PSYC*3250, Course Outline: Fall 2020

General Information

Due to the COVID-19 pandemic, this course is offered in an alternative format: Alternative Delivery Synchronous (AD-S) with specific days and times for virtual class lecture.

Course Title: Psychological Measurement

Course Description:
This course is an introduction to the theory of psychological measurement and measurement procedures presently used in psychology. Coverage will include such topics as reliability, validity, factor analysis and test construction, and the measurement of ability, personality, and achievement. You will learn not only how to evaluate psychological tests and measures, but also construct and refine your own. This knowledge is essential for both future practitioners and researchers in the area of psychology.

Credit Weight: 0.50

Academic Department (or campus): Psychology

Semester Offering: F20

Class Schedule and Location: MWF 3:30AM-4:20AM AD-S Virtual Classroom via Courselink

Instructor Information

Instructor Name: Jeffrey Spence
Instructor Email: spencejr@uoguelph.ca
Office location and office hours: Friday 4:30PM-5:30PM will be hosted in Virtual Classroom via Couselink. You may also try and schedule an alternate time.

GTA Information

GTA Name: Brooke Charbonneau
Email: charbonb@uoguelph.ca
Office Hours: TBA

GTA Name: Diogo Borba
Email: dborba@uoguelph.ca
Office Hours: TBA

Course Content

Specific Learning Outcomes:

2 Literacy, Facet 2. Methodological Literacy: The ability to understand, evaluate, and design appropriate methodologies for rigorous psychological science

2 Literacy, Facet 3. Quantitative Literacy: Includes numeracy, and competence in working with numerical data

2 Literacy, Facet 4 Technological Literacy: The ability to select and use appropriate technology

2 Literacy, Facet 5 Visual Literacy: The ability to effectively find, interpret, evaluate, use, and create images and visual media and content (graphs, tables, figures).

4 Communicating, Facet 2 Written Communication: The ability to express one's ideas and summarize data and results through writing responses to assignment questions.

Lecture Content:

Lectures can be accessed through the Virtual Classroom tab in the course's courselink page.

Below, is a an overview of the main topics that will be covered in lectures.

1. Introduction to psychometrics
2. Scaling
3. Variance, covariance, correlations
4. Interpreting test scores
5. Classical test theory and reliability
6. Reliability estimates
7. Reliability in practice
8. Factor analysis
9. Validity concepts
10. Validity estimates
11. Scale creation

Course Assignments and Tests:

In terms of tests, exams, and assignments you are responsible for all material presented in lectures, the textbook and other readings.

It is important to view lectures to ensure you receive announcements (relevant to grading and other course aspects) as well, material that is not covered in the textbook.

1. Quizzes (40%, students' final grade will be based on 10 of 12 weekly quizzes; each quiz is worth 4% of final grade)

Starting on Friday September 18th there will be weekly online quizzes. Quizzes will be available through Courselink's Quizzes tab.

Quizzes will be based on lecture content and assigned readings. Quizzes will be available to complete on Fridays. Students will have 1 week to complete each quiz once the quiz is made available. 12 quizzes will be offered and students final grade will be based off of 10 quizzes. As a result, students can choose not to complete 2 quizzes without any penalty.

Students will get two attempts for each quiz and will have 3 hours to complete each quiz once it is open.

2. Monthly Assignments (60%)

There will be three assignments throughout the term. Roughly one assignment per month. Assignments are intended to give students hands-on experience with the content and the opportunity to think critically about the material.

First Assignment (20%): Construct definition, scale creation, introduction to R with basic analyses (variance, covariance, correlation).

Second Assignment (20%): Psychometric analyses and interpreting test scores

Third Assignment (20%): Factor analyses, Validity, interpreting test scores

Assignment need to be submitted electronically, via Courselink "Dropbox" tab.

Summary Table With Due Dates On Next Page

Schedule of Content and Due dates - (The content and assigned readings may be subject to change. Students will be notified of changes in lectures and on courselink)

Week	Date	Lecture	Reading	Due / Comments
1	Sept. 11	Introduction to course	Course outline	
2	Sept. 14	Introduction to psychometrics	**Chapter 1: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement**	

Week	Date	Lecture	Reading	Due / Comments
			Sections to read: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement Measurement in the Physical Sciences, Measurement in the Social Sciences	
2	Sept. 16	Latent models and construct definitions	**Chapter 1: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement** Sections to read: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement Measurement in the Physical Sciences, Measurement in the Social Sciences	
2	Sept. 18	Assignment 1 overview and review		Quiz #1 available
3	Sept. 21	Scaling	**Chapter 1: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement** Sections to read: Scales of measurement	
3	Sept. 23	Scaling and item creation	Chapter 2: Designing and Writing Items Sections to read: Designing and writing items Empirical, Theoretical, and Rational Approaches to Item Construction	

Week	Date	Lecture	Reading	Due / Comments
			Literature search Subject matter experts Writing Items: Guiding Rules How many items	
3	Sept. 25	Assignment 1 Question and answer Intro to R and R studio: How to download and open		Quiz #1 due Quiz #2 available
4	Sept. 28	Variance, covariance, correlations	**Chapter 1: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement** Sections to read: The normal distribution Correlation	
4	Sept. 30	Variance, covariance, correlations in R		
4	Oct. 2	Content catch up; Assignment 1 Q and A		Quiz #2 due Quiz #3 available
5	Oct. 5	History of measurement	**Chapter 1: The Assessment of Individuals: The Critical Role and Fundamentals of Measurement** Sections to read: Historical Highlights of Measurement	
5	Oct. 7	Classical Test Theory	**Chapter 5: Classical Test Theory: Assumptions, Equations, Limitations, and Item Analysis**	

Week	Date	Lecture	Reading	Due / Comments
			Sections to read: Read all section except: Ramifications and Limitations of Classical Test Theory Assumptions	
5	Oct. 9			Assignment 1 Due Quiz #3 due Quiz #4 available
6	Oct. 12	Holiday (no class scheduled)	Holiday (no class scheduled)	Holiday (no class scheduled)
6	Oct. 14	Classical Test Theory Assumption violations	**Chapter 5: Classical Test Theory: Assumptions, Equations, Limitations, and Item Analysis** Sections to read: Read all section except: Ramifications and Limitations of Classical Test Theory Assumptions **Chapter 9: Assessing Validity Using Content and Criterion Methods** Section to read: Upper Bounds of Validity and Correction for Unreliability	Assignment 2 available
6	Oct. 16	Introduction to Reliability/ Estimating reliability	**Chapter 7: Reliability of Test Scores and Test Items** Sections to read: Read all section except: Coefficient Theta section	Quiz #4 due Quiz #5 available
7	Oct. 19	Estimating Reliability II	**Chapter 7: Reliability of Test Scores and Test Items**	

Week	Date	Lecture	Reading	Due / Comments
			Sections to read: Read all section except: Coefficient Theta section	
7	Oct. 21	Item Analysis Item Analysis and Reliability in R	**Chapter 5: Classical Test Theory: Assumptions, Equations, Limitations, and Item Analysis** Section to read: Item Analysis within Classical Test Theory: Approaches, Statistical Analyses, and Interpretation	
7	Oct. 23	R Help and Item Analysis and Reliability in R review		Quiz #5 due Quiz #6 available
8	Oct. 26	Interpreting Test scores		
8	Oct. 28	Interpreting Test scores and Reliability	**Chapter 7: Reliability of Test Scores and Test Items** Section to read: Setting confidence intervals	
8	Oct. 30	Assignment 2 Q and A		Quiz #6 due Quiz #7 available
9	Nov. 2	Validity Conceptual	**Chapter 9: Assessing Validity Using Content and Criterion Methods** Sections to read: Asking test takers Asking subject matter experts	Assignment 3 available

Week	Date	Lecture	Reading	Due / Comments
			Assessments using correlation and regression (feel free to ignore technical regression results in this section) Convergent/Divergent Assessment Validity Generalization Meta-analysis	
9	Nov. 4	Estimating Validity	**Chapter 9: Assessing Validity Using Content and Criterion Methods** Sections to read: Asking test takers Asking subject matter experts Assessments using correlation and regression (feel free to ignore technical regression results in this section) Convergent/Divergent Assessment Validity Generalization Meta-analysis	
9	Nov. 6	Assignment 3 Q & A		Assignment 2 due Quiz #7 due Quiz #8 available
10	Nov. 9	Dichotomous decisions		
10	Nov. 11	Dichotomous decisions		
10	Nov. 13	Assignment 3 Q and A		Quiz #8 due Quiz #9 available
11	Nov. 16	Factor analysis	**Chapter 10: Assessing Validity Via Item Internal Structure** Sections to read:	

Week	Date	Lecture	Reading	Due / Comments
			All section except “Common Factor Analysis Using Analysis of Covariance Structures”	
11	Nov. 18	Factor analysis	**Chapter 10: Assessing Validity Via Item Internal Structure** Sections to read: All section except “Common Factor Analysis Using Analysis of Covariance Structures”	
11	Nov. 20	Assignment 3 Q and A		Quiz #9 due Quiz #10 available
12	Nov 23	Factor Analysis in R	**Chapter 10: Assessing Validity Via Item Internal Structure** Sections to read: All section except “Common Factor Analysis Using Analysis of Covariance Structures”	
12	Nov. 25	Factor Analysis in R	**Chapter 10: Assessing Validity Via Item Internal Structure** Sections to read: All section except “Common Factor Analysis Using Analysis of Covariance Structures”	
12	Nov. 27	Factor Analysis in R Assignment 3 Q and A		Quiz #10 due Quiz 11 available
13	Nov 30	Item Response Theory	**Chapter 6: Modern Test Theory: Assumptions, Equations, Limitations, and Item Analysis** Sections to read:	

Week	Date	Lecture	Reading	Due / Comments
			Modern test theory: Assumptions, equations, limitations, and item analyses Modern test theory Models: One-parameter logistic model Models: Two-parameter logistic model	
13	Dec. 2	Item response Theory	**Chapter 6: Modern Test Theory: Assumptions, Equations, Limitations, and Item Analysis** Sections to read: Modern test theory: Assumptions, equations, limitations, and item analyses Modern test theory Models: One-parameter logistic model Models: Two-parameter logistic model	
13	Dec. 4	Assignment 3 Q and A		Quiz 11 due Quiz 12 available (due Dec 11) Assignment 3 due

Grade Summary

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Quizzes	**Weekly**	**40**	**2 Literacy, Facet 2, 3, 4, 5**
Assignment 1	**Oct 9 (midnight)**	**20**	**2 Literacy, Facet 2, 3, 4, 5; 4 Communicating, Facet 2**
Assignment 2	**Nov 6 (midnight)**	**20**	**2 Literacy, Facet 2, 3, 4, 5; 4 Communicating, Facet 2**
Assignment 3	**Dec 4 (midnight)**	**20**	**2 Literacy, Facet 2, 3, 4, 5; 4 Communicating, Facet 2**

Course Resources

Required Texts:

Kline, T. J. B. (2005). *Psychological Testing: A practical approach to design and evaluation.* Thousand Oaks, CA: Sage Publications Inc.

This textbook is available electronically via Omni through U of G library.

Required Software:
Students will also need to download R and R studio (this software is freely available and can be used on mac, PC, and in a cloud based format).

Course Policies

Grading Policies

Students only need to complete 10 out of 12 quizzes. If students complete more than 10 quizzes, the 10 quizzes with the highest grades will be used.

Assignment 1, 2, and 3 need to be submitted via Dropbox on Courselink before the due date and time. Late assignments will be accepted, but will receive a 5% penalty each day it is late. Requests of changes to the above policy will be considered only in exceptional circumstances.

Undergraduate Grading Procedures

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted, they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor. Similarly, any material created by the course instructor is intended for those enrolled in this course solely. Under no circumstances are you allowed to disseminate course materials to external parties.

Re-Grading of Assignments Policy

Where a student is of the belief that an assignment has not been accurately graded, they are to pursue a 2-step course policy: 1) as soon as possible, meet with the original TA that graded the assignment, and if a student remains dis-satisfied, 2) they can request from the instructor that another TA re-grade the assignment. Note that the student will be required to accept the re-grade, whether it be higher or lower.

Recording of Lecture Materials

The University of Guelph's primary mode of course delivery has shifted from face-to-face instruction to remote and online learning due to the ongoing COVID-19 pandemic. As a result, some learning activities (e.g., synchronous lectures or student presentations) may be recorded by faculty, instructors and TAs and posted to CourseLink for grading and dissemination; students may be recorded during these sessions.
The following statements may be added to the course outline and it is recommended these are discussed in any synchronous courses during the first week of classes.

By enrolling in a course, unless explicitly stated and brought forward to their instructor, it is assumed that students agree to the possibility of being recorded during lecture, seminar or other "live" course activities, whether delivery is in-class or online/remote.

If a student prefers not to be distinguishable during a recording, they may:

1. turn off their camera
2. mute their microphone
3. edit their name (e.g., initials only) upon entry to each session
4. use the chat function to pose questions.

Students who express to their instructor that they, or a reference to their name or person, do not wish to be recorded may discuss possible alternatives or accommodations with their instructor.

Student Rights and Responsibilities when Learning Online

Privacy Rights
Lectures held via Virtual Classroom may be recorded for the purpose of posting them for students. As a student, you have the right to protect your privacy online and may choose to turn off your video and/or audio when in session. In the event that your video and/or audio remain on, please note that you are consenting to your presence in lecture recordings. Under no circumstances are you permitted to transmit copies of the recordings to others, without the express written consent of the instructor.

Online behaviour
According to the University Secretariat, students have a responsibility to help support community members' access to the tools they need to engage in their learning and development, both in and outside of the classroom. An example of this type of responsibility is the requirement to abide by the following:

Section 4.3.3. Disruption - to not interfere with the normal functioning of the University, nor to intimidate, interfere with, threaten or otherwise obstruct any activity organized by the University, including classes, or to hinder other members of the University community from being able to carry on their legitimate activities, including their ability to speak or associate with others.

As such, appropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your username and password

University Policies

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website and circulated by email.

Illness

The University will not normally require verification of illness (doctor's notes) for fall 2020 or winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration:
Academic Consideration, Appeals and Petitions

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the

responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
Academic Misconduct Policy

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 54335 or email accessibility@uoguelph.ca or the Student Accessibility Services Website

Course Evaluation Information

Please refer to the Course and Instructor Evaluation Website **.**

Drop date

The last date to drop one-semester courses, without academic penalty, is December 4, 2020. For regulations and procedures for Dropping Courses, see the Schedule of Dates in the Academic Calendar.
Current Undergraduate Calendar

Additional Course Information

Course instructors are allowed to use software to help in detecting plagiarism or unauthorized copying of student assignments. Plagiarism is one of the most common types of academic misconduct on our campus. Plagiarism involves students using the work, ideas and/or the exact wording of other people or sources without giving proper credit to others for the work, ideas and/or words in their papers. Students can unintentionally commit misconduct because they do not know how to reference outside sources properly or because they don't check their work carefully enough before handing it in. Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.