Part 1: Course Overview and Purpose

Instructor Information

Instructor:	Marisa Beeble, Ph.D.
Office Hours:	Online office hours will be held by appointment in the chat room accessible via our Desire2Learn course page, by telephone, or via zoom. Please email me to schedule an appointment.
Telephone: E-mail:	(517) 927-6321 <u>beeblema@d2l.msu.edu</u> ; you can expect a response within 24 hours.

Course Description

Students in this course will learn about quantitative statistics, data management, and data analysis in an evaluation context. This course will focus specifically on foundational descriptive statistics and their applications and limitations in program evaluation. Students will also receive an introduction to the logic of inferential statistics and their applications in evaluation and will cover the basics of correlation and regression analyses. Student will build practical skills in selecting, conducting, interpreting and reporting corresponding quantitative data analyses in a widely used statistical software program (SPSS).

Learning Objectives

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

- 1. Describe the logic, limitations, and applications of descriptive and inferential statistics in an evaluation context
- 2. Given a quantitative evaluation, identify which descriptive statistics should and should not be used; obtain said statistics from SPSS; and interpret and write results for an evaluation report
- 3. Given quantitative evaluation data and instruments, create an SPSS database and codebook and enter, clean, and manage data in SPSS
- 4. Create hypotheses and engage in basic interpretation of inferential statistical tests
- 5. Identify specific evaluation contexts in which you would and would not use bivariate correlations and multiple regression and conduct bivariate correlation and multiple regression in SPSS

6. Interpret and describe the results of bivariate correlation and multiple regression in SPSS for an evaluation report

Core Competencies

Program evaluation involves planning, collecting data, analyzing and interpreting the data, and communicating and utilizing evaluation findings. The figure below illustrates the skills you will build in this course, as they apply to the process of conducting an evaluation.



To achieve these skills, this course will provide you with foundational knowledge in four domains: descriptive statistics (needed for skills #1-5), using SPSS (needed for skills #2-4), data management and analysis practices (needed for skills #2-4), and some inferential statistics (needed for skills #1, 3-5). Additional inferential statistics will be covered in PSY 887, Statistics for Evaluators II.

Part 2: Detailed Course Information

Required Course Materials

Textbooks

- Rubin, A. (2013). Statistics for evidence-based practice and evaluation. (3rd ed.). Belmont, CA: Brooks/Cole, Cengage Learning.
- IBM (2016). Programming and data management for IBM SPSS Statistics 24: A guide for IBM SPSS Statistics and SAS Users.

Software

IBM. SPSS statistics premium gradpack version 25, 26, or 27 [computer software]. Armonk, NY: IBM.

<u>Please note</u>: If you are taking PSY 887 in the summer semester, purchase the *premium version* with a 12-month license. If you are not, the *standard version* with a 6-month license will suffice for our course. If you need to purchase software, please use one of the following IBM recommended distributors:

studentdiscounts.com	www.hearne.software
onthehub.com	journeyed.com

Microsoft Excel [computer software].

<u>Please note</u>: This is available for download at: <u>https://tech.msu.edu/technology/hardware-software/microsoft-licenses/</u>

Technical Course Requirements

For the duration of this course you must have regular access to:

- A high-speed (broadband) internet connection
- A computer manufactured within the last four years
- A minimum screen resolution of 1024x768
- Desire2Learn

Course Structure

All of the course content and assignments will be delivered entirely online through the course management system, Desire2Learn (D2L). Using your MSU NetID you can login to the D2L home page located at <u>http://D2L.msu.edu</u>.

This course contains 5 units. <u>Units</u> are broad categories of content within the field of statistics.

Within each unit are <u>Modules</u> which focus on subtopics that fall under unit categories. Over the course of the semester we will cover 16 modules. Most often we will cover a module over the course of a week; however, for simpler content, we may cover multiple modules within a week and for more complex topics a module may span a twoweek period. **Each module will open at 12:00am Eastern Standard Time (EST) on Monday of the week we begin that module**. In most cases, you will have one week to complete assignments. However, some modules have more extensive assignments with a two-week submission window. Assignments may be completed and submitted at any time during the week they are due; however, **all assignments must be submitted no later than 11:59 pm (EST) on Sunday evening during the week they are due. All assignments will be submitted via D2L.** Once open, modules will remain available throughout the semester.

Within each module, the <u>Roadmap</u> outlines exactly what you should do to complete that module and in what order. Each module has the following components: Overview and Objectives, Lecture Library, Supplementary Resources, and Activities and Assignments.

The <u>Overview and Objectives</u> introduce the module content and outline the knowledge and skills you should have acquired upon completion of the module. The objectives align with the tasks that masters' level evaluators would be expected to perform in a real evaluation setting, and they reflect the content areas that will be assessed in the course. After completing the module readings and lectures, look back at the objectives before attempting any graded assignments to make sure you have mastered the material.

Modules also have a section titled <u>Lecture Library</u>, which is a collection of videos that cover key material, provide examples of concepts that are specific to evaluation, and expand upon important issues that may not be covered extensively in the book. The lectures build upon each other and therefore should be watched in the order in which they appear in the library. When appropriate, additional optional resources and practice assignments are provided to you in the <u>Supplementary</u> <u>Resources</u> section of a module.

Each module also has a section labeled <u>Activities and Assignments</u>. This section contains all of the graded assignments for each module. A variety of assessment strategies will be used in this course, including:

Concept Checks – Most modules have a concept check. These are graded, timed quizzes to assess your understanding of the module's material. Concept checks also give you a sense of how you will be tested on the exams and whether or not you have mastered the module's material. Concept checks may have different maximum points depending on the number of questions. There are 10 concept checks over the semester; collectively concept checks are worth 200 points, which is approximately 21% of your final grade.

Activities – Modules will usually have one or more activities. These are brief assignments that require you to apply the material you learned from the readings and lectures. These activities may involve case examples, short-answer questions, or multiple-choice questions. Each activity has a rubric that provides instructions, shows how points will be awarded, and describes how the assignment should be submitted. Activities may have different maximum points depending on the complexity of the activity. There are 19 activities over the semester; collectively activities are worth 205 points, which is approximately 22% of your final grade.

Application Assignments - Some modules may include application assignments which are longer, graded assignments that require you to apply specific skills you have developed in the course. This may include responding to questions and often will require manipulating and/or analyzing data in SPSS. Application assignments may also entail reporting results from statistical analyses. A rubric will be provided that describes the assignment, how your work will be graded, and how to submit it. In some cases, Application Assignments may be due the week after you completed the module activities so that you can get feedback before doing the application assignment. There are 7 application assignments over the semester; collectively these are worth 200 points, which is approximately 21% of your final grade. Examinations – There will be two examinations in this course, a midterm and a final. Each of these exams will be timed to assess your abilities to recall and apply the course material from the first and second halves of the semester, respectively. The final exam in not cumulative. You will only have one attempt to complete these exams. Questions may be multiple choice, short answer, and long answer. Each exam is worth 150 points. Together they make up 300 points, which is approximately 32% of your final grade.

Discussion Forums – Discussion forums serve as a place to post questions or clarify concepts. You are strongly encouraged to engage in discussions before submitting assignments, but also afterwards to ensure you understand feedback you may have received. When posting on a new topic, please start a new thread. Discussions will be used to: (a) identify what areas students need clarification on and (b) provide you with a forum to practice explaining statistical concepts to others since this will be a necessary skill in evaluation. While I will weigh in if posts are inaccurate or if students appear to be struggling, you are expected to take the lead in working together to answer questions. In addition to explanations of concepts, you can post examples, links to resources, and real-life evaluation situations that illustrate concepts from our class. Regularly posting thought provoking questions and/or well conceptualized responses is an effective way of participating in discussion forums. An overall discussion participation grade will be assigned for the semester, out of 30 points; this makes up approximately 3% of your final grade.

See the **Course Schedule** later in the syllabus for module topics for each week, as well as the associated course readings and assignments. Detailed instructions for each assignment can be found in D2L within each learning module. If you have any questions, please contact the instructor.

Technical Assistance

If you need technical assistance at any time during the course or to report a problem you can:

- Visit the Distance Learning Services Support Site
- Visit the <u>Desire2Learn Help Site</u>

<u>Please note:</u> Accommodations for assignments not submitted on time due to technical difficulties will require documentation from the helpdesk.

Graded Course Activities

Your grade for this course will be based on your performance on the following assignments. The table below shows the maximum number of points you can earn for each type of assignment.

Course Requirements	Points
10 Concept Checks	200
19 Activities	205
7 Application Assignments	200
Midterm Examination	150
Final Examination	150
Discussion Forum Participation	30
Possible Total	935

Viewing Grades

Grades will be available within one week of the due date of an assignment, unless otherwise specified by the instructor. You can view your grades for all assignments in the gradebook available in D2L.

Grading Scale

Final grades are determined based on your mastery of the course materials and demonstration of the required skills as determined by professional standards at the graduate level. Final grades will be calculated based upon the total number of points you have accumulated across the semester, using the following grading scale.

Total Points	Percent of Total Points	Grade
842 – 935	90% to 100%	4.0
795 – 841	85% up to 90%	3.5
748 – 794	80% up to 85%	3.0
702 – 747	75% up to 80%	2.5
655 – 701	70% up to 75%	2.0
608 – 654	65% up to 70%	1.5
561 – 607	60% up to 65%	1.0
<u><</u> 560	Less than 60%	0.0

Part 3: Course Schedule

Date	Торіс	Module Requirements	Due Date
	COURSE OVERVIEW AND UNIT 1: INTRODUCTION		
Week 1 1/11– 1/17	Course Overview and Introductions How does the course work? Syllabus Meet the instructor and peers 	Overview Read Course Overview Read Course Syllabus Complete Introduction discussion 	1/17
	 Module 1: Introduction to Statistics for Evaluators What are statistics and why do they matter? Overview of the course material and how it fits into the evaluation context Introductory concepts and terms Levels of measurement Revisiting the purpose and applications of statistics 	 Module 1 Read Chapters 1-3 Watch Module 1 Lectures Complete Module 1 Activities Complete Module 1 Concept Check 	
	UNIT 2: DESCRIPTIVE	STATISTICS	
Week 2 1/18 – 1/24	 Module 2: Introduction to Descriptive Stats & Frequencies and Percentages The purpose of descriptive statistics Frequencies, raw and valid percentages Frequency Distributions Module 3: Shape of the Frequency Distribution Histograms 	 Module 2 Read Chapter 4 Watch Module 2 Lectures Complete Module 2 Activities Module 3 Read Chapters 5 and 8 Watch Module 3 Lectures Complete Module 3 Activities Complete Modules 2 - 3 Concept 	1/24
Week 3 1/25 – 1/31	 The normal distribution Skewness, kurtosis, modality, and outliers Module 4: Measures of Central Tendency Mean Median Mode Applications in evaluation 	Check Module 4 • Read Chapter 6 • Watch Module 4 Lectures • Complete Module 4 Activities • Complete Module 4 Concept Check	1/31
	Module 5: Measures of Variability/Dispersion and Concluding Descriptive Statistics • Range • Standard deviation • Applications in evaluation	 Module 5 Read Chapter 7 Watch Module 5 Lectures Complete Module 5 Activities Complete Module 5 Concept Check 	

Date	Торіс	Module Requirements	Due Date
	UNIT 3: SPSS, DATA PREPARATION	AND DATA MANAGEMENT	
Week 4 2/1 – 2/7	 Module 6: Introduction to SPSS & Codebook and Database Construction The structure of SPSS Importance of codebooks Running percentages and frequencies in SPSS Moving data between Excel and SPSS 	 Module 6 Watch Module 6 Lectures Read Required Readings (on D2L) Complete Module 6 Activities Start Application 1—Create a Codebook and SPSS Database (Note: due Sunday, Feb 14th, 11:59PM) 	2/7
Week 5 2/8 – 2/14	 Module 7: Data Entry and Initial Data Cleaning Principles of data entry and data preparation Data entry Initial data cleaning Running descriptive stats in SPSS 	 Module 6 Complete Application 1 from Module 6 Module 7 Watch Module 7 Lectures Start Application 2—Data Entry and Data Cleaning (Note: due Sunday Feb 21st, 11:59pm) 	2/14
Week 6 2/15 – 2/21	Module 8: Recoding, Scaling, and Final Data Preparation • Recoding and computing scales • Obtaining alpha • Final data cleaning	 Module 7 Complete Application 2 from Module 7 Module 8 Watch Module 8 Lectures Start Application 3—Recoding, Scaling and Final Data Preparation (Note: due Sunday Feb 28th, 11:59pm) 	2/21
Week 7 2/22 – 2/28	Module 9: Data Analysis & Writing up Descriptive Statistics for Evaluation Audiences	 Module 8 Complete Application 3 from Module 8 Module 9 Read Required Readings (on D2L) Complete Modules 6 - 9 Concept Check Complete Application 4—Write up Descriptive Statistics for an Evaluation Report 	2/28
Week 8 3/1 – 3/7	Module 10: Midterm Exam on Descriptive S	tatistics and Data Preparation	3/7

Date	Торіс	Module Requirements	Due Date
	UNIT 4: FOUNDATIONS OF IN	FERENTIAL STATISTICS	
Week 9 3/8 – 3/14	Module 11: Introduction to Inferential Statistics Note: This module is covered over two weeks	 Module 11 Skim Chapter 9 if you aren't familiar with percentiles Read Chapters 10-12 (skim confidence intervals) Watch Module 11 Lectures 	3/14
Week 10 3/15 – 3/21	Module 11: Introduction to Inferential Statistics CONTINUED	 Module 11 Complete Module 11 Activities Complete Module 11 Concept Check 	3/21
	UNIT 5: BIVARIATE CORRELAT	ION AND REGRESSION	
Week 11 3/22 – 3/28	 Module 12: Bivariate Correlation Linear relationships Pearson's R Applications in evaluation 	 Module 12 Read Chapters 13 and 17 Watch Module 12 Lectures Complete Module 12 Activities Complete Module 12 Concept Check Start Application 5: Conduct and Write up a Bivariate Correlation (Note: due Sunday Apr 4th, 11:59pm) 	3/28
Week 12 3/29 – 4/4	 Module 13: Introduction to Regression for Evaluators Key concepts in multiple regression Regression with continuous and dichotomous predictors Note: This module is covered over two weeks 	 Module 12 Complete Application 5 from Module 12 Module 13 Read Chapter 18 Watch Module 13 Lectures 	4/4
Week 13 4/5 – 4/11	Module 13: Introduction to Regression for Evaluators CONTINUED	 Module 13 Complete Module 13 Activities Complete Module 13 Concept Check Start Application 6: Conduct and Write-up Multiple Regression Analyses (Note: due Sunday Apr 18th, 11:59pm) 	4/11

Date	Торіс	Module Requirements	Due Date
Week 14 4/12 – 4/18	 Module 14: Regression Diagnostics Assumptions and tests for multiple regression 	 Module 13 Complete Application 6 from Module 13 Module 14 Watch Module 14 Lectures Complete Module 14 Activities Complete Module 14 Concept Check Start Application 7—Conduct and Write-up Regression Diagnostics (Note: due Sunday Apr 25th, 11:59pm) 	4/18
Week 15 4/19 – 4/25	 Module 15: Conceptual Introduction to Extensions of Multiple Regression Logistic regression Multilevel regression Moderation and mediation 	 Module 14 Complete Application 7 from Module 14 Module 15 Watch Module 15 Lectures Complete Module 15 Activities Complete Module 15 Concept Check 	4/25
Week 16 4/26 - 4/30	Module 16: Final Exam on Inferential Statist DUE Friday, April 30 th by 5:00	-	4/30

Part 5: Course and University Policies

Late Work Policy

It is in your best interest to turn all work in on time, as **no late assignments will be accepted**. An assignment is considered late if it is submitted after 11:59 pm (EST) the date the assignment is due. Exceptions to this policy will be made at the discretion of the instructor, and only in the case of a documented emergency situation that was reported in advance of an assignment due date.

Electronic Communication

When posting to discussion forums or emailing the instructor, please use basic "netiquette." This means using full sentences, grammar, capitalization, and punctuation so that your text is understandable to other students and the instructor. All posts and messages should be respectful. Inappropriate posts will be removed and disciplinary action may be taken at the instructor's discretion. Never post to D2L in violation of copyright laws.

Participation

Students whose names do not appear on the official class list for this course may not participate in this class. Students who fail to log-in during the first week will be dropped from the course.

You are expected to participate in all online activities as listed on the course schedule. If you miss more than two consecutive weeks of class, (i.e., do not participate actively in class activities or assignments) and have not communicated with the instructor to be excused from class, you will receive a failing grade of 0.0 in the course.

If you have an emergency situation, the instructor must be contacted prior to an assignment due date to make alternative arrangements. Otherwise, you will receive a 0.0 for the missed assignment(s). As noted above, decisions about whether or not an assignment will be accepted is left to the discretion of the instructor.

Understand When You May Add or Drop This Course

It is your responsibility to understand when you need to consider unenrolling from a course. Refer to the Michigan State University Office of the Registrar for important dates and deadlines.

The last day to add this course is the end of the first week of classes (1/25 at 8:00 pm EST). The last day to drop this course with a 100 percent refund and no grade reported is 2/12 (at 8:00 pm EST). The last day to drop this course with no refund and no grade reported is 3/10 (at 8:00 pm EST). You should immediately make a copy of your amended schedule to verify you have added or dropped this course.

Inform Your Instructor of Accommodations Needed

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. If you have a documented disability and verification from the Resource Center for Persons with Disabilities (RCPD), and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student's responsibility to provide documentation of disability to RCPD and meet with an RCPD specialist to request special accommodation before classes start.

Once your eligibility for an accommodation has been determined, you

will be issued a verified individual services accommodation ("VISA") form. Please present this form to the instructor at the start of the term and/or two weeks prior to the accommodation date (test, project, etc). Requests received after this date will be honored whenever possible.

RCPD may be contacted by phone at (517) 884-7273 (884-RCPD), or via their website (http://www.rcpd.msu.edu). RCPD is located in 120 Bessey Hall, near the center of the Michigan State University campus, on the southwest corner of Farm Lane and Auditorium Road.

Commit to Integrity

Academic Honesty

Article 2.3.3 of the Academic Freedom Report states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the Psychology Department adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and Ordinance 17.00, Examinations. (See Spartan Life: Student Handbook and Resource Guide and/or the MSU Web site: www.msu.edu.)

Academic integrity is a minimal expectation of this course. Academic dishonesty in any form will not be tolerated. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, and submitting work of another person. Any student involved in academic dishonesty will be reported to the Office of Academic Affairs and the Office of Student Affairs and a grade of 0.0 may be issued for the course.

Lectures and other course materials must remain the property of the Department of Psychology and must not be copied from the internet for distribution to anyone who is not registered for this course. Online discussions and exercises are confidential and should not be discussed with others who are not enrolled in the class.

It is important for each course participant to express his/her ideas. All ideas need to be respected in discussions and exercises. Any "group projects" that are required, still require individual work as a minimal expectation. All assignments are to be done on your own, without the assistance of additional materials, i.e., internet, texts, articles, other people, etc., unless you are instructed to do otherwise. This includes weekly assignments and exams.

Plagiarism

Taking credit for someone else's work or ideas, submitting a piece of work (for example, a paper, assignment, discussion post) which in part or in whole is not entirely your own work without fully and accurately attributing those same portions to their correct source. This includes information taken from the Internet.

Unless authorized by their instructors, you are expected to do your own, original work on each assignment in each class. If you recycle your own course work from one class to another, you may face an allegation of academic dishonesty. If your instructor believes you have committed an act of plagiarism, he/she may take appropriate action, which includes the issuing of a "penalty grade" for academic dishonesty. Article 11 of the Academic Freedom Report for Students at Michigan State University, or the "AFR," defines a penalty grade as "a grade assigned by an instructor who believes a student to have committed academic dishonesty. . . ." A penalty grade can include, but is not limited to, a failing grade on the assignment or in the course.

For examples of what constitutes plagiarism, see:

- Indiana University Writing Tutorial Services
- Purdue Online Writing Lab

Evaluate the Course

Michigan State University takes seriously the opinion of students in the evaluation of the effectiveness of instruction, and has implemented the SIRS (Student Instructional Rating System) process to gather student feedback. This course utilizes the "online SIRS" system, and you will receive an e-mail sometime during the last two weeks of class asking you to fill out the SIRS at your convenience. As a reminder to be sure to fill out the SIRS evaluation form, the final grade for this course will not be accessible on STUINFO during the week following the submission of grades for this course unless the SIRS online form has been filled out. You have the option on the online SIRS form to decline to participate in the evaluation of the course – we hope, however, that you will be willing to give us your frank and constructive feedback so that we may instruct students even better in the future."

Note: The instructor reserves the right to make changes to the syllabus during the course of the semester. Changes will be announced in the course announcement area.