

# PSY-2140: RESEARCH METHODS IN PSYCHOLOGICAL SCIENCE

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## Cuyahoga Community College

**Viewing: PSY-2140 : Research Methods in Psychological Science**

**Board of Trustees:**

1/30/2025

**Academic Term:**

Fall 2025

**Subject Code**

PSY - Psychology

**Course Number:**

2140

**Title:**

Research Methods in Psychological Science

### **Catalog Description:**

This course introduces the fundamental concepts and techniques used in psychological research and other social sciences. Focus will be given to designing, conducting, and evaluating research studies using both quantitative and qualitative methods. Additional topics will focus on ethics in research, generating hypotheses, collecting data, and analyzing data. This course will foster creative thinking, understanding the scientific process, and applying research findings to real-world psychological issues.

**Credit Hour(s):**

3

**Lecture Hour(s):**

3

### **Requisites**

#### **Prerequisite and Corequisite**

PSY-1010 General Psychology, or PSY-101H General Psychology; or departmental approval

### **Outcomes**

#### **Course Outcome(s):**

Describe the role of the scientific method in social science research.

#### **Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

#### **Objective(s):**

1. Define science and the scientific method.
2. Identify major steps of the scientific method.
3. Differentiate scientific methods from nonscientific methods.
4. Explain the difference between scientific claims and pseudoscientific claims.

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#### **Course Outcome(s):**

Evaluate the methodological goals of descriptive, correlational, and causal research designs.

**Essential Learning Outcome Mapping:**

Information Literacy: Demonstrate contextual awareness of the research process through the reflective discovery of the production and value of information, the use of information in the creation of new knowledge and ethical participation in the use of information in communities of learning.

**Objective(s):**

1. Differentiate quantitative and qualitative research methods.
2. Identify the types of descriptive methods used in the social sciences.
3. Describe the criteria used to establish causal claims.
4. Explain core concepts of correlational designs (i.e., positive and negative correlations, strength of relationships).
5. Discuss how experimental and quasi-experimental designs differ from nonexperimental methodologies.
6. Differentiate among various forms of validity (e.g., internal, external, construct, face).
7. Identify common threats to validity.
8. Distinguish nominal, ordinal, interval, and ratio scales of measurement.
9. Discuss how to operationalize psychological constructs in research practices.
10. Evaluate various methods of sampling.
11. Differentiate populations and samples.

**Course Outcome(s):**

Analyze key ethical issues in human subject research and animal-based research.

**Essential Learning Outcome Mapping:**

Civic Responsibility: Analyze the results of actions and inactions with the likely effects on the larger local and/or global communities.

**Objective(s):**

1. Describe the oversight roles of Institutional Review Boards (IRB) and Institutional Animal Care and Use Committees (IACUC) involving human subjects research and research involving animals, respectively.
2. Discuss how oversight bodies, such as the IRB and IACUC, evaluate the ethical treatment of research subjects.
3. Explain the basic decision model used by oversight bodies.
4. Describe the ethical basis of research practices informed by the Belmont Report.
5. Distinguish confidentiality and anonymity in research studies.
6. Discuss the issue of bias (both implicit and explicit) in the research process.
7. Identify key psychological studies that have received ethical scrutiny.

**Course Outcome(s):**

Evaluate the credibility of information sources and data analytics in psychology and other social sciences.

**Essential Learning Outcome Mapping:**

Information Literacy: Demonstrate contextual awareness of the research process through the reflective discovery of the production and value of information, the use of information in the creation of new knowledge and ethical participation in the use of information in communities of learning.

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

**Objective(s):**

1. Identify reliable sources of primary and secondary information (e.g., peer-reviewed journals, books, conference papers, databases).
2. Critically evaluate methodological procedures when interpreting research study conclusions.
3. Describe the function of descriptive and inferential statistical procedures in research.
4. Explain when to use various statistical tests (e.g., z-scores, t-tests, ANOVA, regression, etc.).
5. Describe strategies for analyzing qualitative data (e.g., coding, thematic analysis, etc.)
6. Demonstrate ability to appropriately cite sources in APA written format.

**Course Outcome(s):**

Generate research questions using theoretical frameworks relevant to psychology and other social sciences (e.g., biological, cognitive, behavioral, social, clinical, etc.).

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Define research question.
2. Explain the role of literature reviews in generating research questions.
3. Discuss the importance of selecting an appropriate research method based on the research question asked.
4. Explain the role of theoretical frameworks in conducting and interpreting social science research.

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**Methods of Evaluation:**

1. Exams and quizzes
2. Projects, papers, and reports involving data collections
3. Computer-based analysis of data
4. Oral presentations of research projects

**Course Content Outline:**

1. Understanding Science
  - a. Scientific methods vs nonscientific methods
    - i. Scientific methods
      1. Systematic investigations
    - ii. Nonscientific methods
      1. Authority
      2. Intuition
      3. Experience
  - b. Types of psychological research
    - i. Basic
    - ii. Applied- 2. Developing Questions
  - a. Generating research ideas
  - b. Focusing ideas to form researchable questions
- 3. Research Ethics
  - a. IRB and IACUC
    - i. Research study protocols
  - b. Ethical concepts
    - i. Beneficence
    - ii. Nonmaleficence
    - iii. Autonomy
    - iv. Justice
- 4. Research Elements
  - a. Variables
    - i. Operational definitions
    - ii. Scales of measurement
  - b. Validity
    - i. Internal/external
    - ii. Construct/face
  - c. Reliability
    - i. Internal consistency
    - ii. Test-retest reliability
    - iii. Interrater reliability
  - d. Sampling Methods
    - i. Population vs sample
    - ii. Probability vs non-probability sampling
    - iii. Sampling bias
- 5. Comparing research designs

- a. Nonexperimental designs
  - i. Surveys
  - ii. Descriptive
  - iii. Correlational
- b. Experimental designs
  - i. True experiments
  - ii. Quasi-experiments
  - iii. Between-subjects vs within-subjects
  - iv. Random assignment
  - v. Control of confounding variables

6. Data Analysis

- a. Descriptive Statistics
  - i. Measures of central tendency
    - 1. Mean
    - 2. Median
    - 3. Mode
  - ii. Measures of variability
    - 1. Variance
    - 2. Standard deviation
    - 3. Range
    - 4. Interquartile Range
- b. Inferential Statistics
  - i. Normal distribution
  - ii. T-distribution
  - iii. F-distribution
  - iv. Procedures
    - 1. z-scores
    - 2. t-tests
    - 3. ANOVA
- c. Qualitative Analysis
  - i. Coding
  - ii. Thematic analysis
  - iii. Content analysis
  - iv. Narrative analysis

7. Presenting Research

- a. Written Reports in APA Style
  - i. Introduction
  - ii. Method
  - iii. Results
  - iv. Discussion
- b. Presentations
  - i. Oral Presentations
  - ii. Poster Presentations

## Resources

Gregory Privitera. (2024) *Research methods for the behavioral sciences*, Sage Publishing.

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Dawn McBride. (2019) *The Process of Research in Psychology*, Sage Publishing.

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Beth Morling. (2021) *Research Methods in Psychology*, WW Norton.

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Paul Cozby & Scott Bates. (2024) *Methods in Behavioral Research*, McGraw Hill.

Larry Christensen, R Burke Johnson, Lisa Turner. (2021) *Research Methods: Design and Analysis*, Pearson Education.

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Kenneth Bordens & Bruce Barrington Abbott. (2021) *Research Design and Methods: A Process Approach*, McGraw Hill.

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