

Department of Epidemiology & Biostatistics**Epidemiology 9590S (First Quarter, Winter Term, 2020)**

Measurement in Epidemiology

Class Meeting Time: Fridays from 9:00 A.M. to 12:00 P.M. (Jan. 10 through Feb. 14)

Location: Kresge Building, Room KB116

Instructor: Marnin J. Heisel, Ph.D., C.Psych.
E-Mail: Marnin.Heisel@lhsc.on.ca
Phone: 519-685-8500, Extension 75981

Office: LHSC-Victoria Hospital (800 Commissioners Rd. E.), #A2-515

Office Hours: As his office is located off-campus, Dr. Heisel will be available to meet on-campus after class or by appointment. You may also reach him by phone during business hours, or by e-mail.

Course Information

Pre-requisites: Epidemiology 9551A & one of Biostatistics 9509A or Biostatistics 9510A

Course Weight: 0.25 Credits

Please ensure that you have the necessary course pre-requisites before signing-up to take this course.

Course Overview

This course focuses on issues relevant to testing and measurement of research instruments, including the development, administration, scoring, and interpretation of standardized measures used in epidemiological research.

Topics to be covered will include: how to select a scale for use in research and evaluation; when to adopt or modify an existing scale and when (and how) to develop a new one; how to interpret a scale's results; assessment of a scale's reliability, validity, and factor structure.

Course Overview (cont.)

Whereas the statistical underpinnings of approaches to testing and measurement will be reviewed more fully in weekly readings, the weekly lectures will focus largely on the pragmatic use of statistics when selecting, evaluating, and interpreting the findings of ratings scales in research and evaluation.

Classes will follow an interactive format, and will consist primarily of presentations, guest lectures, group discussions, class assignments, and in-class work. Frequent attendance of lectures is crucial to gaining an understanding and appreciation of the course material. You are strongly encouraged to participate actively in class discussions, and to come to class prepared to discuss course readings, and to ask frequent questions regarding areas of concern, difficulty, or interest.

Course Goals:

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

- Demonstrate a working understanding of issues relevant to testing and measurement;
- Identify considerations and procedures inherent in selecting a test or rating scale;
- Discuss challenges and processes involved in constructing a new test or rating scale;
- Describe the concept and impact of error in testing and measurement;
- Demonstrate a working knowledge of the concepts of reliability, validity, and standardization.

A key goal of this course is for students to develop a greater comfort and familiarity with issues relevant to testing and measurement in research and a greater sensitivity to the appropriate and ethical usage of testing measures and communication of their results.

Lecture Dates and Topics

Week	Dates	Topic	Presenter
1	Jan. 10, 2020	<ul style="list-style-type: none"> • Course Overview and Review of Syllabus • Introduction to Testing & Measurement in Epidemiology 	Marnin Heisel
2	Jan. 17	<ul style="list-style-type: none"> • Ethical Principles in Testing and Measurement • Constructing Scales: The Wondrous Journey from Item Development to Assessment of Norms 	Marnin Heisel
3	Jan. 24	<ul style="list-style-type: none"> • The Ins-and-Outs of Reliability and Validity • A Brief Introduction to Factor Analysis 	Marnin Heisel
4	Jan. 31	<ul style="list-style-type: none"> • Student Presentations 	Students
5	Feb. 7	<ul style="list-style-type: none"> • Guest Lecture: An Introduction to Item-Response Theory (IRT) 	Professor Emeritus David L. Streiner*
6	Feb. 14	<ul style="list-style-type: none"> • Final Test 	All

* Note: Dr. Streiner is the author of the course textbook

Course Materials

Streiner, D.L., Norman, G.R., & Cairney, J. (2015). Health measurement scales: A practical guide to their development and use (5th edition). Oxford University Press.

In addition to weekly readings from the textbook, you may be assigned weekly readings to augment that week's lectures and/or in-class presentations. Lecture slides, assignments, and other relevant information will be posted on the course OWL page.

Methods of Evaluation

Class Participation	20%
Presentation (with handout; Jan. 31)	25%
Assignment (due Feb. 7)	25%
Final Test (Feb. 14)	30%

Class Participation: Class participation marks will be based upon your class attendance, preparation for class, participation in discussions, and in-class work. This mark will be determined by the instructor with input from you regarding your own participation mark. You will be given a weekly class evaluation form to complete, identifying a few key points that you learned/thought about in class, potential relevance of the topic to your research, and any feedback that you might have.

Presentation: You will be required to give an individual presentation on a published test or rating scale of your choosing. You will select a test or scale to review (ideally relevant to your interests and/or thesis research, and that is not covered in the course lectures) and present on its background, purpose, the reason for its development, and basic information on the test/measure itself, its format, length, number of items (and factors, if relevant), response options, method of administration, requisite administrator training/background, norms, population(s) of relevance, response characteristics, reliability, validity, and recommendations regarding its use in research and/or other purposes. This sounds like a lot, but is pretty straightforward, and constitutes the typical information found in a test's user guide or scale development article. A brief class handout will be required (up to 1 page in length), highlighting the features of the test in bullet-point form. Presentations will take place in-class on **Jan. 31st** and will be graded by the instructor.

Assignment: You will additionally be required to hand-in a brief (i.e., 1000-2000 word) overview of the test/scale that you presented in your in-class presentation. In addition to the information you will present in-class, you will be expected to provide a brief review of the literature (with reference list) regarding the test/scale, including its development, validation, and a few key findings. The assignment is due no later than **Feb. 7th**, and will be graded by the instructor.

A Final Test will be held in class (on **Feb. 14th**), and will focus on conceptual and practical aspects of testing and measurement. Questions may include fill-in-the-blank items, multiple choice items, true/false items, matching items, short answer, and a longer/essay-style question. The test will be graded by the instructor.

Course evaluation will be numeric in format (i.e., you will end up with a total score out of 100%).

Missed Work

If you do not complete in-class work or do not complete your presentation, assignment, or test (without providing the instructor with notice and coming to an agreement regarding late-submission or alternative accommodation), you will receive a 0% for the missed work. Consideration on compassionate grounds may be given by the instructor on a case-by-case basis.

Marking Reassessments

Should you have concerns about a mark you have received on an assignment or test, you are welcome to request a reassessment from the instructor. In order to request a reassessment, please write one paragraph explaining why you believe you deserve a different mark from the one that you received.

This will be reviewed by the instructor together with your original work, and may or may not lead to a revision in your mark.

Policy on Accommodation for Medical and Non-Medical Absences

All non-medical absences must be approved in advance. In the case of an unexpected absence on compassionate grounds, documentation may be requested. If documentation is required for either medical or non-medical academic accommodation, then such documentation must be submitted by the student to the instructor.

Statement on Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Student Accessibility Services

Western is committed to achieving barrier-free accessibility for all its members, including graduate students. As part of this commitment, Western provides a variety of services devoted to promoting, advocating, and accommodating persons with disabilities in their respective graduate program.

Graduate students with disabilities (for example, chronic illnesses, mental health conditions, mobility impairments) are encouraged to register with Student Accessibility Services, a confidential service designed to support graduate and undergraduate students through their academic program. With the appropriate documentation, the student will work with both SAS and their graduate programs (normally their Graduate Chair and/or Course instructor) to ensure that appropriate academic accommodations to program requirements are arranged. These accommodations include individual counselling, alternative formatted literature, accessible campus transportation, learning strategy instruction, writing exams and assistive technology instruction.

Support Services

As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus

Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca/>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (e.g., graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html.

Department & Faculty Offices

The Epidemiology & Biostatistics main office is located in K201 in the Kresge Building on Main campus.

Technology Requirements

Students are responsible for all materials and announcements posted to the course OWL website. Please ensure after the first class that when you log in you are able to access the course site. A copy of the course outline will be available on both OWL and the departmental website.

Cell Phone and Electronic Device Policy

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School and the Department of Epidemiology and Biostatistics that any electronic devices, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket.

Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The Department of Epidemiology and Biostatistics is not responsible for stolen/lost or broken devices.