PSY-2150: QUANTITATIVE METHODS IN BEHAVIORAL SCIENCE

Cuyahoga Community College

Viewing: PSY-2150 : Quantitative Methods in Behavioral Science

Board of Trustees:
2014-01-30

Academic Term:
2014-08-25

Subject Code
PSY - Psychology

Course Number:
2150

Title:
Quantitative Methods in Behavioral Science

Catalog Description:
Introduction to quantitative analysis of behavioral data. Application of descriptive and inferential statistics (including correlation, t-test and ANOVA) and SPSS computer software to data presentation, hypothesis testing and design and interpretation of behavioral research.

Credit Hour(s):
4

Lecture Hour(s):
3

Lab Hour(s):
2

Requisites

Prerequisite and Corequisite
PSY-1010 General Psychology or PSY-101H Honors General Psychology, and a 2000 level Psychology course; and Algebra II course in high school or college or a sufficient score on math assessment test, or departmental approval.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.

II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.
III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status.

Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Tri-C is responsible for identifying students who have not attended a course before financial aid funds can be applied to students’ accounts.

Therefore, attendance is recorded in the following ways:

- For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

- For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student’s responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

Tri-C is required to ensure that students receive financial aid only for courses that they attend and complete. Students reported for not attending at least one of their registered courses will have all financial aid funds held until confirmation of attendance in registered courses has been verified. Students who fail to complete at least one course may be required to repay all or a portion of their federal financial aid funds and may be ineligible to receive future federal financial aid awards. Students who withdraw from classes prior to completing more than 60 percent of their enrolled class time may be subject to the required federal refund policy.

If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ‘artifacts,’ for assessment of course and program outcomes and the College’s Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit.

As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available athttp://www.tri-c.edu/student-resources/documents/studenthandbook.pdf. You must also comply with the College’s Zero Tolerance for Violence on College Property available athttp://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf

Outcomes

Course Outcome(s):

Explain the role of statistics in social science research.
Essential Learning Outcome Mapping:
Written Communication: Demonstrate effective written communication for an intended audience that follows genre/disciplinary conventions that reflect clarity, organization, and editing skills.

Objective(s):
1. Describe the research process and the scientific method.
2. Distinguish between different types of quantitative research, and for each type describe how statistics are used in the operationalization of variables and evaluation of hypotheses.
3. Discusses specific challenges associated with social science research as compared to research in other discipline.
4. Distinguishes between qualitative and quantitative research.

Course Outcome(s):
Plan a social science study.

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. Draw an appropriate research sample.
2. Evaluate research measures.
3. Anticipate and correct threats to research validity.

Course Outcome(s):
Describe social science data sets accurately and effectively.

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. Computes descriptive statistics and creates graphs.
2. Discuss the purposes of data description and the use of various statistics to achieve these goals.
3. List available descriptive statistics, their strength and their limits.

Course Outcome(s):
Apply univariate and simple multivariate statistical methods to test hypotheses 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. Explain logic of hypothesis testing in social science research.
2. Choose appropriate statistical methods on the basis of knowledge of function, assumptions, strength and limits of statistical methods
3. Uses computer software for computations and can read the program output.

Course Outcome(s):
Interpret and evaluate statistical findings, in both his/her own research and results presented in social science research journals, in terms of their implication for social science theories and facts.

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. Relate statistical results to the research questions and hypotheses.
2. Discuss the limits of findings.
Course Outcome(s):
Succeed in more advanced courses in research methods and statistics.

Objective(s):
1. Discuss the mathematical basis for statistical methods, in particular probability as it applies to statistics, probability distributions and the derivation of basic statistical formulas.
2. Describe the names and functions of frequently-used advanced statistical methods not taught in this course.

Methods of Evaluation:
1. Exams and quizzes
2. Problem sets, homework assignments that involve data description and hypothesis testing
3. Projects, papers and reports that involve class research or secondary analysis of existing data sets
4. Computer-based analysis of data, reports based on computer print-outs
5. Oral presentation of analysis of data sets

Course Content Outline:
1. The uses of statistics in behavioral science research
   a. Inferential versus descriptive statistics
   b. Relationships in behavioral science, correlation versus experiments
2. Description of data
   a. Variables, measurement, levels of measurement, graphic representation
   b. Frequency distributions, percentiles, and standard scores measures of central tendency, variability, and distribution shape
3. Introduction to statistical inference
   a. Computing probability
   b. The normal curve and z distribution
   c. Populations, samples and sampling
   d. Sampling distributions
   e. The logic of hypothesis testing
4. Types of hypotheses
   a. Estimates and confidence intervals
   b. Means from two samples
   c. Paired means
5. Correlation and linear regression
   a. Measures of association
   b. Inferences about associations
   c. Linear regression with one predictor variable
6. Analysis of variance
   a. One way ANOVA
   b. Two way ANOVA
7. Hypotheses about proportions and the chi-square
8. Statistics and research design in the behavioral sciences
   a. Power
   b. Effect size
   c. Correlational studies versus experiments versus quasi-experiments
9. Computer software
   a. Data entry and transformation
   b. Creating graphs and charts
   c. Data analysis specifications
   d. Reading output.

Resources


"Psychological Bulletin"

"Journal of Educational and Behavioral Statistics"

**Resources Other**

Stats Soft Electronic Statistics Textbook:
http://www.statsoft.com/textbook/chaid-analysis/?button=1
(The Knowledge Base – An Online Research Methods Textbook, by William M.K. Trochim
http://www.socialresearchmethods.net/kb/
Seeing Statistics by Gary McClelland
http://www.seeingstatistics.com/
Statistics at Square One—T D V Swinscow Revised by M J Campbell
http://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one
(HyperStat Online Statistics Textbook
http://davidmlane.com/hyperstat/

Top of page

Key: 3810