

General information	Subject title, code and credit hours	PSYC560, Psychometrics, 3 KU/6 ECTS
	Department	Psychology
	Program (bachelor's and master's degree)	Master
	Associated Term	Spring 2026
	Instructor	Assoc. Prof. Murat Yildirim
	E-mail:	muratyildirimphd@gmail.com
	Phone	
	Lecture room/Schedule	Neftchilar campus
	Consultations	After classes
Prerequisites	<p>Students enrolling in this course are expected to have successfully completed undergraduate courses in Statistics and Research Methods in Psychology, although this is not strictly mandatory. A basic familiarity with key psychological measurement concepts, such as reliability and validity, will help them engage more effectively with the material. Importantly, no prior programming experience is required, as the course will primarily utilize JASP and, when necessary, SPSS, both of which provide user-friendly interfaces for conducting psychometric analyses.</p>	
Language	English	
Course	Mandatory	
References and sources	<ul style="list-style-type: none"> • Furr, R. M. (2021). Psychometrics: an introduction. SAGE publications. • DeVellis, R. F., & Thorpe, C. T. (2021). Scale development: Theory and applications. Sage publications. • Brown, T. A. (2015). Confirmatory factor analysis for applied research. Guilford publications. • Embretson, S. E., & Reise, S. P. (2013). Item response theory for psychologists. Psychology Press. 	
Course description	<p>This course provides advanced training in psychometric theory and practice, with a strong emphasis on applied data analysis using JASP (Jeffreys's Amazing Statistics Program). Students will learn to design, evaluate, and adapt psychological measures, applying modern psychometric techniques such as reliability analysis, factor analysis, structural equation modeling (SEM), and item response theory (IRT). The course integrates weekly readings with hands on lab activities, ensuring that students not only understand psychometric concepts but also acquire practical skills in applying them to real datasets.</p> <p>The course examines classical test theory and introduces modern approaches, including item response theory. Ethical, legal, and cultural issues in psychological testing are discussed, with particular emphasis on responsible test use and interpretation. Students will gain practical experience in selecting, administering, scoring, and interpreting psychological measures. Applications of psychometrics in clinical, educational, organizational, and research settings are explored. By</p>	

	integrating theoretical foundations with applied examples, the course aims to develop students' quantitative reasoning and critical evaluation skills.		
Course objective	By the end of the course, students will be able to: <ul style="list-style-type: none"> • Understand the theoretical foundations of psychometrics, including measurement, reliability, and validity. • Apply JASP to conduct psychometric analyses (e.g., reliability, factor analysis, IRT). • Critically evaluate psychological scales and instruments. • Design and adapt measurement tools for diverse populations. • Report psychometric findings in line with APA standards and international guidelines. 		
Learning outcomes	Upon successful completion, students will: <ol style="list-style-type: none"> 1. Demonstrate competence in using JASP for psychometric analyses. 2. Construct and evaluate psychological scales. 3. Interpret reliability and validity evidence for psychological measures. 4. Conduct exploration and confirmatory factor analyses. 5. Apply item response theory models to test data. 6. Prepare publication-ready psychometric reports. 		
Teaching methods	Lecture		+
	Group discussion		+
	Classroom activity		+
	Cases analyzing		+
Assessment	Components	Date	Perc. (%)
	Midterm exam	Week 8	35
	Participation	During semester	15
	Individual work	During semester	-
	Final exam	Week 16	40
	Attendance	During semester	10
	Total		100
Rules and policy	Assessment and Marking Criteria <ul style="list-style-type: none"> • Midterm Exam (35%) – Week 8 The midterm will assess students' understanding of foundational psychometric concepts and their ability to apply JASP to reliability, validity, and item analysis tasks. • Participation (15%) – Throughout the Semester Active engagement in lectures and labs is expected. Students should come prepared, contribute to discussions, ask relevant questions, and demonstrate respect for peers' perspectives. • Final Exam (40%) – Week 16 The final exam will evaluate students' mastery of advanced psychometric methods, including factor analysis, SEM, measurement invariance, and IRT, as well as their ability to interpret and report results. • Attendance (10%) – Throughout the Semester Regular attendance is required to benefit from the interactive lab sessions.		

	<p>More than two unexcused absences may negatively affect this component. Each lesson is designed to encourage creativity and active engagement, so students are expected to approach every session with focus and participation. To maintain a productive learning environment, disruptive behavior, unethical actions, unauthorized or irrelevant discussions, and the use of mobile phones, listening devices, or other unrelated equipment are strictly prohibited during class. Regular attendance is essential, and students should inform the faculty dean in advance if they are unable to attend due to illness, family circumstances, or other valid reasons. Please note that students who miss more than 25% of the total course hours will not be permitted to sit for the exam. Active participation in all sessions is highly valued, and punctuality is required, as lateness and other violations of classroom conduct will be taken seriously.</p>	
Week	Topic	Textbook
1.	Introduction to Psychometrics and JASP	<p>Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 1</p> <p>Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 1</p>
2.	Foundations of Measurement	Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 2
3.	Test Construction and Item Writing	Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 3
4.	Reliability in JASP	<p>Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 5</p> <p>Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 4</p>
5.	Advanced Reliability in JASP	<p>Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 6</p> <p>Goss-Sampson, M. (2022). Statistical Analysis in</p>

		JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 5
6.	Validity Concepts	Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 4
7.	Construct Validity	Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 5
8.	Midterm exam	
9.	Item Analysis with JASP	Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 7 Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 6
10.	Exploratory Factor Analysis	Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 8 Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 7 Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 3
11.	Confirmatory Factor Analysis	Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 9 Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 3 Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 4
12.	Measurement Invariance	Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A

		<p>Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 10</p> <p>Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 7</p> <p>Kline, P. (2015). A handbook of test construction (psychology revivals): introduction to psychometric design. Routledge. Chapter 5</p>
1.	Item Response Theory in JASP	<p>Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 11</p> <p>Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 8</p>
2.	Test Adaptation	<p>Hernández, A., Hidalgo Montesinos, M. D., Hambleton, R. K., & Gómez Benito, J. (2020). International test commission guidelines for test adaptation: A criterion checklist. <i>Psicothema</i>, 2020, vol. 32, num. 3, p. 390-398. Chapter 4</p>
3.	Reporting Psychometrics with JASP	<p>Navarro, D.J., Foxcroft , D.R., & Faulkenberry , T.J. (2019). Learning Statistics with JASP: A Tutorial for Psychology Students and Other Beginners (0.7). University of New South Wales. https://learnstatswithjasp.com/ Chapter 12</p> <p>Goss-Sampson, M. (2022). Statistical Analysis in JASP: A Guide for Students (5th Edition). University of Greenwich. https://jasp-stats.org/jasp-materials/ Chapter 8</p>
4.	Final Exam	