PSYC*3250, Course Outline: Winter 2019

General Information

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: F19

Class Schedule and Location: MWF 3:30AM-4:20AM MACN 113

Instructor Information

Instructor Name: Jeffrey Spence
Instructor Email: spencejr@uoguelph.ca
Office location and office hours: Tuesday 9:30-10:30 4006 Mackinnon Extension

GTA Information

GTA Name: Brooke Charbonneau
Email: charbonb@uoguelph.ca

GTA Name: Parco Sin
Email: psin@uoguelph.ca

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.

4 Communicating, Facet 2 Written Communication: The ability to express one's ideas and summarize theory and research through a variety of writing styles (e.g., American Psychological Association [APA] style, term papers, posters

Lecture Content:

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
12. Open science

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 attend lecture to ensure you receive announcements (relevant to grading and other course aspects) that may only be made in lecture. As well, not all of the lecture material is covered in the textbook.

1. Exams (20% Midterm I, 20% Midterm II, 20% Final Exam)

Students will be required to write two in-class midterm exams, and one 2-hour final exam. Midterm and final exam questions may include multiple choice, short answer, and/or problem-solving.

2. Measure Development Project

A major component of the course involves creating your own psychological measure. The purpose of this project is to give you hands-on experience creating a psychological questionnaire, analyzing psychometric data, and writing up psychometric findings. You will work in groups of 2-4 people to create a questionnaire designed to measure a psychological construct of your choice. Data will be collected during class time with PSYC 3250 students acting as research participants. The final write-up is an individual assignment. The requirements and grading breakdown are outlined below.

Your scales must NOT (a) involve any personal, sensitive or incriminating topics or questions that could place participants at risk, (b) manipulate behavior of participants beyond the range of "normal" classroom activity or daily life, (c) involve any physically invasive contact with the research participants, or (d) involve deception. Violation of this requirement will result in a grade of zero for the whole project.

Construct Definition and Scale items (5%). You are required to submit the scale that your group creates with a brief summary of the construct definition, domain specification, and justification. Stage 1: Hand in your construct definition, justification, and your items. Construct definitions/items/justification should be completed and submitted as a group (one paper per group). This will be graded for completeness, appropriateness, and quality. Late submissions will receive a grade of zero. Stage 2: Students will receive feedback from TA/Instructor to revise definitions/items. Stage 3: Hand in final items, properly formatted for data collection, that will be used for data collection. All items will be assembled into a booklet with one informed consent form.

Data Collection (2%). Data collection is essential to ensuring you have data to analyze for your final project. Data collection is anonymous and voluntary but strongly encouraged so that groups will have data to analyze. There is no penalty for not participating in data collection. If you do not want to participate in data collection, but would still like to receive 2%, you must complete a summary of a peer reviewed article approved by course instructor.

Final Measure Development Report (30%). You will **individually** write a scale-development style manuscript based on the scale you created and data you collected in class. This manuscript will include an introduction, methods, and results/discussion section. You will conduct a literature review outlining the importance, significance, and theoretical relevance of your psychological measure. Students will also conduct psychometric analysis on data collected from the class and present these results. Further details on the exact format of this paper will

be provided in a separate handout. Although data is collected as a group, **reports must be written individually**.

3. Open Science Assignment (3%)

This purpose of this assignment is to introduce students to open science practices. Each student will create an open science account (OSF.io) where they will post their data and analysis scripts for their final measurement development report. Students will be graded on their ability to follow OSF instructions and create a working open science repository. Additionally, students will be graded on the clarity and completeness of the files that have been posted. Datafiles need to be in a readily analyzable format (e.g., items as columns, participants as rows) and analysis scripts need to be appropriately documented so a third party can understand what is presented and should only contain the analyses that were used in the file version of their paper (i.e., there should not additional analyses or irrelevant scripts).

To submit the assignment students will need to create a (private) link **Summary Table With Due Dates On Next Page**

Schedule of Content and Due dates

Week	Date	Lecture	Reading	Due / Comments
Part I:		**Psychological Measurement Foundations**		
1	Sept. 6	Introduction to course		
2	Sept. 9	What is psychometrics? And, foundations	Chapter 1: Psychometrics and the importance of psychological measurement	
2	Sept. 11	Measurement Foundations	Chapter 1: Psychometrics and the importance of psychological measurement	
2	Sept. 13	Scale development project introduction; Creating a scale; what is a construct?		Time in class to form groups
3	Sept. 16	Scaling	Chapter 2: Scaling	
3	Sept. 18	Scaling	Chapter 2: Scaling	Some in class time for group administration
3	Sept. 20	Scale development project "how to"; construct definitions and item creation		Register groups
4	Sept. 23	Variance, covariance, correlations	Chapter 3: Individual differences and correlations	
4	Sept. 25	Variance, covariance, correlations	Chapter 3: Individual differences and correlations	
4	Sept. 27	Get feedback on construct selection, definition, items		
5	Sept. 30	Interpreting test scores	Chapter 3: Individual differences and correlations	
5	Oct 2	Midterm I:	Psychological Measurement Foundations	

5	Oct 4	Work on scale project, last chance for feedback before scales are due.		
Part II:		**Classical Test Theory and Reliability**		
6	Oct. 7	Classical test theory and reliability	Chapter 5: Reliability: Conceptual basis	Scales due by 4:20 pm
6	Oct. 9	Classical test theory and reliability	Chapter 5: Reliability: Conceptual basis	
6	Oct. 11	No class	No class	No class
7	Oct. 14	No class (Thanksgiving)	No class (Thanksgiving)	No class (Thanksgiving)
7	Oct. 16	Estimating reliability	Chapter 6: Empirical estimates of reliability	Scales back to students
7	Oct. 18	Revise and refine scales based on feedback/finalize scales		
8	Oct. 21	Estimating reliability	Chapter 6: Empirical estimates of reliability	Finalized scale back in for data collection due 4:20 pm
8	Oct. 23	In class data collection (2%)	In class data collection (2%)	In class data collection (2%)
8	Oct. 25	Data entry and formatting for R tutorial		
9	Oct. 28	Reliability in practice	Chapter 7: The importance of reliability	
9	Oct. 30	Reliability in practice	Chapter 7: The importance of reliability	
9	Nov. 1	Introduction to R tutorial		
10	Nov. 4	Reliability demonstration		

10	Nov. 6	Midterm II:	Classical Test Theory and Reliability	
10	Nov 8	Item analysis in R tutorial		
Part III:		**Factor Analysis and Validity**		
11	Nov 11	Factor analysis	Chapter 4: Test dimensionality and factor analysis	
11	Nov. 13	Factor analysis	Chapter 4: Test dimensionality and factor analysis	
11	Nov. 15	Open Science assignment tutorial		
12	Nov 18	Validity concepts	Chapter 8: Validity: Conceptual basis	
12	Nov. 20	Validity concepts	Chapter 8: Validity: Conceptual basis	
12	Nov. 22	R analysis help session		
13	Nov 18	Validity estimates	Chapter 9: Estimating and evaluating convergent and discriminant validity evidence	Final measure development write-up due by 4:20 pm
13	Nov. 20	Validity concepts	Chapter 9: Estimating and evaluating convergent and discriminant validity evidence	
13	Nov. 22	Open science help session		Open science assignment due by 4:20 pm

Grade Summary

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Midterm I		**20**	**2 Literacy, Facet 2, 3,**
Midterm II		**20**	**2 Literacy, Facet 2, 3**
Final exam		**20**	**2 Literacy, Facet 2, 3**
Construct Definition and scale items		**5**	**2 Literacy, Facet 2** **4 Communicating, Facet 2**
Final measurement development write-up	**Nov 25**	**30**	**2 Literacy, Facet 2, 3, 4, 5** **4 Communicating, Facet 2**
Open Science		**3**	**2 Literacy, Facet 4,5**

Final examination date and time: See WebAdvisor
Final exam weighting: 20%
Final Examination regulations are detailed at:
Examination Regulations

Course Resources

Required Texts:

Furr, M. R. (2018). *Psychometrics: An introduction (3rd edition).* Los Angeles, CA: Sage:

Course Policies

Grading Policies

Construct definitions and items (5%) must be submitted on time (both Stage 1 and Stage 3; see above). Late submission at either stage will result in a grade of zero on this component of the Measure Development Project.

The final Measurement Development Project must be submitted *in paper form* by the specified date and time. Submissions submitted latter than this will be loose 10% per day. Weekends counts as two days. Thus, the final measurement project is due at 1:00 pm on the specified day (see above). If an assignment is handed at 1:15 pm on the due day (i.e., 15 minutes late) the maximum grade is 22.5 out of 25. The late penalty would increase to 20% (i.e., 5% of the final course grade) at 1pm the following day.

The Open science assignment will be submitted online to courselink dropbox by the specified time. Late submission will receive a 10% penalty per day.

Undergraduate Grading Procedures

Course Policy on Group Work:

Measure development items/definitions will be completed in groups. Measure development reports must be written individually. Exams must be completed on an individual basis.

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.

University Policies

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 November 29, 2019. For regulations and procedures for Dropping Courses, see the Schedule of Dates in the Academic Calendar.
Current Undergraduate Calendar