

PSYCHOLOGY 3600
Statistics

1. Instructor: Dr. Richard T. Grow
Office: SS 334 Phone: 626-6713
2. Text: Basic Statistical Analysis 8th Edition by Richard C. Sprinthall
(A note in regards to the expense of this text.)
3. Tests: In this class you will have three unit tests. It is possible that we will have a test during Dead Week.

90 - 100% of points = A
80 - 89% of points = B
70 - 79% of points = C
50 - 69% of points = D
49% and below = E

(Plus and minus grades are at the discretion of the instructor)

*Note: Final grade can also influenced by quality of class notebook and if the homework is completed in an accurate, prompt manner.
4. Reading Assignments: We shall go through this course taking the material as listed in the learning objectives. Thus, by referring to your learning objectives, you can orient yourself as to where you should be reading in your text.
5. Incompletes: Incompletes are very seldom given in this class and are only awarded in keeping with University policy. My advice would be to try and avoid finding yourself in this position, i.e., where you need to ask for an incomplete, if it is at all possible.
6. Notebook: It will be possible to raise or lower your grade in this course, if you are close, depending on the quality of notes you take. More specifically, your notebook will be collected at the time of the final and its completeness and/or lack of functional utility will also enter into your final grade.
7. Homework: A reasonable amount of homework will be assigned in this course. You should always retain one copy of your work so that we can go over it in class. Homework can also affect your final your grade if you are close.
8. Calculator: I would suggest that you purchase a good calculator for this class. The calculator you buy should have the following functions:
 $\sum X, \sum X^2, \bar{X}, \sum Y, \sum Y^2, \bar{Y}, S_x, \sigma_x,$
 $S_y, \sigma_y, \sum XY, r, a$ and $b.$

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 181 of the Student Service Center. SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary.

PSYCHOLOGY 3600
Sprinthall 8th Edition
Learning Objectives

1. Know what is meant by naturalistic observation, case study, survey, longitudinal design, cross-sectional design, ABA and ABAB designs, experimental design, variable, independent variable, dependent variable, matching, randomization, control group, experimental group, and single and double blind. (198-200, 207-210)
2. Know what is meant by the following terms: variable, data, population or universe, parameter, sample, random sample, statistic, descriptive statistics, and inferential statistics. (19-20, 142-146, 197-200)
3. Know what is meant by the following symbols: Σ , \bar{X} , N , X and Y .
4. Know the definition of the various scaling systems, be able to recognize examples of each, and be aware of why scaling systems are important to statistics. (202-205)
5. Be able to define the terms: continuous, discontinuous (discrete), and dichotomous.
6. Be able to recognize the true and apparent limits of a number and/or class interval.
7. Be able to recognize and construct a frequency distribution, and group frequency distribution. (29-32)
8. Be able to recognize and/or construct a Bar Graph, Histogram, and Frequency Polygon. Also be aware of the misuses of graphing techniques. (30-31)
9. Be aware of what a frequency distribution is, and the various shapes that such distributions frequently take.
10. Know what is meant by the terms percentile and percentile rank. (54)
11. Be able to compute the percentile rank for any given raw score and/or obtain the raw score at a given percentile from a grouped frequency distribution.
12. Be aware of some of the problems associated with percentile ranks.
13. Know what is meant by "Measures of Central Tendency." (35-49)
14. Be able to define and compute a mean. (35)
15. Be able to define and compute a median. (39)
16. Be able to define and recognize a mode. (40-41)
17. Know where and when each of the measures of central tendency is appropriate to use: i.e., strengths and weaknesses of each.

18. Be aware of the relationship that the mean, median, and mode have in normal and skewed distributions. (37,39)
19. Understand what is meant by the idea of variability and why measures of dispersion are needed. (53-69)
20. Be able to define and compute the range. (54)
21. Know what is meant by the term Semi-Interquartile Range. Be able to compute Q , and be aware of its weaknesses. (55)
22. Know what is meant by the terms: Mean deviation, and Variance, and be able to compute both. (60)
23. Be able to reproduce the definitional formula for the computation of the Standard Deviation and be able to compute a standard deviation using this formula. (56-60)
24. Be able to compute a standard deviation using either of the two raw score formulas mentioned in class.
25. Know what is meant by the concept of a standard deviation and its relationship to the normal curve. (handout and 74)
26. Pearson's coefficient of skew and Sk . (597)
27. Know when and where it is appropriate to use $n-1$ in the computation of the standard deviation. (168)

Test 1

28. Understand what is meant by the term transformed score. (97-115)
29. Be able to compute a z-score. (76-80, 84-89)
30. Be able to go from any given z score and/or z scores and tell me what relationship they have to the normal curve. Be able to use Table A (80-84)
31. Know what is meant by T score, C.E.E.B. Scores, A.G.C.T. Scores, Wechsler deviation, and Wechsler sub tests scores, etc. (106-109)
32. Be able to transform one standard scoring system into another.
33. Be able to define the term correlation, and illustrate this concept in terms of a scattergram, lists of scores, etc. (282-289)
34. Realize that there are various types of correlation coefficients and that Pearson r and Rho are only two examples of such correlation coefficients.
35. Be able to tell me when and where it is appropriate to use Pearson r and Rho. (301)

36. Be able to compute a Pearson r and know and be able to appropriately use the various Pearson r formulas.
37. Realize where it is inappropriate to use Pearson r . (310)
38. Be familiar with the concept of restriction of the range and the effects it has on r . (295)
39. Be able to compute a Spearman r (or Rho), and know when it is appropriate to use this correlation coefficient. (303-304)
40. Be able to construct a regression line, i.e., line of best fit through a scatterplot. (399-414)
41. Be able to compute slope and intercept and be able to explain what is meant by these terms. Be able to predict X from Y , and Y from X . (399-414)
42. Be able to establish a confidence level for a given correlation coefficient. (412-414)
43. Understand what is meant by the term standard error of estimate. (412)
44. Be familiar with the concept of r^2 . (296-298)
45. Realize that you can't prove causation on the basis of correlation and be able to verbalize why this is so.

Test 2

46. Be familiar with the inverse logic system upon which statistical inference rests and how the Null and Alternative Hypothesis fits into this scheme of things. (266-269)
47. Know and be able to use the general probability formula. (120-121)
48. Know and be able to use the formula of the probability of A or B . (133)
49. Know and be able to use the formula of the probability of A and then B . (133-134)
50. Be familiar with the general steps that are used in hypothesis testing.
51. Be able to define the following terms: Null Hypothesis, Alternative Hypothesis, Type I error, and Type II error. (178-181)
52. Be able to articulate what is meant by the concept Standard Error of the Mean. (176)
53. Be able to compute the Standard Error of the Mean. (156, 171)
54. Be able to test various hypotheses about where the true mean of the population might lie given various obtained sample means. (173-177)

55. Be able to establish confidence intervals around various obtained sample means. (185-189, 241-248)
56. Be able to set up, compute, and interpret the three types of T statistics. Further, know where each is appropriate. (Handouts, 175-176, 248)
57. Be able to set up, compute, and interpret a one-way analysis of variance. (323-337)
58. Be able to set up, compute, and interpret a two-way analysis of variance. (342-354)
59. Be able to do a post hoc analysis using Scheffe's.
60. Be able to do a post hoc analysis using Tukey's HSD (337-339)
61. Be able to set up, compute, and interpret the two different types of chi square statistics. (366-377)
62. Know what is meant by the term analysis of covariance, and be able to run such a problem on the computer.
63. Be able to recognize a repeated measures design, and be able to run such a program on the computer.
64. Exercises in choosing the correct statistical test. (556-582)

Final