information for international students, professional opportunities, mentorship program, health & well-being, public health students' association, and PhD Final Oral Exams.
U of T <a href="#">Graduate Student Union</a>	The UTGSU is a voice for over 18 500 students as well as a platform for community building and services. UTGSU supports and advocates on behalf of graduate students.
<a href="#">Health Sciences Writing Centre</a> (for DLSPH PhD students)	<p>The Health Sciences Writing Centre provides free individualized, confidential writing instruction to:</p> <ul style="list-style-type: none"> <li>• Develop your writing skills</li> <li>• Improve your capacity to plan, organize, write, and revise academic papers (in any subject!)</li> <li>• Manage ESL/EFL language challenges</li> </ul> <p>The Centre works with all students, for all assignments, at all stages of the writing process. Visit the website to book an appointment or for more information.</p>
<a href="#">UofT Academic Success Centre</a>	Offers group workshops and individual counselling to develop strategies for a range of learning challenges such as time management, stress and anxiety, memory, exams, note taking, textbook reading, concentration.
<a href="#">UofT Career Services</a>	Provides opportunities to meet employers, industry experts and alumni; strategies to Identify goals and navigate career decisions; and resources: Improve your resume, interviews, and online presence.

## E. SEMINAR SCHEDULE (subject to revision)

For questions and additional information for graduate students interested in registering in the course for credit/audit, Please email Professor Shelley Bull (bull@lunenfeld.ca)

\* September 18 – Last date to add a course \*

**September 20** 10 am – Meeting of Graduate Students/Post-doctoral Trainees  
(In person **Room** TBA / Zoom)

**September 27** 10 am – **Organizational Meeting re topics & themes for the Seminar/Journal Club this academic year**  
(In person **Room** TBA / Zoom)

**October 4** 12 noon – **CANSSI STAGE International Speaker Seminar**  
Speaker: **Genevieve Wojcik**, Johns Hopkins Bloomberg School of Public Health  
Assistant Professor of Epidemiology

### Global Diversity, Local Contexts: An Epidemiological Lens to Modeling Ancestry and Environment for Genetic Risk

<https://canssiontario.utoronto.ca/event/stage-iss-genevieve-wojcik/>

\*\* this seminar will be live-stream at 700 University Ave \*\*

**October 11** 10 am – **Seminar/Journal Club** – TBA

**October 18** No Seminar – Reading Week

**October 25** 10 am – **Seminar/Journal Club** – Michael Wainberg, LTRI

**November 1** 10am – **Seminar/Journal Club** - TBA

\* November 4 - Deadline to schedule course presentation in Fall or Winter term \*

**November 8** No Seminar \*\*IGES November 3-5, ASHG November 5-9 \*\*

**November 15** 12 noon – **CANSSI STAGE International Speaker Seminar**

Speaker: **Elizabeth Atkinson**, Baylor College of Medicine  
Assistant Professor, Molecular and Human Genetics

### Empowering Gene Discovery and Accelerating Clinical Translation for Diverse Admixed Populations

<https://canssiontario.utoronto.ca/event/iss-elizabeth-atkinson/>

**November 22** 10 am – **Seminar** – Highlights from IGES/ASHG

**November 29** 10 am – **Seminar/Journal Club** - TBA

**December 6** 12 noon – **CANSSI STAGE International Speaker Seminar** - TBA

\* last week of classes December 2 – 6 \*

**December 13** 10 am – **Seminar/Journal Club** – TBA

\* exam week December 9 – 13 \*

\*\*\*\*\* 2024 \*\*\*\*\* (subject to revision)

\* First week of classes January 5 -10

**January 10** 12 noon – **CANSSI STAGE International Speaker Seminar**  
Speaker: **Josée Dupuis**, McGill University  
Professor and Chair, Epidemiology, Biostatistics & Occupational Health  
<https://canssionario.utoronto.ca/event/iss-josee-dupuis/>

**January 17** 10 am – **Seminar/Journal Club** – TBA  
**January 24** 10 am – **Seminar/Journal Club** – TBA  
**January 31** 10 am – **Seminar/Journal Club** – TBA

**February 7** 12 noon – **CANSSI STAGE International Speaker Seminar**  
Speaker: **Jonathan Marchini**, Regeneron Genetics Center  
Head, Statistical Genomics and Machine Learning

## Statistical Methods for Large Scale Genetic Association Studies

<https://canssionario.utoronto.ca/event/iss-jonathan-marchini/>

\* February 7 – Deadline to submit paper outline \*

**February 14** 10 am – **Seminar/Journal Club** – TBA  
**February 21** *No seminar* – Winter Break (Reading) Week  
**February 28** 10 am – **Seminar/Journal Club** – TBA

\* February 28 - Final date to drop full-year course in ACORN \*

**March 7** 12 noon – **CANSSI STAGE International Speaker Seminar** - TBA  
<https://canssionario.utoronto.ca/events/stage-iss/>

**March 14** 10 am – **Seminar/Journal Club** - TBA  
**March 21** 10 am – **Seminar/Journal Club** - TBA  
**March 28** 10 am – **Seminar/Journal Club** - TBA

**April 4** 12 noon – **CANSSI STAGE International Speaker Seminar** - TBA  
<https://canssionario.utoronto.ca/events/stage-iss/>

\*\* Last week of classes – March 31- April 4 \*\*

\*\* April 4 - Due date for final student papers \*\*