

**Psychology 427
Introduction to Psychological Testing
Spring Semester 2009**

**NOTE: Tentative Syllabus. Subject to
change without notice until Jan 20, 2009**

Instructor: Dr. H. B. Lee Office: Sierra Tower 301 Phone: 677-2827/677-4863
Office Hours: Wednesday 2:00-2:50 PM, Friday 11:00-11:50 AM

Required Text: Anastasi, A. & Urbina, S. **Psychological Testing, 7th Edition.** Prentice Hall, 1997
Recommended Text: McCutcheon, L. E. **Psychological and Educational Testing.** CAT Publishing:
Redding, CA, 1999

Tentative Schedule:

Exam Date	Text
Friday, February 6th	Functions and Origins of Psychological Testing Nature and Use of Psychological Tests Technical and Methodological Principles: Norms, Meaning of Test Scores (Chapters 1, 2, 3)
Friday, March 6th	Reliability of a Test, Validity of a Test)Basic Concepts) (Chapters 4, 5)
Friday, April 3rd	Technical and Methodological Principles: Test Validity, Measurement & Interpretation, Item Analysis (Chapters 6 and 7)
Friday, May 8 th	Ability Testing: Individual and Group Testing, Intelligence tests and Personality Testing. (Chapters 8, 10, 11 and 13).

The Anastasi & Urbina book is and has been one of the most useful textbooks. Students are recommended to buy the book through online booksellers where the prices are lower and home delivery is available. Students are also encouraged to take good lecture notes. It is very important to attend all lectures since exam materials will be from the text, lectures and the handouts distributed by the instructor.

Each student will be allowed to use his/her entire set of notes. For computations, each student is allowed to have an electronic calculator. No PDA, palm pilots, laptops, notebooks or any electronic device where signals such as infrared can be transmitted are NOT permitted during an exam. A class exam consists of multiple choice items and possibly short answers and fill-ins. Computations are required for the course, so each student should have a good working calculator. The grade components in the course are

Four (4) Exams	80 points (20 points each)
Textbook Check	2 points
Class Participation & Attendance	10 points
Instructor's Personal Evaluation	6 points
Completion and submission of agreement Form on Wednesday, Jan 28th	2 points
TOTAL :	100 points (100%).

There are NO make-up exams.

Letter grades for the lecture portion will be assigned using the following scheme:

Grades will be assigned using the following:

A: 95 to 100 pts.	A-: 90 to 94 pts.	B+: 88 to 89 pts.	B: 82 to 87 pts.
B-: 78 to 81 pts.	C+: 75 to 77 pts.	C: 68 to 74 pts.	C-: 60 to 67 pts.
D+: 57 to 59 pts.	D: 50 to 56 pts.	F: less than 50 pts.	

ALL students are expected to have taken Psychology 320 and 320L prior to this course. All students who have not completed the pre-requisites will be at a clear disadvantage and will not receive any preferential treatment. Due to commitments to the academic community, there may be times when the class will not meet. Those days will be announced in advance in a prior class meeting. Using university terminology, "an alternative assignment" will be given in lieu of the lecture.

No Class /Lab Meetings on the following dates: Spring Break: April 6th to April 11th.

The instructor is **not obligated** in any way to add students to the class even if there are vacancies. Some not-enrolled students think the instructor will eventually add them to the class if they continue to attend class. The instructor is NOT obligated and will NOT add such students. However, students seeking to add the course must present to the instructor official written evidence of satisfactory completion of the pre-requisites on demand. If a waiting list for adds are created by the instructor, students on that list must answer to every roll call. The failure to respond to roll call will result in a forfeiture of status on the waiting list. That student will no longer be considered. Any student who is administratively dropped by the university for any reason, (e.g. non-payment) will be placed at the end of the waiting list. The instructor for admission into the class will not give such students any special considerations. The instructor can refuse admission to any student. The instructor is not obligated to provide a reason.

The Signed Course Agreement

Each enrolled student MUST provide a signed copy of the course agreement form in order to remain in the class. Any student who has not signed and returned the agreement to the instructor will not be allowed to remain in the course. Students who are NOT enrolled in the class are NOT guaranteed admission into the class just because they have signed an agreement. If the instructor decides to grant admission to a student not enrolled in the class, the student must provide a signed agreement at the time permission to enroll numbers are given along with official written evidence of completion of the pre-requisites.

Exams: There will be 4 exams given in the class. No final exam will be given. Exams are NOT directly cumulative but will require skills needed for earlier exams. **Only students properly enrolled in the class will be allowed to take ANY of the exams.** Due to budget cuts, the department may not provide resources for makeup exams. If this is the case, there are **no make-up** exams. Missed exams will be given a score of zero. You may use a hand-held calculator, but not a palm-pilot, ipod, cell phone or laptop or any electronic device that can store sentences or communicate by infrared or other wireless methods, during the exams. No cell phones are allowed during the class and during exams. Exams include multiple choice, short answers and manipulation of data, including calculations. Students are warned that if they do work using a pen, cross-outs or messy work (at the judgement of the instructor) will NOT be tolerated and will get the students a zero score. If you use ink, be sure to have white-out to correct your errors. Always bring your student photo ID to exams because identification may be checked. For ALL exams, each student is allowed to use his/her complete set of notes. Students during the exam can NOT share notes and calculators. Each student is responsible for bringing his/her own statistical tables. The statistical tables and handouts are considered as part of the notes allowed for the test. At the judgement of the reader, any illegible or poorly written or incomplete demonstration of solution on

exams will result in no credit for that problem. Not following the rules exactly as given by the instructor on how to do a problem will result in a zero score for that problem. No books are allowed during the exam. No copy of pages from the book (except statistical tables) will be allowed during the exam. The 4th exam will be given during the last lecture class meeting of the semester, Friday, May 8th.

Housekeeping:

Missed exams: By definition, emergencies beyond a student's control are rare events. There will be no make-up exams given. There will be 4 regular exams given during the semester. There is no final exam. Any missed exams will be assigned a score of zero.

Grade appeals: If you believe that a mistake has been made in grading your exam, write a note describing the error, attach it to the original exam, and give it to the instructor. You have 5 working days to do this starting from the day that the exams are returned to the students. If you do not attend class, you will have to obtain your exam from your instructor during the instructor's office hours. If you are ill or have some other circumstance that will prevent you from complying with this 5-day requirement, you need to discuss this with your instructor before or during this five-day period in order to make alternative arrangements. Appeals after 5 working days will not be considered. Please be advised that the multiple-choice portion of the exam is commonly copied before returning them to you and will compare the two when considering your appeal. If you have a concern about the exam grading, you must bring this to the attention of your instructor the day your exam is returned to you. Since grading of the exams is very straightforward, most difficulties arise due to failure to follow the rules and guidelines set by the instructor. If that is so, the appeal will be denied.

Incompletes: In the event you miss the last exam, you must meet the following criteria before I can give you an Incomplete: (1) your work must be of passing quality throughout the course, e.g., your first 3 exams plus attendance are passing work (D grade or higher on a percentage basis). If you have not taken any of the exams or have not shown up to class on a regular basis (Instructor's Opinion) you are NOT considered to be passing the class. (2) Missing the exam was due to an emergency beyond your control that you have documented to my satisfaction, and (3) you contacted me on or before the day of the last exam to arrange a conference. Please be aware that the instructor will NOT be around during the summer break so no makeup last exam will be given during that period of time. Students who are granted an incomplete will have two semesters following this semester in order to makeup the incomplete. If you have taken an incomplete grade for the class, do NOT re-enroll in the class. The instructor will not approve any extension regardless of the reason.

Cell phones and pagers: Students are asked to turn off their cell phones and their pagers during class time. Failure to do so may result in interrupting the class. If this situation occurs, the student responsible will be penalized at least one point for each occurrence in terms of class participation and attendance component of the grade. If the student is unidentifiable, every student in the proximity of the call phone noise will be penalized 1 point. If a cell phone rings during an exam, the exam session ends for ALL students. The student who is responsible for this violation will be given a zero on the exam and lose ALL points for class participation & attendance. All exams will be collected at that time. So be sure to turn off your cell phone or leave it with your instructor or exam proctor during examination periods.

Class Attendance and Participation: Ten percent of each student's grade is available for the student who attends class regularly without causing anguish and difficulties for the instructor and other students. Attendance will be taken on a semi-regular basis. If no response from the student is given at the time attendance is taken, 2 points will be deducted from this component of the grade. Disruptions caused by the student during class time will also result in a deduction. Attendance is definitely taken when exams are given and when exams are returned to the student. The Instructor's personal evaluation (6 percent of the final grade) of each student is a totally subjective

assessment by the instructor of each student. Any student missing the last exam (except those with a legitimate incomplete; see above) will receive zero points for class participation and attendance and the instructor's personal evaluation. Any student caught or suspected of cheating or plagiarizing will be given a zero score for that exam and also receive a zero score for the class participation and attendance and personal evaluation components of the course. Note: There is NO makeup for points lost in this section.

Agreement Form. Attached to this course syllabus is the course agreement form. Each student must submit a signed copy of this form to the instructor on Wednesday, January 28th on or before 2 PM. The form is a signed agreement by the student certifying that the student has read this syllabus completely and that he/she understands the rules and regulations set by the instructor for the course. Any student who does not understand the provisions of this syllabus needs to ask for clarification from the instructor. **Any student who does not submit this form to the instructor must be prepared to drop the class or take a "F" grade in the course. Any of your exams will likely have questions on it that directly pertain to the course syllabus. Note: It is inappropriate for any student to submit the agreement form without reading the course syllabus in its entirety. Submitting the form during or immediately after the first class meeting will be met with suspicion and a likelihood of points deducted from one's grade. Timely submission of a signed form is worth 2 points toward the final grade.** There is NO makeup for the loss of these 2 points.

In those situations where students are given a take-home exam or assignment, the instructor expects each student to work on her/his own. It would be considered cheating if students worked together on the take-home or out-of-class assignments. Any students caught working together on graded take-home assignments or exams will receive a zero on that assignment or exam and also lose all points accumulated for the class participation and attendance portion of the class. Additionally, the instructor will give all students involved a score of zero on the personal evaluation portion of the class. The burden of non-cheating proof rests with the students involved.

IMPORTANT: The instructor will refer to formulas, examples and statistical tables given in the textbook. A random check to see if student has a copy of the textbook will be made some time during the semester. If the student passes the check, 2 points will be given to the student toward determining the final grade. There is NO makeup for the loss of this point.

Some important rules to maximize your grade in the class.

Basic Rules for the Class

1. Attend ALL lectures and scheduled lab meetings. Attendance will be taken on an irregular basis.
2. Follow Instructor's Instructions Exactly
3. There is NO creativity in this course. Do **NOT** make up your own rules. This is a statistics course and not an art class. The instructor gives specific rules that you need to follow. Failure to do so will result in a zero score for the lab assignment and exams. This will be enforced strictly this semester.
4. Where appropriate or asked, show ALL meaningful steps in your computations. Meaningful steps that are left out will result in no credit given. For example, in computing the Centile Rank, if the formula is left off, you will receive no credit. If you present your final answer of a scaled score without showing clearly the decimal answer and the rounding used, you will receive no credit.
5. You must have a calculator capable of doing statistical computations quickly. Such calculators are available for \$9 or less at various places. Ones by TI and Casio are fine. These calculators have special function keys to compute the mean and standard deviation. Each student is expected to know how to access these special functions on her/his calculator. The instructor or teaching assistant is NOT responsible for teaching a student how to operate his/her calculator.

Rules for Hand Computations. Violation of any of these rules when doing hand computations will result in no credit given.

1. Your answer must agree exactly with the one computed or arrived at by the instructor. Inability to do so will definitely result in points deducted.
2. Carry three (3) decimal places for ALL of your computations. Exercise rounding rules ONLY at the end of the computational problem. Failure to do so will result in **no credit** given for the question/problem regardless of whether you arrived at the solution that agrees with the instructor's.
3. For centiles (or percentiles), CEEB, deviation IQ, and McCall T-score scaled scores, the final answer is expressed as an integer (whole number; no fractions). At the end of the computation for these scaled scores, round to the nearest whole number (no decimals). Failure to round these to whole numbers will result in no credit given. Inadequate demonstration of rounding will also result in no credit given.
4. Centiles (or percentiles) are RANKS. Even though they are interpreted in terms of percentages, they are NOT percentages. Do NOT attach a percentage sign to a centile, percentile, centile rank or a percentile rank.
5. Z-scores, or standard scores are computed using numbers that are carried to 3 decimal places. They are reported to 2 decimal places. So if you need to report a Z-score, round it to 2 decimal places. However, if a Z-score is used in an intermediate step to arrive at another statistic, such as a scaled score, keep it at 3 decimal places.
6. For final answers involving percentages, they are reported as is. Do not round them to a whole number. A percentage symbol is attached to these.
7. For correlations and regression equations, 3 decimals are also carried in all computations. Correlations and regression coefficients are reported as a final answer to 2 decimal places. However, if the correlation and/or regression coefficients are used in the computation of another statistic, they must be used with 3 decimal places. If correlations and regressions, as a final answer, are not reported and rounded to 2 decimal places, no credit will be given.
8. If the problem requires you to compute a quantity that is generally reported as a whole number, such as the number of cases, or a predicted test score, these are rounded and reported as whole integer numbers.
9. The formula used to compute the standard deviation for this course will be

$$S = \sqrt{\frac{\sum (X - M)^2}{n - 1}} = \sqrt{\frac{n \sum X^2 - (\sum X)^2}{n(n - 1)}}$$

It is assumed that each student in the course have successfully completed the pre-requisite course and familiar with using formulas such as these. Failure to use these formulas or use these formulas correctly will result in no credit.

If you are unable to comply with these important rules, drop this course immediately and take it from someone else where these rules are NOT important to them. Reminder: Friday of the 3rd week is the last day to drop the course without instructor's approval. I will not sign any drop sheets after that deadline unless the reason is well documented; is within the rules of the university and meets with my approval.

Some Useful Formula in Psychological Testing

Formula for Mean

$$M = \frac{\sum X}{n}$$

Formula for Standard Deviation

$$SD = \frac{1}{n} \sqrt{n \sum X^2 - (\sum X)^2} \quad , \quad S = \sqrt{\frac{n \sum X^2 - (\sum X)^2}{n(n-1)}}$$

Formula to Convert a Raw score to a Z-score

$$Z = \frac{X - M}{S}$$

Formula for Calculating Correlation

$$r_{XY} = \frac{\sum XY - N \times M_X M_Y}{N \times SD_X SD_Y} \quad \text{where } X = \text{first variable, } Y = \text{second variable}$$

In terms of deviation scores, $x = X - M_X$ and $y = Y - M_Y$

$$r_{XY} = \frac{\sum xy}{N \times SD_X SD_Y}$$

Formula for Covariance

$$Cov_{ij} = r_{ij} s_i s_j = \frac{\sum x_i x_j}{N}$$

Calculating Test-Retest Reliability

$$r_{X_1 X_2} = \frac{\sum X_1 X_2 - N \times M_{X_1} M_{X_2}}{N \times SD_{X_1} SD_{X_2}} \quad \text{where } X_1 = \text{first testing, } X_2 = \text{second testing}$$

Calculating Alternative Form Reliability

$$r_{X_A X_B} = \frac{\sum X_A X_B - N \times M_{X_A} M_{X_B}}{N \times SD_{X_A} SD_{X_B}} \quad \text{where } X_A = \text{Form A, } X_B = \text{Form B}$$

Calculation of Split-Half Reliability

$$r_{X_O X_E} = \frac{\sum X_O X_E - N \times M_{X_O} M_{X_E}}{N \times SD_{X_O} SD_{X_E}} \quad \text{where } X_O = \text{score on odd-numbered items,}$$

$X_E = \text{score on even-numbered items}$

Spearman-Brown Correction Formula for Split Half:

$$\text{estimated full length } r_{XX} = \frac{2 r_{X_O X_E}}{1 + r_{X_O X_E}}$$

General Spearman-Brown Formula:

$$\text{new } r_{XX} = \frac{(N) \text{ current } r_{XX}}{1 + (N - 1) \text{ current } r_{XX}} \quad \text{where } N = \frac{\text{new test length}}{\text{old test length}}$$

Test Length as a Function of Reliability

$$K = \frac{(1 - r_{XX}) R_{KK}}{(1 - R_{KK}) r_{XX}}$$

Formula for Kuder-Richardson 20 (KR-20) Reliability

$$KR_{20} = \frac{k}{k-1} \left(\frac{SD_X^2 - \sum p_i q_i}{SD_X^2} \right) \quad \text{where } SD_X^2 \text{ is the variance of the total scores}$$

p_i = proportion getting item i correct and q_i is the proportion getting item i wrong.
 k = number of items

Formula for KR-21

$$KR_{21} = 1 - \left(\frac{k \times M_X - M_X^2}{k \times SD_X^2} \right) \quad \text{where } M_X \text{ is the mean of the total scores}$$

Formula for Coefficient Alpha

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum SD_i^2}{SD_X^2} \right) \quad \text{where } SD_i^2 = \text{variance of item } i.$$

Formula for Standard Error of Measurement (SEM)

$$SEM = SD_X \sqrt{1 - r_{XX}}$$

Item Difficulty Index

$$p = \frac{\text{number of persons answering item correctly}}{\text{total number of people taking the test}}$$

Item Discrimination Index

$$D = p_T - p_B$$

$$p_T = \frac{\text{number of people in top group getting item correct}}{\text{number of people in top group}}$$

$$p_B = \frac{\text{number of people in bottom group getting item correct}}{\text{number of people in bottom group}}$$

Guttman Formula for Split-Half Reliability

$$\text{estimated full length } r_{XX} = 2 \left[1 - \frac{SD_a^2 + SD_b^2}{SD_X^2} \right]$$

Rulon Formula for Split-Half Reliability

$$\text{estimated full length } r_{XX} = 2 \left[1 - \frac{SD_{a-b}^2}{SD_X^2} \right]$$

Reliability of Difference Scores

$$r_{dd} = \frac{r_{XX} + r_{YY} - 2r_{XY}}{2 - 2r_{XY}}$$

Internal Consistency using correlations

$$r_{kk} = \frac{kM(r_{ij})}{1 + (k-1)M(r_{ij})}$$

Bayes' Theorem

$$p(H_i | A) = \frac{p(H_i)p(A | H_i)}{\sum_{j=1}^k p(H_j)p(A | H_j)}$$

Relationship Between Test Validity and Test Length

$$R_{KL} = \frac{r_{XY}}{\sqrt{\frac{1}{K} + \left(1 - \frac{1}{K}\right)r_{XX}} \sqrt{\frac{1}{L} + \left(1 - \frac{1}{L}\right)r_{YY}}}$$

$$K = \frac{R_{KY}^2 (1 - r_{XX})}{r_{XY}^2 - R_{KY}^2 r_{XX}}$$

Correction for Attenuation (Infinite length)

$$R_{\infty\infty} = \frac{r_{XY}}{\sqrt{r_{XX} r_{YY}}}$$

$$R_{\infty Y} = \frac{r_{XY}}{\sqrt{r_{XX}}}$$

Formulas for Computing a Partial Correlation

$$r_{12.3} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{(1 - r_{13}^2)(1 - r_{23}^2)}}$$

$$r_{12.34} = \frac{r_{12.4} - r_{13.4}r_{23.4}}{\sqrt{(1 - r_{13.4}^2)(1 - r_{23.4}^2)}}$$

Formula for Computing a Part Correlation

$$r_{1.23} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{(1 - r_{23}^2)}}$$

Formula for Finding the Factor Loadings of a General Factor

$$g_i = \sqrt{\frac{r_{ij}r_{ik}}{r_{jk}}}$$

Variance of a linear composite

$$s_t^2 = \sum s_i^2 + 2 \sum r_{ij} s_i s_j$$

Partial regression coefficient (For 3 variable problems)

$$b_{YX_1.X_2} = \left(\frac{SD_Y}{SD_{X_1}} \right) \beta_{YX_1.X_2}$$

$$b_{YX_2.X_1} = \left(\frac{SD_Y}{SD_{X_2}} \right) \beta_{YX_2.X_1}$$

Standard Partial regression coefficient (for 3 variable problems)

$$\beta_{YX_1.X_2} = \frac{r_{YX_1} - r_{YX_2}r_{X_1X_2}}{1 - r_{X_1X_2}^2}$$

$$\beta_{YX_2.X_1} = \frac{r_{YX_2} - r_{YX_1}r_{X_1X_2}}{1 - r_{X_1X_2}^2}$$

Squared Multiple Correlation for 3 variable problems.

$$R_{Y.X_1X_2}^2 = \frac{r_{YX_1}^2 + r_{YX_2}^2 - 2r_{YX_1}r_{YX_2}r_{X_1X_2}}{1 - r_{X_1X_2}^2}$$

Psychology 427
Psychological Testing
Spring Semester 2009
Agreement Form

I, _____ certify that I have read this entire course syllabus and that I fully understand and agree to abide by all the rules, requirements and policy set forth by the instructor, department, college and university. The instructor has discussed the content of the syllabus in class. He has also informed every student in attendance that he will answer all questions concerning the syllabus and the course content during the semester.

I also understand that the any exam given in this course could cover material from the course syllabus.

This form must be signed and dated by me and submitted to the instructor on Wednesday, January 28, 2009, no later than 2 PM. .

Signature _____

Print Your Name _____

Date _____