PSYC 2316-01
Statistics for the Social Sciences

Fall 2019

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Office Hours: MWF: 9:00 AM–10:00 AM; TR: 9:00 AM–11:00 AM; M-R: 1:00 PM–2:00 PM; and by appointment

1 Course Information

1.1 Meeting

Time: Tuesday/Thursday, 11:00 AM – 12:30 PM
Location: Wells Science Hall (WSH) 152
Course Website: myCourses
Prerequisite: MATH 1304 or higher

1.2 Description

This course is designed to introduce students to basic statistical techniques and procedures used by applied researchers in the behavioral and social sciences. As a result, emphasis will be placed on basic procedures involved in organizing and presenting data, as well as selecting, running, and interpreting various parametric statistical tests. Students will utilize the **R** statistical software application to conduct and interpret descriptive and inferential statistics. Students completing this course will acquire the skills necessary to both conduct and interpret statistical analyses in behavioral and social science settings.

1.3 Course Objectives

At the conclusion of this course, students should be able to:

1. **Gain factual knowledge such as important terminology, classifications, methods, and trends by:**

    A. Participating in lectures and in-class presentations;
    B. Distinguishing between the four basic scales of measurement;
    C. Distinguishing between null and alternative hypotheses;
    D. Distinguishing between Type I and Type II Errors;
    E. Understanding characteristics of population and sample distributions;
    F. Understanding essential characteristics of descriptive statistics and procedures used for summarizing data;
    G. Understanding probability and the foundations of inferential statistics;
    H. Making inferences about the variability between- and within-samples according to the general linear model;

    I. Distinguishing between statistical and practical significance.

2. **Learn to apply course material to improve decision-making, problem solving, and critical thinking skills related to experimental design and statistical analysis by:**

    A. Completing formal assessments involving knowledge-level, conceptual, and applied material;

    B. Completing a series of individual data evaluation and analysis projects involving performing, analyzing, and interpreting statistical output;

    C. Communicating research findings according to the rules of APA Style (in both written and oral form);

    D. Considering the ethical issues associated with research involving human and nonhuman participants.

1.4   Credit Hour

The semester credit hour is a unit by which an institution measures its course work. The value of a semester credit hour can be determined by time, the educational experience, and outside preparation by the student.

For this course:

1. At least fifteen (15) contact hours, as well as, a minimum of thirty (30) hours of student homework is required for each semester credit hour.

1.5   Readings

Textbook:

Diez, D. M., Çetinkaya-Rundel, M., & Barr, C. D. (2019). *OpenIntro statistics* (4th ed.). OpenIntro.

1.6   Required Software

All data and statistical analyses in PSYC 2316-01 will be conducted using the **R** statistical programming language via the graphical user interface software, RStudio. During class, RStudio will be accessed using an online, cloud-based version of the software. This will be the preferred method for use during and outside of class. Follow the instructions in the RStudio_Cloud_Setup.pdf document in myCourses (see: Files > RStudio Cloud Setup > RStudio_Cloud_Setup.pdf) to create a user account.

1.7   Academic Integrity

UMHB's Academic Integrity policy will be strictly upheld in this course. If you have not read it, it is your responsibility to do so. Find it online here: Classroom Expectations and Ethics. The statement explains University requirements concerning Christian citizenship, student responsibility, class attendance, academic decorum, and academic integrity.

While the entire policy will be upheld, some sections that are most likely to be relevant to this class are included here: The University is a learning community in which participants are responsible for one another.

a. Assisting a student in any violation of the academic integrity standards is expressly prohibited. For example, providing or receiving unauthorized assistance, including (but not limited to) taking another student's exam, providing answers to another student during a test, or contributing to another student's written work without permission.

Written work should reflect the student's own ideas and any use of others' words, ideas, or patterns of thought should be appropriately quoted and/or cited.

a. Plagiarism in any form is expressly prohibited.

b. Failure to comply with the university's copyright policy is expressly prohibited.

A student who fails to meet these standards of academic integrity may receive a lower grade (including zero) on an assignment or a lower grade (including an "F" or "No Credit") for the course, as determined by the instructor. The penalty for academic dishonesty may also include more severe penalties, up to expulsion from the University. Conduct which violates the student Code of Conduct may also be grounds for disciplinary action as described in the Student Handbook.

1.8   Disabled Student Services and Accommodations

It is the student's responsibility to request disability accommodations. Students requesting an accommodation for a disability, must contact the UMHB Counseling, Testing & Health Services as early as possible in the term. The Course Catalog, Student Handbook and UMHB website provide more details regarding the process by which accommodation requests will be reviewed. For more information, please contact Dr. Brandon Skaggs, Vice President for Student Life [bskaggs@umhb.edu; (254) 295-4496].

1.9   Class Structure

All assignments, exams, and other coursework are completed individually. However, during certain class meetings you may either be assigned to or asked to form small groups in order to collaborate on data analysis projects and/or prompts. You will be guided through the following course learning modules.

1.9.1   Learning Modules

PSYC 2316-01 is divided into four (4) learning modules:

1. Introduction to Data and Probability

2. Foundations for Statistical Inference

3. Statistical Inference for Numerical and Categorical Data

4. Simple and Multiple Regression

1.10   Course Communication

1.10.1   Email

Most all course communication outside of class will take place via email. I will routinely email you course updates and announcements to your UMHB-assigned email address. Thus, you should check your email frequently. Likewise, due to the nature of this class and the corresponding assignments, you will likely need to contact me with questions. I am committed to responding as quickly as possible to your questions via email. As a result, you can expect me to respond, on average, within several hours of your email—often sooner. However, in some circumstances, a personal visit during office hours or other scheduled appointment may be more efficient than email. You are welcome to call me on my office line: (254) 295-4553. This can be an even more efficient method for quick troubleshooting inquiries.

1.10.2   Remind

Although I do not anticipate delaying or canceling any class meeting(s), there may be extenuating circumstances which require me to do so. In these situations, I will communicate with you through a free, safe, and one-way text messaging service called Remind. To sign up for these alerts, text @psyc2316a to 81010 and follow the instructions. If you have trouble with this method, try texting @psyc2316a to (254) 296-8301.

2 Course Requirements

2.1 Module Quizzes (MQs)

MQs are multiple choice quizzes, with up to 35 questions, that students complete individually in class. Questions from each MQ are based on the reading and lectures from each module, outlined in the Tentative Course Calendar. You will be provided with a Scantron form to complete this assignment.

Table 1: Module Quiz Dates

	Module	Due
1.	Introduction to Data and Probability (Chs. 1-2)	09-17-2019
2.	Foundations for Statistical Inference (Chs. 3-4)	10-15-2019
3.	Statistical Inference for Categorical and Numerical Data (Chs. 5-6)	11-12-2019

2.1.1 Individual Lab Assignments

Individual lab assignments will feature a series of guided, application-based, statistical analysis problems that you will complete using RStudio Cloud. These assignments require you to apply what you've learned within each of the course modules by utilizing the RStudio statistical software to produce a comprehensive lab report.

Each lab assignment will include a detailed set of directions available on the course website. You should use RStudio Cloud to complete these assignments. Additionally, you will be provided a skeleton-like lab report template for each of the lab assignments. More details on completing the lab assignments will be provided in class. Table 2 below contains the topic and due date for each lab assignment. Note: These are individual assignments. Dr. Baggett is a veritable **R** genius and will be able to identify any student(s) who violate the academic integrity policy outlined in Section 1.7.

Table 2: Individual Lab Assignment Dates

	Topic	Due
1.	Introduction to **R** and RStudio	09-08-2019
2.	Introduction to Data	09-22-2019
3.	The Normal Distribution	10-06-2019
4.	Sampling Distributions and Confidence Intervals	10-20-2019
5.	Inference for Numerical Data	11-10-2019
6.	Inference for Categorical Data	11-24-2019

2.1.2 Final Exam

The final exam will consist of a cumulative multiple-choice test worth 100 points. The final exam for this section is scheduled for 10:30 AM–12:30 PM Thursday, December 12, 2019.

2.2 Grade Calculation

2.2.1 Individual and Team Performance

Table 3 below describes all assignments, their point value, and proportion of weighted total. See to Table 4 for final grade calculation and letter grade distribution.

Table 3: Individual Assignments and Point Values

Assignment	*n*		Points		Total	Prop.
Module Quizzes (MQs)	3	×	31.66667	=	95	.40
Individual Lab Assignments	6	×	10	=	60	.25
Final Exam	1	×	100	=	100	.30
Attendance	28	×	0.178571429	=	5	.05
Extra Credit	5	×	2	=	10	.00
Individual Performance Total				**=**	**260**	**1.00**

2.2.2 Final Grade Calculation

All course grades will be posted in the gradebook in myCourses. All point totals and proportional weights listed in Table 3 are reflected in myCourses. Thus, your current grade in myCourses should reflect your actual grade. Table 4 below describes the point range required to achieve a given letter grade.

Table 4: Final Grade Point Range Requirements

Grade	Point Range	Percentage	Grade Points
A	233.00 – 260.00	90 – 100	4.0
B	208.00 – 232.00	80 – 89	3.0
C	182.00 – 207.00	70 – 79	2.0
D	156.00 – 181.00	60 – 69	1.0
F	000.00 – 155.00	00 – 59	0.0

3 Policies

3.1 Attendance

Your regular attendance in this course is expected. I will record and maintain attendance records for each student. Attendance is worth 5% of your final grade. In other words, if you attend 100% of the scheduled class meetings you will earn the complete 5% attendance total. Any University- or otherwise-excused absence will not count toward this total. At the conclusion of the semester, the percentage of class meetings you attended will be multiplied by 0.05 to obtain your attendance grade.

3.2 Late Work

All assignments are considered late if submitted after the date and time specified in the syllabus and/or *myCourses* site. This policy will be enforced in the event that assignment deadlines are revised during the course of the term. Assignments submitted late will result in a penalty of 20 percentage points per day.

For example, if an assignment is due on October 30, 2019 and is submitted within 24 hours of the due date and time that assignment will result in an automatic deduction of 20 percentage points from the assignment raw score. In other words, if you submit an assignment worth 10 points on October 31, 2019, and the assignment was originally due October 30, 2019, and you score a 9.5/10, then your new score would be:

$$9.5 - (9.5)(0.20) \times 100 = 7.6. \tag{1}$$

Assignments submitted more than five calendar days late will receive a grade of zero. To ensure fairness, this policy will be strictly enforced. Exceptions under the conditions described below in section 3.3.4 may be made, but will require at least 24 hours advance permission from the instructor.

3.3   Exams and Quizzes

3.3.1   Exam/Quiz Day Decorum

Once any in-class exams or quizzes are distributed you may not leave the classroom until you have submitted your answer and test forms.

3.3.2   Tardiness on Exam/Quiz Days

Students who arrive late for class on exam/quiz days will be allowed to complete the quiz in the amount of time remaining upon their arrival.

3.3.3   Mobile Phones

The use of mobile or cell phones during tests is strictly prohibited. All mobile or cell phones should be placed on airplane mode during tests.

3.3.4   Missed Exams

Missed MQs may be retaken under the following circumstances only:

1. Death in the immediate family (parent, spouse, sibling, child) within two weeks prior to the exam date.

2. Participation in an official UMHB-sponsored academic or sporting event.

    a. MQs must be scheduled and completed prior to the in-class administration.

3. Unforeseeable medical emergency affecting yourself, your spouse, or your child (e.g., automobile accident, major sickness, et al.).

Note: Routine medical appointments or clinical visits related to minor illnesses do not qualify as an unforeseeable medical emergency. Likewise, conflicts with a work schedule or trips not related to official UMHB events do not qualify for retaking a missed exam. Supporting documentation may be required.

3.4   Miscellaneous

3.4.1   Food and Drink

No food of any kind will be allowed in the classroom. You may bring beverages into the classroom with a sealable lid or cap. Otherwise, no drinks are allowed.

3.4.2   Mobile Phones

The use of mobile or cell phones during class or tests is strictly prohibited. All mobile or cell phones should be placed on airplane mode during class and tests.

4   Disclaimer

Syllabus is subject to change at instructor's discretion.

5 Tentative Course Calendar

MODULE	WK	DATE	TOPIC(S)	READ.	DUE
Introduction to Data and Probability	1	Tue. 27-Aug	Introduction to Course/Lab 01: Introduction to R and RStudio	Ch. 1	—
—	1	Thu. 29-Aug	Lab 01: Introduction to R and RStudio, contd.	—	—
—	2	Tue. 03-Sep	Introduction to Data I	—	—
—	2	Thu. 05-Sep	Introduction to Data II	—	—
	3	**Sun. 08-Sep**	—	—	**Lab 01**
	3	Tue. 10-Sep	Introduction to Data III	—	—
	3	Thu. 12-Sep	Lab 02: Introduction to Data	—	—
—	4	Tue. 17-Sep	—	—	**MQ 01**
Foundations for Statistical Inference	4	Thu. 19-Sep	Distributions of Random Variables I	Ch. 3	—
—	5	**Sun. 22-Sep**	—	—	**Lab 02**
—	5	Tue. 24-Sep	Distributions of Random Variables II	—	—
—	5	Thu. 26-Sep	Lab 03: The Normal Distribution	—	—
—	6	Tue. 01-Oct	Foundations for Inference I	Ch. 4	—
—	6	Thu. 03-Oct	Foundations for Inference II	—	
—	7	**Sun. 06-Oct**	—	—	**Lab 03**
—	7	Tue. 08-Oct	Foundations for Inference III	—	—
—	7	Thu. 10-Oct	Lab 04: Foundations for Statistical Inference	—	—
—	8	Tue. 15-Oct	—	—	**MQ 02**
Statistical Inference for Categorical and Numerical Data	8	Thu. 17-Oct	Inference for Numerical Data I	Ch. 5	—
—	9	**Sun. 20-Oct**	—	—	**Lab 04**
—	9	Tue. 22-Oct	Inference for Numerical Data II	—	—
—	9	Thu. 24-Oct	Inference for Numerical Data III	—	—
—	10	Tue. 29-Oct	Lab 05: Inference for Numerical Data	—	—
—	10	Thu. 31-Oct	Inference for Categorical Data I	Ch. 6	—
—	11	Tue. 05-Nov	Inference for Categorical Data II	—	—
—	11	Thu. 07-Nov	Lab 06: Inference for Categorical Data	—	—

MODULE	WK	DATE	TOPIC(S)	READ.	DUE
—	12	**Sun. 10-Nov**	—	—	**Lab 05**
—	12	Tue. 12-Nov	—	—	**MQ 03**
Simple and Multiple Regression	12	Thu. 14-Nov	Introduction to Linear Regression I	Ch. 7	—
—	12	Tue. 19-Nov	Introduction to Linear Regression II	—	—
—	13	Thu. 21-Nov	Multiple and Logistic Regression I	Ch. 8	—
—	14	**Sun. 24-Nov**	—	—	**Lab 06**
—	14	Tue. 26-Nov	Catch-Up/Lab Day	—	—
—	14	Thu. 28-Nov	**HOLIDAY**	—	—
—	15	Tue. 03-Dec	Multiple and Logistic Regression II	—	—
—	15	Thu. 05-Dec	Final Exam Review	—	—
—	16	Thur. 12-Dec	***FINAL EXAM, 10:30 AM***	—	—