Division of Social and Behavioral Sciences
Department of Psychology

PSYC 2317: Statistical Methods in Psychology
CRN 14010 – Fall 2016
Angela Morales 306, Tuesdays 9:30-11:00am
3 hour lecture course / 48 hours per semester/ 16 weeks
Hybrid

Instructor: Charles L. Earley, J.D., M.A.
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Psychology Department Chair: Dr. Karen P. Saenz, karen.saenz@hccs.edu

Office Location and Hours By Appointment
Please feel free to contact me concerning any problems that you are experiencing in this course. You do not need to wait until you have received a poor grade before asking for my assistance. Your performance in my class is very important to me. I am available to hear your concerns and just to discuss course topics.

Email Policy
HCCS policy requires instructors and students to communicate only through the HCCS email system. If you have not activated your HCCS student email account, you can do so here (http://www.hccs.edu/district/students/student-e-maileagle-id/). Emails will generally be answered within 48 hours during weekdays, not including holidays.

Course Description
PSYC 2317 is an introduction to the use of scientific methods in psychology and to the statistical analysis of data. Attention is given to descriptive and inferential statistical methodology including t-tests, analysis of variance, correlation and regression.

Prerequisites
PSYC 2317 requires MATH 0312 (or higher). Students must be placed into college-level reading (or take INRW 0420 or ESOL 0360 as a co-requisite and be placed into MATH 0312 or higher. If you have enrolled in this course without having satisfied these prerequisites, you are at higher risk of failure or withdrawal than students who have done so, and you should carefully read and consider the repeater policy in the HCCS Student Handbook.

Program Student Learning Outcomes (PSLOs) for all PSYC Courses

1. Define, discuss, and apply key terms and concepts that are essential to success in upper division psychology courses (e.g., abnormal psychology, history and systems of psychology, advanced learning theory, developmental psychology, industrial/organizational psychology).
2. Outline, define, discuss, and apply the steps of the scientific method.
3. Define, discuss, and apply key terms and concepts associated with descriptive and experimental research methods.
4. Define, discuss, and apply psychological terms and concepts that are commonly found in news reports, self-help literature, parenting literature, and psychotherapy.

Core Curriculum Objectives (CCOs) for all PSYC Core Courses

PSYC 2301 satisfies the social science requirement in the HCCS core curriculum. The HCCS Psychology Discipline Committee has specified that the course addresses the core objectives as follows:

- ***Critical Thinking***: Students will demonstrate the ability to engage in inquiry and analysis, evaluation and synthesis of information, and creative thinking by completing a written assignment such as a book report, research paper, or essay.
- ***Communication Skills***: Students will demonstrate effective development, interpretation and expression of ideas through written, oral, and visual communication by completing a written assignment such as a book report, research paper, or essay.
- ***Quantitative and Empirical Literacy***: Students will demonstrate the ability to draw conclusions based on the systematic analysis of topics using observation, experiment, and/or numerical skills by completing textbook reading assignments, completing assignments, and answering questions on quizzes and exams that pertain to Course Student Learning Outcome #2 above.
- ***Social Responsibility***: Students will demonstrate cultural self-awareness, intercultural competency, civil knowledge, and the ability to engage effectively in regional, national, and global communities by completing textbook reading assignments, completing assignments, and answering questions on quizzes and exams that pertain to Course Student Learning Outcome #4 above.

Course Student Learning Outcomes (CSLOs) for PSYC 2317

Upon completion of this course, the student will be able to:

1. Identify and interpret common statistical notation, the outcomes of inferential tests and the concept of statistical significance.
2. Select, explain and utilize common research designs including experimental methods, quasi-experimental methods and correlational techniques.
3. Demonstrate understanding of the concepts of probability using the statistical tables.
4. Calculate basic inferential statistics, including z-tests, t-tests, ANOVA, correlation coefficients, and simple linear regression.
5. Use the appropriate t-test for a data set, including knowledge of single sample and independent samples t-tests.
6. Conduct hypothesis tests with ANOVA (Independent Measures and Two-Factor).

Learning Objectives

1. Define and identify basic general concepts in statistics.

CORE DOMAIN 1: General Statistical Concepts and Terminology
Define:
1.1.1. Statistics
1.1.2. Population
1.1.3. Sample
1.1.4. Parameter
1.1.5. Statistic
1.1.6. Descriptive statistics
1.1.7. Inferential statistics
1.1.8. Sampling errors

CORE DOMAIN 2: Methodology
Define:
1.2.1. The correlational method
1.2.2. The experimental method
1.2.3. Nonexperimental methods (quasi-experimental method)

CORE DOMAIN 3: Variables and Measurement
Define
1.3.1. Discrete variable
1.3.2. Continuous variable
1.3.3. Real limits
1.3.4. Scales of measurement
1.3.5. The nominal scale
1.3.6. The ordinal scale
1.3.7. The interval scale
1.3.8. The ratio scale
1.3.9. Summation notation (upper case sigma, for summation)

2. Describe and explain concepts and procedures of descriptive statistics.

CORE DOMAIN 1: Frequency Distributions
Describe and explain the procedure to construct
2.1.1 Frequency distribution tables
2.1.2. Frequency distribution graphs
2.1.3. Histograms
2.1.4. Polygons
2.1.5. Bar graphs

CORE DOMAIN 2: The Shape of a Frequency Distribution
Describe
2.2.1. Symmetrical distribution
2.2.2. Positively skewed distribution
2.2.3. Negatively skewed distribution

CORE DOMAIN 3: : Central Tendency
Describe and explain
2.3.1. Central tendency
2. 3.2. Types of central tendency
2.3.3. Features of the mean
2.3.4. Features of the median
2.3.5. Features of the mode

CORE DOMAIN 4: : VARIABILITY
Describe and explain
2.4.1. Variability
2. 4.2 Ranges
2.3.2 Variance
2.3.4. Standard deviation

CORE DOMAIN 5: Z-Scores (Standardized Scores)
Describe and explain
2.5.1. Z Scores, formula and application
2.5.2 Features of the Z distribution
2.5.2. Other standardized distributions based on z-scores

3. Describe and explain probability theory and hypothesis testing procedure.

CORE DOMAIN 1: Probability
Describe and explain the computation of
3.1.1 Probability
3.1.2. Probability in a normal distribution (using the Unit Normal Table)
3.1.3. The Sampling Distribution of the mean

CORE DOMAIN 2: Sampling and Probability
Describe and explain
3.2.1. The distribution of sample means
3.2.2. The central limit theorem
3.2.3. The expected value of the sample means
3.2.4. The standard error

CORE DOMAIN 3: Hypothesis Testing
Describe and explain
3.3.1. Hypothesis testing steps
3.3.2. Types of hypotheses: Null and Alternative
3.3.3. Nondirectional (two-tailed) and Directional (one-tailed) tests
3.3.4. Region of rejection or critical values as a criterion
3.3.5. Types of decision: Reject and Fail to reject null hypothesis.
3.3.6. Type I errors
3.3.7. Type II error
3.3.8. Effect size (Cohen's d)

4. Describe, explain, and compare various inferential statistical procedures.

CORE DOMAIN 1: Single-Sample t test
Describe and compute
4.1.1. The single t test and it's assumptions
4.1.2. The t formula
4.1.3. The t distribution
4.1.4. Degrees of Freedom
4.1.5. Effect size

CORE DOMAIN 2: The t test for independent samples
Describe and compute
4.2.1. The independent t test
4.2.2. The pooled variance
4.2.3. Effect size
4.2.4. Homogeneity of variance assumption

CORE DOMAIN 4: Analysis of Variance (ANOVA)
Explain and compute:
4.5.1. ANOVA: The F test and its assumptions
4.5.2. F Distribution
4.5.3. Types of degrees of freedom: Between and Within
4.5.4. Types of Sum Squares: Between and Within
4.5.5. Types of Mean Squares: Between and Within
4.5.6. The ANOVA summary table, SSs, DFs, F5
4.5.7 Two-Factor ANOVA

CORE DOMAIN 5: Correlation
Explain and describe:
4.6.1. Pearson's r
4.6.2. Types of correlations
4.6.3. Hypothesis testing with r

CORE DOMAIN 6: Regression
Explain and compute:
4.7.1. Regression and regression line
4.7.2. Coefficient of determination

Instructional Methods

Success in the Course
As with any three-hour course, you should expect to spend ***at least six hours per week*** outside of class reading and studying the material. I will provide assignments to help you use those six hours per week wisely. Successful completion of this course requires a combination of reading the textbook, attending class, completing assignments in APLIA. There is no short cut for success in this course; it requires reading (and probably re-reading) and working through the assigned problems in the chapters.

Eagle Online Canvas Learning Management System
This section of PSYC 2317 will use Eagle Online Canvas to supplement in-class assignments, exams, and activities. Multiple assignments and videos will be posted on Eagle Online Canvas that supplement the material discussed in class and provide notes for the class. HCCS Open Lab locations may be used to access the Internet and Eagle Online Canvas. **YOU MUST USE FIREFOX OR CHROME AS YOUR** BROWSER. For a free download of Firefox for free, go to http://www.mozilla.org/en-US/firefox/new/

Instructional Materials
Essentials of Statistics for the Behaviorial Sciences (8th Edition) with Aplia Access Code by F. Gravetter and Larry Wallnau ISBN-10: 1133956572

Temporary Free Access to Aplia with E-Book
See "How to Access Your Aplia Course" on the last page of this syllabus.

Aplia
Aplia assignments will be posted throughout the semester. Please note the due dates and make sure assignments are submitted in a timely manner.

Exams and Assignments

Quizzes or Exams
The three exams and a comprehensive final are designed to test the student's ability to:
1. Define and identify basic general concepts in statistics.
2. Describe and explain concepts and procedures of descriptive statistics.
3. Describe and explain probability theory and hypothesis testing procedure.
4. Describe, explain, and compare various inferential statistical procedures.

Exams will consist primarily of problems that test your ability to understand statistical concepts and the ability to analyze data.

Written Assignment
There will be a research assignment that is a major part of this class. All projects will be entered in the PSYC Fair competition. Specifics of the project will be included in the PSYC Fair handout and on the Blackboard site for this class.

For this study, you must develop and complete a research project utilizing data that are already available. This will include a poster presentation and a completed manuscript in APA format.

More information will be provided on Eagle Online Canvas.

Aplia Assignments
Various Aplia assignments will be assigned throughout the semester.

Final Exam
The final exam is comprehensive and covers all the material covered in the text.

Grading Formula

Aplia Assignments	100 points
Canvas Assignments	100 points
Exams	300 points
Written Assignment(s)	250 points
Final Exam	250 points

Grade	Total Points
A	900+
B	800-899
C	700-799
D	600-699
F	<600

HCC Grading Scale

A	100-90	4 points per semester
B	89-80	3 points per semester
C	79-70	2 points per semester
D	69-60	1 point per semester
F	<60	0 points per semester
FX	Failure due to non-attendance	0 points per semester
IP (In Progress)		0 points per semester
W (Withdrawn		0 points per semester
I (Incomplete)		0 points per semester
AUD (Audit)		0 points per semester

IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA.

Makeup Policy

There are **no make-up assignments or exams**. Students have ample time to complete assignments. If you wait until the last minute and there is a problem that prevents you from completing an assignment, you will not be allowed additional time. The grade for a missed exam will be dropped only if there is a reason found acceptable by the instructor. If the instructor does not find the reason for missing the exam acceptable, a "zero" will be recorded for that exam. Acceptable reasons to drop an exam grade include, but are not limited to, hospitalization, detention in jail, or a death in the family. Documentation must be provided. Pay attention to due dates and times.

Incomplete Grades

In order to receive a grade of Incomplete ("I"), you must have completed at least 85% if the work in the course. In all cases, the instructor reserves the right to decline a student's request to receive a grade of Incomplete.

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Course Calendar

DATE	DATES	TOPIC/ASSIGNMENT
WK 1	08/23	Syllabus Introduction to Aplia
WK 2	08/30	Read Ch 1 Statistical Notation Ch 1 Aplia Problem Set
WK 3	09/06	Read Ch 2 Frequency Distributions Ch 1 and 2 Aplia Problem Set

WK 4	09/13	Read Ch 3 - Central Tendency Ch 3 Aplia Problem Set
WK 5	09/20	Read Ch 4 – Variability Ch 4 Aplia Problem Set
WK 6	09/27	Read Ch 5 Z-Scores Ch 5 Aplia Problem Set
WK 7	10/04	Read Ch 6 Probability Ch 6 Aplia Problem Set
WK 8	10/11	Read Ch 7 Sampling Distributions Ch 7 Aplia Problem Set Read Ch 8 Hypothesis Testing Ch 8 Aplia Problem Set EXAM 1
WK 9	10/18	Read Ch(s) 9 and 10 T-Statistics Ch(s) 9 and 10 Problem Sets
WK 10/11	10/25 11/01	Read Ch(s) 12 and 13 ANOVA Ch(s) 12 and 13 Aplia Problem Sets
WK 12	11/08	Read Ch(s) 12 and 13 ANOVA Ch(s) 12 and 13 Aplia Problem Sets
WK 13	11/15	Read Ch 14 Correlation Ch(s) 12 and 13 Aplia Problem Sets EXAM 2
WK 14	11/22	Read Ch 15 Chi Square Ch 14 Aplia Problem Set Quiz 11 – Correlation
WK 15	11/29	EXAM 3/REVIEW
WK 16	12/06	**FINAL EXAM**

Last day to Withdraw: 10/28

Instructor and Student Responsibilities

As your Instructor, it is my responsibility to**:**

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through class activities, discussions, and lectures
- Description of any special projects or assignments
- Inform students of policies such as attendance, withdrawal, tardiness and make up
- Provide the course outline and class calendar which will include a description of any special projects or assignments
- Arrange to meet with individual students before and after class as required

To be successful in this class, it is the student's responsibility to**:**

- Attend class and participate in class discussions and activities

- Read and comprehend the textbook
- Complete the required assignments and exams:
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts and all assignments
- Be aware of and comply with academic honesty policies in the HCCS Student Handbook

Attendance
You are encouraged to attend each class since regular attendance correlates with good grades. Be on time and attend the entire class. If you must be absent, you are, of course, responsible for the material covered in class in your absence (see the Course Calendar). Be advised that instructors must drop students who fail to attend class by the official date of enrollment ("Census Day"). In addition, instructors may drop students who miss six hours of class time. If you decide to withdraw from the course, it is your responsibility to complete the proper forms with the registrar's office.

Withdrawal
If you decide to withdraw from the course, it is your responsibility to do so online via the PeopleSoft student management system. If you need assistance, visit the counselors' office on your campus. You may wish to discuss your decision to withdraw from the class with your instructor beforehand.

Classroom Conduct
I expect students to conduct themselves professionally in their communications with me, their classmates, and college staff and administration. Behavior inappropriate to the collegiate setting (including but not limited to abusive/derogatory/threatening/harassing language directed at the instructor or towards other students, staff or administrators) will not be tolerated, and may result in removal from the course if severe and/or repeated.

Student Organizations

Psi Kappa
All students are invited to join Psi Kappa, an organization that can help students learn about psychology outside the classroom, serve the community, meet students in other PSYC classes, interact with PSYC faculty, and learn leadership skills. For more information, visit the Psi Kappa page on the HCC Learning Web, the Psi Kappa blog, and the Psi Kappa Facebook page.

Psi Beta
HCC has an active chapter of Psi Beta: National Honor Society in Psychology for Community and Junior Colleges. To learn more about this organization visit the Psi Beta website. For information about the HCC chapter, visit the Psi Beta page on the HCC Learning Web.

Psychology Achievers Scholarship
To be eligible for the $125 per semester Psychology Achievers Scholarship, a student must (1) meet all HCC Foundation criteria for scholarship eligibility, and (2) make an A in either PSYC 2301 or PSYC 2314. For more information, visit the HCC Foundation scholarship website.

Tutoring
Visit this page to find out about HCC tutoring services.

HCCS Student Policies
All students are responsible for reading and understanding the HCCS Student Handbook, which contains policies, information about conduct, and other important information. Access the handbook at http://central.hccs.edu/students/student-handbook/

EGLS$_3$ Evaluation for Greater Learning Student Survey System
The EGLS3 (Evaluation for Greater Learning Student Survey System) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS3 surveys are only available for the Fall and Spring semesters. There are no EGLS3 surveys during the Summer semester due to logistical reasons.

Office of Institutional Equity
Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights are on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance. It is important that every student understands and conforms to respectful behavior while at HCC. Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations. Log in to www.edurisksolutions.org. Sign in using your HCC student email account, then go to the button at the top right that says Login and enter your student number.

How to Access Your Aplia Course

What is Aplia?

In just 10 years, more than one billion answers have been submitted through Aplia, the premier online assignment solution. Millions of students use Aplia to better prepare for class and for their exams. Join them today!

Registration

1. Connect to https://login.cengagebrain.com/cb/entitlement.htm?code=C9UR-PD66-VDMM
2. Follow the prompts to register for your Aplia course.

Payment

After registering for your course, you will need to pay for access using one of the options below:

Online: You can pay online using a credit or debit card, or PayPal.

Bookstore: Textbooks packaged with an Aplia access code are available in the HCC bookstore.
Free Trial: You will be offered a free trial of Aplia during the registration process. Use this option if you are unable to obtain a textbook and Aplia access at the beginning of the semester. Later, you will be able to convert your free trial to paid access. You will not have to set up a new Aplia account.

Please note: At the end of the free trial period, your course access will be suspended until your payment has been made. All your scores and course activity will be saved and will be available to you after you pay for access.

If you already registered an access code or bought Aplia online, the course key to register for this course is: C9UR-PD66-VDMM

System Check

To check whether your computer meets the requirements for using Aplia, go to http://www.aplia.com/support/sysreq.jsp.