湖北工業大學
HUBEI UNIVERSITY OF TECHNOLOGY

Course Title	Introduction to Behavioral Statistics
Course Code	PSYC 2301
Semester	Summer 2026
Course Length	4 Weeks, 60 Contact Hours
Credits	4
Instructor	Jiang Yu
Office	Life Science Building B204
Email	15072447563@qq.com
Prerequisite	N/A

Course Description:

This course introduces statistical reasoning and quantitative methods commonly employed in behavioral and social science research. Students develop skills in organizing, summarizing, analyzing, and interpreting data arising from experimental and observational studies. Topics include descriptive statistics, probability concepts, sampling distributions, estimation, hypothesis testing, comparison of means, correlation, regression, analysis of variance, contingency table analysis, and introductory nonparametric procedures. Practical data analysis using statistical software is integrated throughout the course, with emphasis on interpreting output and communicating findings in professional research formats.

Delivery Mode: In-Person, Face-to-Face Instruction

Course Goals:

Students who successfully complete this course will demonstrate competency in the following general education core goals:

- **Critical thinking skills** – Students will engage in creative and/or innovative thinking, and/or inquiry, analysis, evaluation, synthesis of information, organizing concepts, and constructing solutions.
- **Communication skills** – Students will demonstrate effective written, oral, and visual communication.
- **Teamwork** – Students will demonstrate the ability to work effectively with others to support a shared purpose or goal and consider different points of view.
- **Social responsibility** – Students will demonstrate intercultural competency and civic knowledge by engaging effectively in local, regional, national, and global communities.

Student Learning Outcomes:

Upon completion of this course, students will be able to:

- Organize and summarize behavioral science data using graphical and numerical methods;
- Calculate and interpret measures of central tendency and variability;
- Explain probability concepts and sampling distributions;
- Apply principles of statistical inference and hypothesis testing;
- Construct and interpret confidence intervals;
- Conduct and interpret z-tests and t-tests;
- Understand statistical power and its role in research design;
- Analyze relationships using correlation and regression techniques;
- Conduct one-way and factorial analyses of variance;
- Perform chi-square analyses for categorical data;
- Utilize statistical software to analyze datasets.

Textbooks/Supplies/Materials/Equipment/ Technology or Technical Requirements:

Required Textbook

Frederick J Gravetter, Larry B. Wallnau, Lori-Ann B. Forzano, James E. Witnauer. *Essentials of Statistics for the Behavioral Sciences (10th Edition).* Cengage Learning.

Software / Technology Requirements

Students are required to use one of the following statistical software packages:

- IBM SPSS Statistics (preferred)
- JASP
- PSPP

A scientific calculator is recommended.

Course Requirements:

Participation and Learning Activities

Participation credit is based on completion of tutorial exercises, participation in software workshops, and engagement in in-class statistical problem-solving activities.

Laboratory Assignments

Students complete four software-based exercises throughout the semester. Assignments involve data screening, descriptive analyses, inferential testing, interpretation of statistical output, and presentation of findings.

Midterm Examination I

The first midterm evaluates students' understanding of foundational statistical concepts including research measurement, frequency distributions, descriptive statistics, standard scores, probability, sampling distributions, and introductory hypothesis testing. Both computational and conceptual questions are included.

Midterm Examination II

The second midterm assesses mastery of inferential statistical methods including one-sample and two-sample t procedures, repeated-measures analyses, effect size estimation, confidence intervals, and interpretation of statistical results.

Applied Data Analysis Project
Students analyze a behavioral science dataset using statistical software and prepare a structured report following accepted scientific reporting conventions. The project emphasizes selection of appropriate statistical techniques, interpretation of findings, and communication of results.

Comprehensive Final Examination
The final examination covers all major course topics, with particular emphasis on ANOVA, correlation, regression, chi-square procedures, and integration of statistical reasoning across research contexts.

Assessments: Activity	**Percent Contribution**
Participation and Learning Activities	5%
Laboratory Assignments	20%
Midterm Examination I	15%
Midterm Examination II	15%
Applied Data Analysis Project	15%
Comprehensive Final Examination	30%

Grading:

Final grades will be based on the sum of all possible course points as noted above.

Grade	**Percentage of available points**
A	94-100
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D	64-69
D-	60-63
F	0-59

Course Schedule:
The schedule of activities is subject to change at the reasonable discretion of the instructor. Minor changes will be announced in class, major ones provided in writing.

PSYC 2301 Schedule		
Lecture	Lecture Topic	Readings
L1	Statistics in Behavioral Science Research	Ch.1
L2	Variables, Measurement Scales, and Research Designs	Ch.1
L3	Frequency Distributions and Data Visualization	Ch.2
L4	Frequency Tables, Percentiles, and Graphical Methods *Assignment 1 Released*	Ch.2
L5	Measures of Central Tendency	Ch.3
L6	Measures of Variability	Ch.4
L7	Standard Scores and Standardized Distributions	Ch.5

	Assignment 1 Due	
L8	Probability and the Normal Distribution	Ch.6
L9	Sampling Distributions and the Central Limit Theorem	Ch.7
L10	Introduction to Hypothesis Testing	Ch.8.1-8.4
L11	Type I/II Errors, Effect Size, and Statistical Power	Ch.8.5-8.6
L12	**Midterm Examination I**	Ch.1-8
L13	One-Sample t Tests and Confidence Intervals	Ch.9
	Assignment 2 Released	
L14	Independent-Samples t Tests	Ch.10
L15	Related-Samples t Tests	Ch.11
	Assignment 2 Due	
L16	Comparing Experimental Designs and Selecting Statistical Tests	Ch.10-11
L17	Introduction to One-Way ANOVA	Ch.12.1-12.4
L18	Post Hoc Comparisons and ANOVA Interpretation	Ch.12.5-12.6
L19	Two-Factor ANOVA: Main Effects and Interactions	Ch.13.1-13.2
	Assignment 3 Released	
L20	Advanced Interpretation of Factorial Designs	Ch.13.3
L21	**Midterm Examination II**	Ch.9-13
L22	Correlation Analysis and Hypothesis Testing	Ch.14.1-14.5
	Assignment 4 Released	
L23	Linear Regression and Prediction Models	Ch.14.6
	Assignment 3 Due	
L24	Chi-Square Tests: Goodness-of-Fit and Independence	Ch.15
L25	Integrated Statistical Applications and Course Review	Review Materials
	Assignment 4 Due / Applied Project Due	
--	**Comprehensive Final Examination**	

Accommodation Statement:

Academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as he/she is not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow.

Academic Integrity Statement

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in coursework may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or outside the University; and nondisclosure or misrepresentation in filling out applications or other University records.

Other Items:

Attendance and Expectations
All students are required to attend every class, except in cases of illness, serious family concerns, or other major problems. We expect that students will arrive on time, be prepared to listen and participate as appropriate, and stay for the duration of a meeting rather than drift in or out casually. In short, we anticipate that students will show professors and fellow students maximum consideration by minimizing the disturbances that cause interruptions in the learning process. This means that punctuality is a must, that cellular phones be turned off, and that courtesy is the guiding principle in all exchanges among students and faculty. You will be responsible for the materials and ideas presented in the lecture.

Assignment Due Dates
All written assignments must be turned in at the time specified. Late assignments will not be accepted unless prior information has been obtained from the instructor. If you believe you have extenuating circumstances, please contact the instructor as soon as possible.

Make-Up Work
The instructor will not provide students with class information or make-up assignments/quizzes/exams missed due to an unexcused absence. Absences will be excused and assignments/quizzes/exams may be made up only with written documentation of an authorized absence. Every effort should be made to avoid scheduling appointments during class. An excused student is responsible for requesting any missed information from the instructor and setting up any necessary appointments outside of class.

Access, Special Needs and Disabilities
Please notify the instructor at the start of the semester if you have any documented disabilities, a medical issue, or any special circumstances that require attention, and the school will be happy to assist.