

STATISTICAL METHODS IN PSYCHOLOGY

[PSYC 2317, 2-3:30pm, West Loop Rm 132B, CRN 78452]
Fall 2015

Professor: Dr. Neneh Kowai-Bell

Department Chairperson: Dr. Karen Saenz

Final Exam: Date _____ Time _____. Bring Scantron. Location: (in the regular classroom).

Instructor Contact Information: please use Eagle Online 2 Quickmail.

[EO2 can be found on the HCC *student sign-ins* webpage.]

EO2 Quickmail will be forwarded to neneh.kowaibell@hccs.edu without risk of getting lost.

**PLEASE BE ADVISED THAT RESPONSES TO QUICKMAIL appear in your HCC email account.
As such, you MUST activate your HCC email to receive emails.**

Office hours: Mon/Wed 1-3pm (by appointment) & Tues/Thurs 3:30-4pm

COURSE DESCRIPTION: An introduction to the use of scientific methods in psychology and to the statistical analysis of data. Attention is given to descriptive, correlation and inferential statistical methodology.

PREREQUISITE: Must be placed into college level reading (or take GUST 0342 as a co-requisite) and be placed into college level writing (or take ENGL 0310/0319 as a co-requisite) and be placed into MATH 0312 (or higher).

How to be successful in this class:

1. Read before class.
2. Attend all classes, take notes, and ask questions if anything is unclear.
3. Do the problems (Aplia is required & End of Chapter questions will be assigned).
4. Ask questions.

REQUIRED TEXTBOOK and APLIA WEBSITE:

APLIA WEBSITE

Aplia is part of CengageBrain, which allows you to sign in once and access your materials and courses. It is an online learning tool that will help you gain a better understanding of the content presented in this class. You will also be able to access an electronic copy of the text for you to print.

Course Key: VW9S-T2H5-RETA

Student Registration URL:

<http://login.cengagebrain.com/course/VW9S-T2H5-RETA>

Gravetter & Wallnau. (2013). Essentials of Statistics for Beh Sciences. ISBN: 9781285918303

You can begin working on assignments as soon as you register! You **MUST** purchase Aplia's website for this course. However, access is free for three weeks but then payment must be made to continue. **Free Access ends SEP 13, 2015.**

You will have access to a digital version of the textbook on Aplia through the end of this course as long as you purchase Aplia.

The questions presented in Aplia are designed to challenge your critical thinking skills and mimic real life situations.

Registration:

1. Connect to <http://login.cengagebrain.com>.
2. If you already have an account, sign in. From your Dashboard, enter your course key in the box provided, and click the Register button.

If you don't have an account, click the Create an Account button, and enter your course key when prompted: Continue to follow the on-screen instructions. Access is free for three weeks but then payment must be made to continue. Free Access ends **SEP 13, 2015**.

More than 10% of your grade comes from the “Graded” Aplia assignments. You have three attempts at each question, and your grade is based on average score for the three attempts.

(Required: *Aplia*)

CLASSROOM ACTIVITY:

The instructor will prepare lectures, demonstrations and assign learning exercises to cover each topic listed on the schedule. Lectures will cover much of the material on which you will be tested. Read the assigned chapters prior to class and complete the homework assignments. Come prepared to participate by asking questions, and sharing examples.

PLEASE MUTE ELECTRONIC DEVICES DURING CLASS. YOU CAN BE ASKED TO LEAVE FOR THE DAY AND CONSIDERED ABSENT IF A CELL PHONE INTERRUPTS CLASS OR AN EXAMINATION.

MOBILE PHONES ARE NOT TO BE USED DURING CLASS OR EXAMS. LOOKING AT OR USING A PHONE IN ANY MANNER WHILE IN POSSESSION OF AN EXAM WILL INCUR A ZERO THAT WILL NOT BE DROPPED.

Date		In Class	Homework
Tu	Aug 25	Syllabus & introduction to class	Learn vocabulary for Quiz 1.1
Th	Aug 27	Ch 1: Populations and Samples, Scales of Measurement (Quiz Ch 1 part 1)	Learn vocabulary for Quiz 1.2
		“Orientation” (How to use Aplia) & Math Review →	Read Ch 1 (before 9/1) 2 Aplias due Sun 8/30
Tu	Sept 1	Ch 1: Types of Studies: Correlational Methods (Quiz Ch 1 part 2) & Experimental & Quasiexp Methods	Read Ch 2 (before 9/3)
Th	Sept 3	Ch 2: Descriptive Statistics Frequency Distributions, Shapes of Distributions	Aplia (Ch 1) due Sun 9/6 Aplia (Ch 2) due Sun 9/6 Read Ch 3 (before 9/8)
Tu	Sept 8	Ch 3: Central Tendency (Quiz Ch 1 part 3?) Descriptive Statistics	> Last day to drop 9/8 << Read Ch 4 (before 9/10)
Th	Sept 10	Ch 4: Variability (Quiz Ch 2 & 3?) & Order of Operations Review	Aplia (Ch 3) due Sun 9/13 Do problems assigned by Dr. K Aplia (Ch 4) due Sun 9/13
Tu	Sept 15	** EXAM 1 (CH 1-4) **	
Th	Sept 17	Ch 5: Z-scores (Quiz Ch 4- concepts and calculations)	Read Ch 6 (before 9/22) Aplia (Ch 5) due Sun 9/20
		Ch 5 →	Do text problems assigned by Dr. K
Tu	Sept 22	Ch 6: Probability (Quiz from hmwk Ch 5)	Read Ch 7 (before 9/24)
Th	Sept 24	Ch 7: Sampling Distributions	Ch 6 & 7 → Do text problems assigned by Dr. K Aplia (Ch 6) due Sun 9/27 Aplia (Ch 7) due Sun 9/27 Read Ch 8 (p. ____ by 9/29)
Tu	Sept 29	Ch 8: Hypothesis Testing (Quiz from hmwk ch 6 & 7)	Ch 8 → Do text problems assigned by Dr. K
Th	Oct 1	Ch 8: Hypothesis Testing	Read Ch 8 (p. ____ by 10/1) Aplia (Ch 8) due Sun 10/4
Tu	Oct 6	Go over assigned end-of-ch. questions (Quiz from hmwk ch 5 - 8)	
Th	Oct 8	** EXAM 2 (CH 5-8) **	
Tu	Oct 13	Ch 9: Intro to t-test	Read Ch 9 (p. ____ by 10/15) Do Ch 9 problems assigned by Dr. K
Th	Oct 15	Ch 9: Intro to t-test con't	Aplia (Ch 9) due Sun 10/18 Read Ch 10 (before 10/20) Do problems assigned by Dr. K

Tu	Oct 20	Ch 10: Independent Samples t-test (Quiz from hwk Ch 9)	<i>Aplia</i> (Ch 10) due Sun 10/25 Read Ch 11 (p. ___ by 10/22)
Th	Oct 22	Ch 11: Repeated Measures & Related Samples t-test (Quiz from hwk Ch 10)	<i>Aplia</i> (Ch 11) due Sun 10/25
Tu	Oct 27	Go over assigned end-of-ch. questions (Quiz from hwk Ch 9-11)	>> Last day to << >> Withdraw 10/30 <<
Th	Oct 29	** EXAM 3 (CH 9-11) **	Learn vocabulary for Quiz Ch 12 Read Ch 12 (before 11/4)
Tu	Nov 3	Ch 12- Analysis of Variance (ANOVA) Concepts (Quiz Ch 12)	
Th	Nov 5	Ch 12 continued... Calculations	<i>Aplia</i> (Ch 12) due Sun 11/8 Read Ch 13 (p. ___ by 11/10) Do Ch 12 problems assigned by Dr. K
Tu	Nov 10	Ch 13: Two Factor ANOVA (Quiz from hwk Ch 12)	Read Ch 13 (p. ___ by 11/12) Do Ch 13 problems assigned by Dr. K
Th	Nov 12	Ch 13 continued... Concept: <i>Interactions</i>	<i>Aplia</i> (Ch 13) due Sun 11/15
Tu	Nov 17	Review for Exam 4 (& Quiz from hwk Ch 13)	
Th	Nov 19	** EXAM 4 (CH 12-13) **	<i>Aplia</i> (Ch 13) due Sun 11/22 Learn vocabulary for Quiz Ch 14 Read Ch 14 (p. ___ by 11/24)
Tu	Nov 24	Ch 14: Correlation	
Th	Nov 26	Thanksgiving- No Class	
Tu	Dec 1	Ch 14: Correlation continued... (Quiz from hwk Ch 14) Go over review sheet	
Th	Dec 3	Review	<i>Aplia</i> (Ch 14) due Sun 12/6
Tu	Dec 8	If the Final is Thursday, then no required class Tues. Dr. K will be available 1:15- 2:15 pm for questions	
Th?	Dec 10? 2-4pm	** FINAL EXAM (CH 1-14) ** Location: Regular classroom	← See HCC Website for time and date of final. It may be Tuesday.

- Aplia online assignments are due at 10pm. No late assignments unless specified.
- In-class quizzes occur at the start of class. Late students forfeit the missed quiz points.
- There may be in-class activities or homework due for credit that are not on this schedule.
- Aplia deadlines are provided here as guidelines. The official deadline is provided online in Aplia.
- There may be problems assigned by Dr. K that are not on this schedule.

Please note that changes to the syllabus may occur at the instructor's discretion and will be announced in class.

You will be responsible for any changes

GRADING AND EVALUATION

Your final grade will be calculated according to the following formula:

- A. Exams (proctored on campus during class) (60%) Best 3 out of 4 exams
- B. Comprehensive final exam (20%)*
- C. Aplia Graded Assignments (15%) of the course grade. You will have three attempts to solve each problem and the grade will be the average of the three attempts.
- D. In-class quizzes, activities and professionalism (15%).
[See p. 11 of syllabus for expectations for "Professionalism"](#)

Final Averages will earn the following grades:

A = 90-100%

B = 80-89.99%

C = 70-79.99%

D = 60-69.99%

F = Below 60%

No extra credit will be given to an individual student.

Connect

PeopleSoft

- [Student System sign-in](#)
- [Student System Help](#)

Eagle Online

- Eagle Online 2 Login: eo2.hccs.edu

Student Email

- webmail.hccs.edu

Learning Web

- learning.hccs.edu

How to log in to Eagle Online 2 (EO2):

Eagle Online 2 Login instructions are in your HCC email. Your login will be the W# you used to register for classes.

If you do not know your W number, you can look it up from the [Student System Sign In](#) page (see "Forgot My User ID"). For more information on your User ID or your HCC Email password see the [Eagle ID web page](#).

Your Eagle Online 2 username/password is the same as your Eagle ID, which is the User ID or W number that you were issued upon admission and the password you created for your HCC Email. Your Eagle ID is also used for logging into campus computers, AskOnline tutoring, printing on campus, etc.

Eagle Online 2 Support: For Eagle Online documentation, tutorials (including movies), phone and chat support, go to the [HCC Eagle Online support website](#). Phone support: 713-718-2000, options 4, 2, 3 (available 24 x 7)

EXAMS

Plan to take all exams. THERE ARE NO MAKE-UP EXAMS PROVIDED. ONE MISSED EXAM SCORE WILL BE DROPPED.”. The final exam grade **will not be dropped**.

For the exams, you will be allowed to prepare and use a 1-page handwritten sheet (which will be turned in with your exam). The exam will be closed-book, closed note, except for your 1-page hand written sheet.

No typed, photocopied, or printed material will be allowed.

PLEASE TAKE CARE OF ALL PERSONAL NEEDS PRIOR TO THE BEGINNING OF AN EXAMINATION. NO ONE WILL BE ALLOWED TO LEAVE THE ROOM AFTER BEGINNING AN EXAM WITHOUT SUBMITTING THEIR ANSWERS AS COMPLETE. **Anyone arriving more than 15 minutes late for any examination may be considered absent and will have missed the examination.**

See Full Length Syllabus for Course Objectives and Learning Objectives.

COURSE GOALS: To develop knowledge and skills in the use of proper statistical methodology (both descriptive and inferential statistics) in analyzing data collected by scientific methods in psychology.

STUDENT LEARNING OUTCOMES:

1. Define and identify basic concepts in inferential and descriptive statistics.
2. Explain and apply the concepts and procedures of descriptive statistics.
3. Describe and utilize principles of probability and hypothesis testing.
4. Apply and interpret common inferential statistical tests and correlational methods.

OBJECTIVES:

Part I: The basic components of statistics.

1. To learn the basic terminology and logic of statistical Analysis.
2. master definitions and computations with the exception of the power curve and the sample size requirements.

Part II: Applications of inferential statistics to the scientific method

1. The t test will be introduced to replace the z test.
2. Compute one sample, independent sample, and related sample t-tests.
3. Identify, apply, compute and interpret ANOVA, correlation and regression, and Chi Square

STUDY GUIDE

Gravetter, F.J. Study Guide for Essentials of Statistics for the Behavioral Sciences, Wadsworth.

TEXTBOOK WEB SITE: <http://www.cengage.com/cgi->

The textbook companion website for the old edition (7th) offers a practice quiz for each chapter that you may use for additional practice.

The screenshot shows the Cengage Brain website interface. At the top, the Cengage Brain logo is visible. Below it, the title 'Essentials of Statistics for the Behavioral Sciences, 8th Edition' is displayed. A dropdown menu labeled 'Select a chapter ...' is present. On the left, a 'Book Overview' sidebar lists 'Chapter 1' with sub-links for 'Crossword Puzzle', 'Flashcards', and 'Glossary'. The main content area features the book cover for 'Essentials of Statistics for the Behavioral Sciences, 8th Edition' by Frederick J. Gravetter and Larry B. Wallnau. The cover art consists of colorful, overlapping circles. To the right of the cover, the authors' names and ISBN information are listed: ISBN-10: 1133956572, ISBN-13: 9781133956570, and © 2014.

(Optional: extra practice)

POLICIES & NOTICES

Grades are Earned

Grades are earned and you start from zero. I cannot “give” you points for work that has not been turned in or an exam that has not been taken. A final course grade will only be changed if there has been an error. Grades will not be changed, after the fact, for any other reason (such as academic probation, job reimbursement, loss of financial aid, immigration visa status, undisclosed personal circumstance, how hard you studied or how nice of a person you are ☺).

Attendance, Arriving Late, Leaving Early

Points will be associated with activities that happen in class time. If you are absent (or late or leave early), you forfeit those points (including for any quizzes). Students are responsible for material missed and are responsible for obtaining the information from a classmate or other sources (including the textbook). The instructor will not be able to tell you what you missed or re-teach the class one-on-one. After you seek notes from a few classmates, you may come to the professor for clarification/verification. This applies to absences that may be considered “excused” or otherwise. Each full time professor teaches approximately 150 students in a semester. If each student has one excused absence.... it would add up. See the full syllabus for the HCC attendance policy.

Incompletes

A grade of "I" (incomplete) will be considered only for those students who:

- (1) are unable to complete the class because of illness or other extraordinary circumstance
- (2) discuss their situation with the instructor prior to the end of the semester
- (3) have completed at least 80% of quizzes, exams, and assignments.

In all cases, regardless of circumstances, the instructor reserves the right to refuse to award an “I”.

Withdrawal

The last day to withdraw is **Oct 30, 2015**. Check with the registrar for the date and exact time (to the best of my knowledge it may be 4pm). If you do not officially withdraw from the course, but stop coming to class, you will earn an “F” for your academic record.

International Students

Receiving a W in a course may affect the status of your student visa. Once a W is given for the course, it will not be changed to an F for the purpose of maintaining an international student's visa. Please contact the International Student Office at 713-718-8520 if you have any questions about your visa status and other transfer issues.

Repeater Notice

Students who repeat a course three or more times are subject to additional course fees at HCC and other Texas public colleges and universities. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible...

6 Drop Limitation Rule

Beginning in Fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than SIX total course withdrawals throughout their educational career in obtaining a certificate and/or degree... Note: A class dropped between the first day of class and the census date does not affect the 6 drop rule count.

Academic Honesty

Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements.

- You are responsible for knowing and adhering to the HCC Academic Honesty Policy, found in the HCC catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you.
- Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. This can result in receiving an "F" in the course or being dismissed from the College.
- "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion. More information is provided under "HCC Policy Statement: Academic Honesty" in this document and in the HCC Catalog or Student Handbook.

Use of Camera and/or Recording Devices

Use of recording devices, including camera phones and tape recorders, is prohibited in classrooms, laboratories, faculty offices, and other locations where instruction, tutoring, or testing occurs. Students with disabilities who need to use a recording device as a reasonable accommodation should contact the Office for Students with Disabilities for information regarding reasonable accommodations. Do not use recording devices without permission of the instructor.

Students with Disabilities

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the appropriate HCC Disability Support Service (DSS) Counselor at the beginning of each semester. Faculty are authorized to provide only the accommodations requested by the Disability Support Services Office. Students who are requesting special testing accommodations must first contact the appropriate DSS counselor for assistance.

INSTRUCTOR POLICIES & STUDENT RESPONSIBILITIES

1. Eagle Online e-mail and HCC email are the primary means of communication between the instructor and students outside of class and office hours. Students should use the e-mail tool on the Eagle Online course homepage to contact the instructor and check HCC email for the response.

2. This is a face-to-face course in which instruction will be delivered in person. However, we will also use the World Wide Web for required activities (Cengage *Aplia*), communication (Eagle Online 2 email and HCC email), assignment submission (Eagle Online 2), and posting syllabus updates and handouts (HCC Learning Web). As the

need arises to provide other resources, the professor will inform the students (usually in class) of how to access it.

3. Students with disabilities who require modifications must notify the instructor of the specific need as soon as possible after enrollment. To be eligible for modifications, students must clients of the HCCS office serving students with disabilities or of a comparable department at their home institution.

4. Instructions for submission of all assignments must be followed. If an assignment specifies electronic submission of materials, no other format is acceptable.

5. Students are expected to read the full syllabus, read the textbook as assigned, adhere to specified deadlines and policies, and to keep up with assignments.

6. Assignments, quizzes, and other materials that have specific due dates must be submitted by the time and date specified by the professor.

7. Questions for the instructor are to be submitted via Eagle Online e-mail (see HCC email for response) or asked in person.

8. Students who are dropped from the class for administrative reasons (e.g. TASP/THEA compliance, failure to pay) may not submit assignments or take exams until documentation of correction of the problem is provided to the instructor.

9. A grade of "I" (incomplete) will be considered only for those students who have completed at least 80% of quizzes, exams, and assignments satisfactorily. Only students who are unable to complete the class because of illness or other extraordinary circumstance may receive an "I". In addition, only students who discuss their situation with the instructor prior to the end of the semester may receive an "I". In all cases, regardless of circumstances, the instructor reserves the right to refuse to award an "I".

10. The instructor reserves the right to change the syllabus at any time during the course.

11. NO LATE WORK WILL BE ACCEPTED unless otherwise specified in the instructions and there are NO MAKE-UP QUIZZES or EXAMS.

HONESTY & INTEGRITY

HCC Policy Statement: Academic Honesty

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another students' test;

- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of a test that has not been administered;
- Bribing another person to obtain a test that is to be administered.

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook).

INSTRUCTOR RESPONSIBILITIES: Prepare class activities, lectures and exams Review and evaluate results. Assign grades.

STUDENT RESPONSIBILITIES:

- Attend classes in a timely manner and participate.
- Read and comprehend the textbook
- Complete required assignments and exams
- Request help in the event of questions or problems
- Maintain copies of paperwork, handouts, and assignments, including this syllabus

Instructor Evaluation

EGLS3 (Evaluation for Greater Learning Student Survey System)

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time near the end of the term, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and department chairs for continual improvement of instruction. Go to www.hccs.edu/egls3 for more information.

- ✓ Professionalism is a skill that can be practiced and I am willing to give you feedback on that if necessary.
- ✓ **Rules of etiquette apply to face-to-face, phone and online communication.**
- ✓ Note that if unprofessional behavior is egregious enough (as judged by the professor), the entire amount allotted to “professionalism” may be lost.

If you have questions about how you are doing, you may speak to me.

Distractions

Cell phones (and other devices) should be closed/off/silent during class, tests, and presentations. They can be quite distracting for other students. I expect that students refrain from having personal conversations during class.

It’s not always *what* you say, but *how* you say it

Rude behavior such as hostile tone of voice, interruption, or snide remarks while others are speaking is unacceptable. Confrontational and argumentative behavior have no place in our classroom.

Debating

Lecture is not the appropriate time or place for a debate. The professor can devote more time and attention to your individual point in office hours. If the point is relevant to the whole class the professor can share it with them later.

- ✓ Asking thought provoking questions during class is fine, but trying to “win” a debate during class time (at the expense of your classmates getting to hear the material) is not appreciated.

Maintaining a Respectful Classroom Environment

In an academic environment, we all need to stay focused on maintaining a **respectful** classroom (online or face-to-face) where everyone can share without fear of being laughed at or ridiculed. You are very free to disagree with each other. In fact, I encourage a variety of opinions (so if yours is not being stated, please speak up). However, you can disagree without insulting any individual. Saying one position is ridiculous or that an individual who holds a view is stupid (or some other insult) will not be tolerated in class. The following guidelines can help us work toward respectful engagement with the material.

- ✓ Raise your hand instead of interrupting and yelling out your viewpoint.
- ✓ If you have participated and your point has been made, no need to dominate discussion to say the same thing again. If you have something new to add, please do so.
- ✓ Accept redirection by the professor (“we can come back to this point at another time...”). This is part of cooperative professional behavior.

Problem Solving *with* the Professor

I welcome any comments and constructive criticism about the course, expressed maturely and professionally. I should hear your concerns from you directly (I prefer face-to-face, as e-mails can easily be misunderstood). If I cannot resolve the problem in a mutually satisfactory, then we can discuss what the next step is. This is the professional, appropriate and acceptable way to address concerns in this class.

Email

E-mail can be ambiguous. If you send me an e-mail that comes across as unconstructive I may let you know how it came across, regardless of your intent, and ask you to start over and send another e-mail expressing your request in an unambiguously constructive manner (i.e. there’s no way someone could be offended by it). I will address what you’ve asked at that point.

Regardless, of tone, if I just can’t make out what you are asking I may simply ask for a “do-over.” To clarify your writing, break long sentences into more than one sentence, each conveying one whole thought. Please use capitalization and punctuation (including commas).

E-mail. Before you write an e-mail think about what outcome you desire.

Communication about tests. In my experience, problematic e-mails have generally been right before or right after a major exam. If you are in an anxious state, it is better to use e-mail to request a phone call or meeting. Just briefly state the purpose in the e-mail.

CORE CURRICULUM OBJECTIVES

This course addresses core competencies as follows:

Reading: Students are required to read a college-level textbook.

Writing: Students are required to write explanations for statistical findings. Speaking: Students are required to participate in class discussions. Listening: Students are required to attend and participate in lecture sessions. Critical Thinking: Students are required to respond to make inferences about statistical findings.

Academic Discipline/CTE Program Learning Outcomes

1. Define terms and concepts that students will encounter in advanced courses taken by psychology majors.
2. Define terms and concepts that students will encounter in advanced psychology and psychology-based courses taken by students majoring in fields such as nursing and education.
3. Define psychological terms and concepts that students will encounter in news reports, self- help materials, and as part of the process of seeking and engaging in psychotherapy.

COURSE STUDENT LEARNING OUTCOMES (SLO)

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

LEARNING OBJECTIVES

1. Define and identify basic general concepts in statistics.
 - 1.1. 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
 - 1.2. 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)
- 1.3. 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.

- 1. 2.1. 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
- 2.2 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

- 2.3 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

- 2.4. CORE DOMAIN 4: VARIABILITY

Describe and explain

2.4.1. Variability

2. 4.2 Ranges

2.3.2. Interquartile Range

2.3.4. Variance

2.3.5. Standard deviation

2.5 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.

1. 3.1. 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

3.2. 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

3.3 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. Statistical Power

3.3.9. Effect size (Cohen's d)

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

1. 4.1 CORE DOMAIN 1: Single-Sample t test

Describe and compute

4.1.1. The single t test and its assumptions

4.1.2. The t formula

4.1.3. The t distribution

4.1.4. Degrees of Freedom

4.1.5. Effect size

4.2. 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

4.3. CORE DOMAIN 3: The t test for related samples Describe and compute

4.3.1. The t for related samples.

4.3.2. Repeated-measures design

4.3.3. Matched-subjects design

4.3.4. Pros and cons of repeated-measures design

4.3.5. Effect size

4.4 CORE DOMAIN 4: Estimation Define and interpret

4.4.1. Purpose of Estimation

4.4.2. Point Estimation

4.4.5. Confidence Intervals

4.4.6. Estimation based on single-sample t

4.4.7. Estimation based on independent-measures t

4.4.8. Estimation based on related sample t

4.5 CORE DOMAIN 5: 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

4.6. CORE DOMAIN 6: Correlation

Explain and describe:

4.6.1. Pearson's r

4.6.2. Types of correlations

4.6.3. Hypothesis testing with r

4.7. CORE DOMAIN 7: Regression

Explain and compute:

4.7.1. Regression and regression line

4.7.2. The least-squares solution

4.7.3. Coefficient of determination

4.7.4. Standard error of estimate