Psychology 280
Test #2 – Chapters 8, 9, 12 & 13

Chapter 8 – Experimental Design
➢ Understand how the experimental design differs from nonexperimental designs. Reviewing Chapter 4 may be helpful and first slide of Experimental Design lecture notes.*
➢ Compare and contrast the basic experiments (e.g. posttest only, pretest-posttest, Solomon-four group), including their advantages and disadvantages. Be sure to understand the role of a pre-test in these designs.*
➢ Understand what a confounding variable is and what a researcher can do to minimize its impact.*
➢ Differentiate between independent groups and repeated measures designs. What are their advantages and disadvantages? Specifically, look at the number of participants each design needs and how they account for participant differences. Also, what is a central feature of the independent groups design that repeated measures designs do not have? Ability to identify or generate examples of independent groups and repeated measures designs.*
➢ With repeated measures designs, understand the types of order effects, including approaches to deal with these effects such as counterbalancing. Understand how many conditions you will need to test in the counterbalancing approaches, including a Latin Squares design.
➢ Be able to define and identify the different developmental research designs.

Chapter 9 – Conducting Experiments
➢ Compare and contrast the ways of manipulating an independent variable. Understand straightforward and staged manipulations and why you might or might not use each approach.
➢ Ability to explain the importance of the strength of manipulating the independent variable.
➢ Understand the three general types of measures used in measuring dependent variables. Ability to give examples of each type.*
➢ Understand why cost and ethics are two major considerations when deciding on how to measure the dependent variable.
➢ Ability to explain the importance of the sensitivity of the dependent variable. Be sure to understand ceiling and floor effects.*
➢ Understand the additional control procedures that may be necessary to address alternative explanations.
  o Specifically focus on placebo groups, experimenter bias, and expectancy effects.
➢ Understand the role of pilot studies, manipulation checks and debriefing.
➢ When do we use probability versus haphazard sampling?
Chapter 12 – Understanding Research Results
- What is a frequency distribution? What are the major types of graphs used to display frequency distributions?
- Ability to explain measures of central tendency and variability. What are their role in describing the data?
- Understand what a correlation coefficient is, with what type of data you use it with and be able to describe what the strength of its relationship means.
- What are the patterns of correlation relationships and what do they mean for the variables involved? That is, positive, negative, and no relationship.
- Understand the basic purpose of regression and multiple regression/correlation.
- How do partial correlations help address the third variable problem?

Chapter 13 – Understanding Research Results
- Understand why we use inferential statistics.
- Explain the difference between the null hypothesis and the research hypothesis. Explain what types of errors you can make in hypothesis testing. Understand the Type I/Type II decision matrix.*
- Have a clear understanding of the role significance testing (including selecting a significance level) plays in hypothesis testing, including its impact on Type 1 and Type 2 errors.*
- Understand what factors influence selecting an alpha level.
- Understand the pros and cons of interpreting a nonsignificant result (that is, accepting the null hypothesis).
- Ability to select the appropriate inferential statistic test for nominal, ordinal, interval and/or ratio data. Specifically, be familiar with when a chi-square, t Test or analysis of variance are used based on the level of measurement (pgs. 252-254).

*Denotes areas where essay questions may be asked.