

**PSYC 6349.001: Psychometric Theory
Fall 2016**

Instructor: Dr. Lauren Coursey
Office Number: LS 302
Lab: LS 527
Email Address: lcoursey@uta.edu
Faculty Profile: <https://www.uta.edu/profiles/lauren-coursey>
Office Hours: TH 2:00 – 3:00, or by appointment

Section Information: PSYC 6349.001
Time and Place of Class Meetings: T/TH 3:30 – 4:50; LS 420

Description of Course Content: The course offers a general survey of psychometric theory and scale development topics. Students should develop an appreciation for the principals and techniques of item analysis and psychological measurement. The course will cover topics such as classical test theory, reliability, validity, factor analysis, and IRT (among others). Students should acquire the skills necessary to critically evaluate psychological measures and design psychological assessments.

Student Learning Outcomes: Students should have an appreciation for the scale development process including and a basic understanding of how to design and implement tests to measure psychological phenomena. Students should develop the expertise necessary to critically evaluate existing measurement tools and procedures.

Required Textbook:

Allen, M. J. & Yen, W. M. (1979). Introduction to Measurement Theory. Long Grove, IL: Waveland Press.

DeVellis, R. F. (2016). Scale development: Theory and applications (4th Ed.). Thousand Oaks, CA: Sage

Optional: *Garson, G.D. (2013) Factor Analysis (Statistical Associates "Blue Book" Series Book 15). Statistical Associates Publishers.*

Optional: *Nunnally, J. & Bernstein, I. (1994) Psychometric Theory (3rd Ed.). New York: McGraw Hill.*

Blackboard: The use of Blackboard is required in this course. Make it a habit to check Blackboard regularly. We will use this space to post grades, announcements, additional readings, updates to the syllabus, and any other relevant content. Course grades will be posted on Blackboard only. You must have a valid UTA user ID to access Blackboard. Blackboard website: <https://elearn.uta.edu/webapps/login/>

Exams: There are a total of **2** take-home tests (essay format). Exams will cover all material/information covered in your required textbook, readings, and lectures. You should be able to give advice for good psychometric practice, explain key terms, respond to applied or hypothetical problems, work through example statistical problems, explain key formulas, and provide criticism of poor psychometric practice. Students must work independently to complete exams. You will be given a course grade of "F" if you fail to behave in accordance with UTA's guidelines on academic integrity.

Scale Development Project: You should identify and develop a scale for a psychological construct of interest. It is important that you do a thorough literature search to verify that an appropriate scale does not already exist (PRIOR to beginning the project). You should develop 20 – 40 items to measure your construct. You will write a 10-15 page paper describing your construct (including a literature review that details the related theoretical concepts/constructs and the need for your measurement scale), your scale construction process, the nature of your items, proposed steps to validate your scale and establish reliability (in detail), and proposed means to analyze your items (in detail).

Project Presentation: Each student will present their scale development project idea to the class. At the time of the presentation, students should have completed a literature review of the research area of interest and prepared at least 15 potential items. In your presentation please discuss why you have chosen the particular content domain. Discuss why your scales is needed/important → Does your scale address important gaps in the literature? Does your scale have practical value? Your presentation should be approx. 10-15 minutes. Your classmates will provide feedback (both in class and via blackboard) including constructive criticism and ideas for additional items. You will be graded on your presentation and your responses to your classmates' presentations.

General Participation: You should come prepared to every class. You will be expected to contribute to class discussions and may be called upon to answer questions regarding any required readings.

Homework: For each major topic covered, you will have a short hands-on activity. The homework is intended to aid in the development of basic scale development skills. You will have one week to complete each assignment.

Attendance: As graduate students you are expected to attend every class. Students who miss a class for any reason or miss a portion of a class due to tardiness or early departure will still be held accountable for all of the material that is covered during those sessions, including material covered in lecture that is not in the book/readings.

Grading:

Midterm Exam	25%
Final Exam	25%
Scale Development Project	25%
Class Participation	15%
Homework	10%

If you are having difficulty with the class material, or believe you are doing poorly, please talk to me about your situation earlier rather than later. Do not wait until after the final to discuss your GPA, exam grades, or if you have a dispute with a grade you were given. It is your responsibility to verify with me that the percentages that you think you've earned are accurate. If you are near the border of a grade boundary (e.g., **between** a B and an A), this is especially important. Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see "Student Support Services," below.

Expectations for Out-of-Class Study: A general rule of thumb is this: for every credit hour earned, a student should spend 3 hours per week working outside of class. Hence, a 3-credit course might have a minimum expectation of 9 hours of reading, study, etc.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aaofaof>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the **Office for Students with**

Disabilities (OSD). Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364.
Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos. For information regarding Title IX, visit www.uta.edu/titleIX.*

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

I will only communicate with you via e-mail using your UT-Arlington e-mail account. Messages relevant to the class will be posted on Blackboard. Do not e-mail or call me to ask what materials will be or were missed in class. I strongly encourage you to get the e-mail and telephone number of at least one other person in class. **Do not e-mail asking to be bumped up to the next letter grade.**

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research

problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, located to your right. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>

Course Schedule

DATE	Day	IN-CLASS TOPIC	Readings/Assn.
AUG 25	TH	SYLLABUS	
AUG 30	T	INTRO STATS REVIEW	Allen 1 & 2 DeVellis 1
SEP 1	TH	SCALING	Allen 7 & 8 Schwarz
SEP 6	T	SCALING	
SEP 8	TH	CTT & LATENT VARIABLES	Allen 3 DeVellis 2 Green
SEP 13	T	SURVEY CONSTRUCTION	Goddard & Villanova Handout DeVellis 5
SEP 15	TH	RELIABILITY	Allen 4 DeVellis 3 *Nun. 6
SEP 20	T	RELIABILITY	Schmitt
SEP 22	TH	RELIABILITY	*DeVon
SEP 27	T	RELIABILITY	Wanous *Shavelson
SEP 29	TH	VALIDITY	Allen 5 DeVellis 4
OCT 4	T	VALIDITY	Campbell Campbell & Fiske

			*Dwyer
OCT 6	TH	VALIDITY	GET MIDTERM
OCT 11	T	SURVEY CONSTRUCTION CONTD	Allen 6
OCT 13	TH	DAY TO FINISH UP MIDTERM	MIDTERM DUE: 10/16/16
OCT 18	T	SURVEY CONSTRUCTION CONTD	Nun. 8
OCT 20	TH	PROJECTS	
OCT 25	T	PROJECTS	
OCT 27	TH	PROJECTS	
NOV 1	T	INTRO TO FACTOR ANALYSIS	DeVellis 6 *Nun. 11
NOV 3	TH	EFA	*Nun. 12
NOV 8	T	EFA	*Garson
NOV 10	TH	CFA	*Nun. 13
NOV 15	T	CFA	
NOV 17	TH	SPECIAL PROBLEMS BIAS	Allen 9 & 10 *Nun 9
NOV 22	T	SPECIAL PROBLEMS BIAS	Cole
NOV 24	TH	THANKSGIVING	
NOV 29	T	BEYOND CTT IRT	Allen 11 DeVellis 7 & 8 *Nun. 10
DEC 1	TH	IRT	Embretson
DEC 6	T	DISCUSS PROJECTS & FINAL	Project Due GET FINAL
			FINAL DUE: --

***Recommended Articles**

Readings:

- Campbell, D. T. (1996). Unresolved issues in measurement validity: An autobiographical overview. *Psychological Assessment, 8*(4), 363-368. doi:10.1037/1040-3590.8.4.363
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81-105. doi:10.1037/h0046016
- Cole, N. S. (1981). Bias in testing. *American Psychologist, 36*(10), 1067-1077. doi:10.1037/0003-066X.36.10.1067
- DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., & ... Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship, 39*(2), 155-164. doi:10.1111/j.1547-5069.2007.00161.x
- Dwyer, C. A. (1996). Cut scores and testing: Statistics, judgment, truth, and error. *Psychological Assessment, 8*(4), 360-362. doi:10.1037/1040-3590.8.4.360
- Embretson, S. E. (1996). The new rules of measurement. *Psychological Assessment, 8*(4), 341-349. doi:10.1037/1040-3590.8.4.341
- Goddard III, R. D., & Villanova, P. (1996). Designing surveys and questionnaires for research. *The psychology research handbook: A guide for graduate students and research assistants, 85-97*.
- Green, B. F. (1981). A primer of testing. *American Psychologist, 36*(10), 1001-1011. doi:10.1037/0003-066X.36.10.1001
- Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment, 8*(4), 350-353. doi:10.1037/1040-3590.8.4.350
- Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist, 54*(2), 93-105. doi:10.1037/0003-066X.54.2.93
- Shavelson, R. J., Webb, N. M., & Rowley, G. L. (1989). Generalizability theory. *American Psychologist, 44*(6), 922-932. doi:10.1037/0003-066X.44.6.922
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures?. *Journal of Applied Psychology, 82*(2), 247-252. doi:10.1037/0021-9010.82.2.247