

PSY 306L – TESTING AND MEASUREMENT TENTATIVE LABORATORY SCHEDULE

Fall 2022

PSY 306 Lab sessions are designed to enhance hands-on experiences and learn or revise basic statistical techniques we use to test psychological measures' psychometric quality (reliability and validity). The main aim of the lab session is not to teach you these statistical analyses that you probably already know from the other courses, such as PSY-202, but to give you a chance to practice and show how you can use them in assessing psychometric characteristics. You are expected to use them in your class project and assignments effectively. You should be able to apply the learned statistical techniques in analyzing data using both SPSS and JASP.

	Learning Objectives	Learning Outcomes
Week 1 & 2	Introduction interface of JASP and SPSS, file conversion from Excel to SPSS and JASP, Descriptive Statistics (Mean, SD, Frequency Analysis), Normal Distribution (Percentiles, Skewness, Z scores), Data Visualization Techniques (Box Plot, Histogram, Bar Graph, Pie Graph, Scatterplot).	<ul style="list-style-type: none"> ● Can open a file, convert it and save it. Can open a syntax file and save it. ● Identify the mean score, standard deviations, frequency of each variable, and response. ● Know the characteristics of a normal distribution. ● Can create a boxplot and identify outliers. ● Can understand the concept of and compute measurement of error.
Week 3 & 4	Correlation, T-test, Chi-square test, ANOVA, Regression, Hierarchical Regression	<ul style="list-style-type: none"> ● Know which statistical test to use to test a property of a measure ● Can define and report a <i>p</i>-value. ● Can define alpha value. ● Can define R-Square change in a hierarchical regression.
Week 5	Computing Variables, Reverse Item Computation, Total Score Computation in the test construction process. Measurement of Error, Missing Values (listwise or pairwise deletion)	<ul style="list-style-type: none"> ● Can compute a total score for a subscale and a scale. ● Can reverse code an item. ● Understand how to handle and prevent missing values in statistics. ● Define and identify the types of missing values.
Week 6 & 8	Reliability, Cronbach's Alpha, Split-half Reliability, Interrater Reliability, Kappa's Score, Confidence Intervals, SMC, Internal consistency of factors, Prevalence, Sensitivity, Specificity.	<ul style="list-style-type: none"> ● Know the item-total correlations. ● Can compute Cronbach's alpha reliability score. ● Can compute split-half reliability. ● Can make a decision about item removal. ● Can calculate Kappa's score ● Can calculate standard error of measurement. ● Can calculate Confidence Intervals. ● Can calculate predictive, sensitivity, and specificity values.

		<ul style="list-style-type: none"> ● Define and elaborate on internal consistency.
Week 9	Revision Reliability, Validity (Correlational Method), Incremental Validity	<ul style="list-style-type: none"> ● Can calculate Incremental Validity
Week 10, 11 & 12	Factor Analysis, KMO & Barlett's test for Factorability, Oblique Rotation (Direct Oblimin), Orthogonal Rotation (Varimax rotation)	<ul style="list-style-type: none"> ● Can run and interpret KMO & Barlett's test. ● Can run and interpret the results of Principal Factor Analysis and Factor Analysis. ● Can decide on which Factor Rotation is appropriate. ● Can make a decision about how many factors to extract. ● Know the criteria for factor extractions. ● Can label factors on a scale. ● Can label cross-loaded items on a scale. ● Can use multiple methods for validity. ● Can differentiate the explained variances between factors. ● Can show marker items. ● Can make a decision about item removal and justify it. ● Can define uniqueness and communality.
Week 13	Revision of Factor Analysis, Project-related questions. -Project Presentations-	