PSYC A280: INTRODUCTION TO EXPERIMENTAL METHODS

Item	Value
Curriculum Committee Approval Date	10/07/2020
Top Code	200100 - Psychology, General
Units	4 Total Units
Hours	108 Total Hours (Lecture Hours 54; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)
Associate Arts Local General Education (GE)	• OC Behavioral Science - AA (OD3)
Associate Science Local General Education (GE)	• OCC Social/Behavioral Sci - AS (OSD)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 4 Social & Behavioral Sciences (4)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 4 Social&Behavioral Sci (4)
California State University General Education Breadth (CSU GE-Breadth)	• CSU D Soc Politic Econ Inst (D)

Course Description

This course addresses the principles and techniques which enter into experimental research concerning behavior and emphasizes designing, conducting, analyzing, and reporting research in the behavioral sciences. PREREQUISITE: PSYC C1000 or PSYC C1000H; and STAT C1000. ADVISORY: ENGL C1000. Transfer Credit: CSU; UC. C-ID: PSY 200.**C-ID:** PSY 200.

Course Level Student Learning Outcome(s)

1. Students will be able to critically evaluate research and experimental methods in the behavioral sciences and design valid research in Psychology and other social sciences.

Course Objectives

- 1. Compare and contrast basic vs. applied research.
- 2. Use PsycINFO to look up a topic, find reference citations and abstracts, and then find the articles in shelved, library periodicals or in electronic collections.
- 3. Write up conducted experiments in the APA format.
- 4. Define and recognize examples of independent and dependent variables.
- 5. Explain operational definitions and develop such definitions.
- 6. Compare, contrast, and explain positive linear, negative linear, and curvilinear relationships.
- 7. Explain and contrast the various sampling techniques used in research.
- 8. Distinguish between cross-sectional, longitudinal, and sequential methods.
- 9. Differentiate between the various types of psychological tests.
- 10. Explain and perform various observation and survey techniques.
- 11. Differentiate between internal and external validity.
- 12. Design and conduct well controlled experiments, particularly avoiding confounding variables.
- 13. Compare and contrast independent group designs vs. repeated measure designs.
- 14. Differentiate between descriptive vs. inferential statistics.
- 15. Explain the difference between Type I and Type II errors and note how they relate to significance levels.
- 16. Explain and contrast the four scales of measurement.
- 17. Describe the assumptions and applications and calculate and interpret measures of central tendency, measures of variability, standard scores, t-test for independent groups, t-test for dependent groups, chi-square, and one-way analysis of variance.
- 18. Explain the various types of correlations and their applications and limitations.
- 19. Explain factorial designs, including main effects and interaction effects, and note how the number of independent variables and their levels influence the number of experimental groups.
- 20. Explain the major issues which affect generalization of results.
- 21. Explain the major ethical concerns that influence the conduct of human and animal research.

Lecture Content

Scientific understanding of behavior Use of research methods Scientific approach Goals of science Basic vs. applied research Hypotheses Library research Parts of an article in conjunction with the American Psychological Association (APA) format How to use key indices: PsycINFO, Social Science Citation Index, Science Citation Index Process of noting topic, using an index, finding reference citations and abstracts, accessing articles among shelved periodicals or finding articles in electronic collections How to write APA reports on conducted experiments Studying behavior Independent vs. dependent variables Operational definitions Correlational vs. experimental methods Measuring concepts Reliability Construct validity Reactivity of measures Measurement scales Observing behavior Naturalistic observation Systematic observation Case studies Archival research Personality measures Surveys Constructing questions Responding to questions Rating scales Experimental design Internal validity Confounds Assigning participants to conditions: Independent groups vs. repeated measures vs. matched pairs Developmental psychology research designs: Longitudinal, cross-sectional, sequential Conducting experiments Selecting participants Manipulating the independent variable Measuring the dependent variable Complex experimental designs Increasing the number of levels of the independent variable Increasing the number of independent variables (factorial designs) Quasi-experimental designs Program evaluation Quasi-experimental designs Single case experimental designs Statistics and research results Population vs. sample Descriptive vs. inferential statistics Frequency distributions Graphing and table conventions Types of correlations Null and research hypotheses Statistical significance Calculations and applications: Central tendency, measures of variability, standard scores, t-test for independent groups,

t-test for dependent groups, chi square, one-way analysis of variance Computer analysis of data Generalizing results Other populations Other experimenters Laboratory settings Role of replications Types of replications Ethical research Informed consent Debriefing Alternatives to deception APA ethics code Institutional review boards Protection of human participants Ethics and animal research

Lab Content

LABORATORY CONTENT: 1. Completion of exercises demonstrating expertise in the online research tools of PsycINFO and PsycARTICLES 2. Finding and reading relevant research articles and completing lab exercises that target and allow students to report critical information learned in the class such as naming the research method, identifying key variables such as independen t vs. dependent variables, noting operational definitions, and noting the outcomes of the studies. 3. Conducting experiments which require APA paper submissions 4. Reviewing the issues of appropriate use of statistical calculations, calculation of statistics, and interpretation of statistics. 5. mily: Arial,sans-serif;">Learning how to use software such as SPSS to calculate statistics. 6. Designing and conducting independent experimental projects, followed by collecting, analyzing, and interpreting the data, and finally writing the APA research report.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

Explanation and application of topics, concepts, and terms, as well as demonstration of calculations. Written feedback to all laboratory exercises, student papers, assignments, and tests. Verbal feedback to small discussion groups. Textbook and other instructor-provided handouts. Review sheets to support student preparation for tests. Use of document camera or white board. DVDs or video tapes. Exams to assess student progress and mastery. Technology in the classroom: Power point presentations, accessing internet websites and on-line journal references, and computer data analysis. Online or hybrid class - Instructors will use live and/or pre-recorded online audio and/or video resources (e.g. Canvas, ConferZoom, Big Blue Button, Powerpoint) for lectures and labs. Students will have access to lecture slides on Canvas. Instructors will also communicate with students using announcements, chat rooms, and email. Online office hours will be held weekly and the syllabus and schedule will be posted daily throughout the entire semester. Engagement with students: Discussions will be uploaded on Discussion boards where students can interact with other classmates and the instructor. Instructors will provide timely feedback to students on assignments and papers using the comment tool on Canvas. Exams will take place online and instructors will provide feedback after exams are graded.

Reading Assignments

Students will read 2 hours per week from assigned textbook, articles, and supplementary materials

Writing Assignments

Students will spend 2 hours per week writing a correctly formatted (American Psychology Association style) research report. Writing Assignments Synthesis of important material and critical thinking will be noted in: Use of the American Psychological Association format and style in writing up conducted experiments. Responses to essay (or short answer essay) questions. Writing up laboratory reports after reading full research reports and responding to directed questions in the lab assignments Responses to textbook questions.

Out-of-class Assignments

Students will work 2 hours a week completing out-of-class homework, assignments and labs Students will use critical thinking skills to conduct and design experiments and write up their reports in the APA style and format. Students will use critical thinking skills to answer essay questions. Student success will be viewed in terms of (a) practical applications described; (b) examples of content that are fully explained; and/or (c) reasons given to justify the students position. Students will use critical thinking skills to explain, to compare and contrast, and to describe relevant content in order to answer teacher or textbook questions.

Demonstration of Critical Thinking

Objective examination questions covering text and lecture material. Short answer essay questions demonstrating critical thinking skills and covering text and lecture materials. Performance and interpretation of statistical calculations. Research reports written individually by students in the American Psychological Association format (two minimum, three or more recommended). Use of critical thinking skills to design and conduct an experiment as a final project. Use of critical thinking skills to answer textbook study questions. Participation in small group, in-class discussions.

Required Writing, Problem Solving, Skills Demonstration

Objective examination questions covering text and lecture material. Short answer essay questions demonstrating critical thinking skills and covering text and lecture materials. Performance and interpretation of statistical calculations. Research reports written individually by students in the American Psychological Association format (two minimum, three or more recommended). Use of critical thinking skills to design and conduct an experiment as a final project. Use of critical thinking skills to answer textbook study questions. Participation in small group, in-class discussions.

Eligible Disciplines

Psychology: Masters degree in psychology OR bachelors degree in psychology AND masters degree in counseling, sociology, statistics, neuroscience, or social work OR the equivalent. Masters degree required.
Psychology: Masters degree in psychology OR bachelors degree in psychology AND masters degree in counseling, sociology, statistics, neuroscience, or social work OR the equivalent. Masters degree required.

Textbooks Resources

1. Required American Psychological Association. Publication Manual of the American Psychological Association, 7 ed. Chicago: American Psychological Association, 2019 Rationale: latest 2. Required Cozby, Paul and Bates, Scott. Methods in Behavioral Research, 13 ed. New York: McGraw-Hill, 2019 Rationale: - 3. Required American Psychological Association. Concise Rules of APA Style, Latest ed. Washington D.C.: American Psychological Association, 2010 4. Required Gravetter, F. J. Forzano, L.B.. Research Methods for the Behavioral Sciences, 6 ed.

Belmont: Wadsworth, Cengage Learning, 2019 5. Required Pelham, B.W. Blanton,H.. Conducting Research in Psychology: Measuring the Weight of Smoke, 5 ed. Belmont: Cengage Learning, 2019 Rationale: *

Other Resources

1. Handouts to be provided and distributed by the instructor.