University of Florida
College of Medicine
Department of Health Outcomes and Biomedical Informatics

GMS 6822: *Measuring and Analyzing Health Outcomes*
Spring 2020

Instructor: Yi Guo, PhD
              Assistant Professor
              2004 Mowry Road, Suite 2251
              (352) 294-5969
              yiguo@ufl.edu

Credits: 3 credits
Location: TBD
Time: TBD
Office hours: By appointment

Course Description
This course will introduce measurement methods currently used in population health sciences and clinical research. Students will gain basic knowledge of health outcomes measures and practical skills in selecting appropriate measures for their own research. This course covers the topics of classical test theory and modern test theory, and their applications to population health sciences and clinical research. The principles of psychometrics will be introduced, such as reliability, validity, and responsiveness. Data types corresponding to measurements will be emphasized in the context of statistical analysis. The assessment tools will be compared, especially the generic and disease-specific instruments. Clinical meanings and interpretations for measurement results will be illustrated.

Course Objectives
By the end of the semester, students will understand the basic concepts of health outcomes measurement:
1. Overview of health outcomes measurement, conceptual framework of measurement, and basic measurement theory;
2. Type of measurement tools and appropriate selection for use;
3. Scale design using qualitative methods (focus group and cognitive debriefing);
4. Psychometric methods for instrument assessment (reliability, validity, and responsiveness);
5. Instrument development and refinement;
6. Cross-cultural translation and validation;
7. Issues of data analysis;
8. Issues of instrument administration;
9. Outcome measures on special populations and practical design issues (data collection methods, maximizing and calculating response rates, estimating costs, and reporting issues).

Textbook
David L. Streiner and Geoffrey R. Norman. *Health Measurement Scales: A Practical Guide to Their Development and Use*. 5th edition.

Evaluation and Grading
Grades will be based on completion of:
    1) Reaction comments and quality (20%)
    2) Research protocol (30%)
    3) Project presentation (30%)
    4) Class participation (20%)

Reaction comments:
Students must read the assigned readings prior to attending each class session, and submit 1 single-spaced page (12 points in size) of reactions, thoughts, comments and/or questions on the main issues raised in the readings. Weekly assignment is due via email (yiguo@ufl.edu) by 8:00 am the day of each class session. Students need to focus on 1) conceptual and methodological implications of the readings, 2) what has been learned from each reading and its implications to student's area of research, and 3) what it is not clear and the need for further discussion.

Research protocol and project presentation:
Each student will prepare for a research protocol based on his/her research interests and addressing the following issues: 1) a description of research questions (including brief explanation of importance, description of target population and specific aims of study, review of existing instruments that might address the question), 2) description of an instrument (including conceptual framework, measurement module [new instrument, adopted instruments, or combination of different instruments], format, mode of administration, etc) that is needed to address the research questions, 3) discussion of the choices made during instrument development, and 4) description of a strategy with appropriate justification for evaluating relevant measurement properties (including reliability, validity, responsiveness, etc).

Each student is asked to present the research protocol for 20 minutes (including 5 minutes Q&A). A final research protocol (6 single-spaced pages and 12 points in size) is due during the finals week. The content of research protocol need to include the following sections: 1) background, 2) conceptual framework, 3) study population and data collection, 4) instrument development process, and 5) instrument validation methods.

Class discussion:
Each student will be assigned to initiate the discussion for one to three class sessions. You must be prepared to "jump start" the discussion (e.g. present discussion questions). All students must participate in each class discussion.

Grades will be assigned as follows:
Letter Grade   Grade Percentage
A   95-100
A-   90-94
B+   87-89

B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
E	59 and below

Tentative Dates and Topics

Date	*Topic*
Week 1	Overview of health outcomes measurement
Week 2	Measurement theory and type of health outcomes instrument
Week 3	Quality Adjusted Life Years (QALYs)
Week 4	Instrument development (1) – focus group and cognitive debriefing
Week 5	Instrument development (2) – design at item and scale levels
Week 6	Measurement methods (1) – classical test theory
Week 7	Measurement methods (2) – response shift and responsiveness
Week 8	Measurement methods (3) – item response theory
Week 9	Generalizability Theory
Week 10	1. Factors influencing patient-reported outcomes measurement
	2. Cross-cultural instrument translation and validation
Week 11	Study design and analysis in health sciences I
Week 12	Study design and analysis in health sciences II
Week 13	Application in clinical/health services research and future direction
Week 14	Student presentation
Week 15	Student presentation

Class Attendance

Class attendance is required. Excused absences follow the criteria of the UFL Graduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed class day when possible. UFL rules require attendance during the first two course sessions, and students also must attend all course sessions of student presentations for this class. Missing more than three scheduled sessions will result in a failure. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Finally, students must read the assigned readings *prior to* the class meetings, and be prepared to discuss the material.

E-Learning

Course information, readings, and grades are available on Canvas at http://lss.at.ufl.edu/. You must have a Gatorlink account to log on. For more information on using Sakai, see http://lss.at.ufl.edu/help/Student_Faq.

Students with Disabilities

Students requiring accommodations must first register with the Dean of Students' Office. The Dean of Students' Office will provide documentation to the student who must then provide this documentation to the faculty member when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Academic Integrity
Each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website. The Honor Code states: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." Cheating or plagiarism in any form is unacceptable and inexcusable behavior.

Policy on Style for Citation and Plagiarism
The two key purposes of citation are to 1) give appropriate credit to the authors of information, research findings, and/or ideas (and avoid plagiarism) and 2) facilitate access by your readers to the sources you use in your research.

Quotations: When directly quoting an outside source, the borrowed text, regardless of the amount, must be surrounded by quotation marks or block quoted. Quoted text over two lines in length should be single-spaced and indented beyond the normal margins. Every quote must include a source—the author, title, volume, page numbers, etc.—whether an internal reference, footnote, or endnote is used in conjunction with a bibliography page.

Paraphrasing or Citing an Idea: When summarizing an outside source in your own words or citing another person's ideas, quotation marks are not necessary, but the source must be included. This includes, but is not confined to, personal communications from other students, faculty members, experts in the field, summarized ideas from published or unpublished resource, and primary methods derived from published or unpublished sources. Use the general concept of "when in doubt – cite."

Plagiarism is a serious violation of the academic honesty policy of the College. If a student plagiarizes others' material or ideas, he or she may receive an "E" in the course. The faculty member may also recommend further sanctions to the Dean, per College disciplinary action policy. Generally speaking, the three keys of acceptable citation practice are: 1) thoroughness, 2) accuracy, and 3) consistency. In other words, be sure to fully cite all sources used (thoroughness), be accurate in the citation information provided, and be consistent in the citation style you adopt. All references should include the following elements: 1) last names along with first and middle initials; 2) full title of reference; 3) name of journal or book; 4) publication city, publisher, volume, and date; and 5) page numbers referenced. When citing information from the Internet, include the WWW address at the end, with the "access date" (i.e., when you obtained the information), just as you would list the document number and date for all public documents. When citing ideas or words from an individual that are not published, you can write "personal communication" along with the person's name and date of communication.