NRRM 200: Analytical Methods: Statistics (4 Credits)
Course Syllabus – Fall 2018

Instructor:	David A. Graefe, Ph.D.	**Class Meets:**	Monday and Wednesday 3:00 – 4:50
Office:	201 Prichard Hall	**Classroom:**	Morrow Library, 119
Phone Number:	(304) 696-2608	**Office Hours:**	Monday 9:00 – Noon
E-Mail:	graefe@marshall.edu		Wednesday 10:00 – 1:00
			Or by appointment

Course Description (from catalog):
Students develop an understanding of statistical reasoning through the use of software to generate, summarize, and draw conclusions from data. This course enhances statistical technique dexterity through analysis of applied problems.

More Description:
Students will develop an understanding of statistical reasoning. The course will cover basic statistics including sampling and experimental design, numerical and graphical representation of data, descriptive statistics, normal and other data distributions, confidence intervals, sample size determinations, and hypothesis testing (t-test, analysis of variance, correlation, regression, and chi-square). Students will use Excel and SPSS statistical software to analyze and draw conclusions from data.

Course Format:
Class will meet on Monday and Wednesday each week, unless otherwise specified by the instructor or course schedule. Materials will be presented using lectures, in-class discussions, and class projects and presentations. Students will be expected to attend class and participate in class discussions, complete written homework assignments, and take in-class quizzes and exams.

Required Texts, Additional Reading, and Other Materials:

Required texts:

- Vaske, J. J. (2008). *Survey research and analysis: Applications in parks, recreation, and human dimensions.* State College, PA: Venture Publishing Inc.

- Other readings as assigned and provided by the instructor.

Assigned readings are an essential component of this course and provide students with a baseline of knowledge that will be expanded upon through more detailed and complex in-class lectures and discussions. Students will be required to complete assigned readings prior to the class period in which the material will be discussed.

Supplemental course materials (e.g., handouts, reading assignments, etc.) will be posted to the Blackboard website (http://www.marshall.edu/muonline/).

Desired Objectives/Outcomes:

Student Learning Outcomes	How Practiced in this Course	How Assessed in this Course
Demonstrate a basic understanding of statistics.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Describe data using summary statistics (measures of central tendency and variability) and/or graphs and charts.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Develop an understanding of experimental and survey research designs and articulate the strengths and weaknesses of each research design.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Use appropriate statistical tests to examine hypotheses (e.g., chi-square, t-test, ANOVA, correlation, regression).	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Analyze data using statistical software (Excel and SPSS).	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Create and interpret graphical summaries of data.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Create and interpret numerical summaries of data.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Use normal and other distributions to describe real world phenomena.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Use confidence intervals to estimate population parameters with sample data.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Determine appropriate sample sizes for various research purposes.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.
Critically analyze and evaluate published results of statistical studies.	Class lectures and discussions, assigned readings, in-class examples	Quizzes, lab exercises, homework, exams, projects.

University Policies:
By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Attendance Policy and Make-up Work:
In-class participation is an essential component of this course and students will be expected to attend each class unless they have a valid university-approved excuse (see university excused absence policy). I will be happy to meet with students who miss class with a valid excuse to discuss course material and how missed work can be made up. However, I will not re-lecture to students who miss class during office hours, and it will be the students' responsibility to catch up on missed material (e.g., readings, in-class exercises, etc.).

Assignment Submission and Late Policy
All homework assignments must be turned in **at the beginning of class** on the specified due date. Except under special circumstances with written justification, assignments turned in after the due date will be penalized with a 10% reduction in points for each day late, including Saturdays and Sundays (i.e., one day late = 90% highest possible score, two days late = 80% highest possible score, etc.). Assignments will not be accepted more than one week after the original due date.

In-class quizzes and lab assignments will not be accepted late (i.e., there will be no opportunity to make up any missed in-class quizzes or lab exercises), except under special circumstances with written justification and prior approval. If your absence is unexcused, you will not be given an opportunity to make up any missed in-class assignments. In order to receive an excused absence, you must visit the office of academic affairs to obtain a written excused absence form.

Course Requirements and Grading Policy:
Students will be evaluated in this course based on their performance in the following categories:

- Quizzes – Students are required to attend and actively participate in each class throughout the semester. Students are also expected to complete reading assignments prior to the class period in which the materials will be discussed. In order to assess compliance with these expectations, I will be administering several unannounced, in-class pop-quizzes related to course material at random throughout the semester. Quizzes will be administered at the start of class, and students who show up late (after the quizzes have been handed in) will not be permitted to complete one. Students who miss a class period without having a university approved excused absence will receive a score of zero for any quiz given during that class period. However, I will drop the lowest quiz score for each student before determining his/her overall course grade (i.e., the results of your worst quiz will not affect your overall grade). This policy will be beneficial to students who complete readings and attend class on a regular basis.

- Labs/In-Class Exercises – Students will be required to complete several hands-on lab exercises during class. These labs will be essential for demonstrating how to conduct statistical analyses using software such as Microsoft Excel and SPSS. Lab exercises must be handed in during class. Late or make-up labs will not be accepted, except under special circumstances with written justification.

- Homework Assignments – Students will be required to complete several written homework assignments throughout the course of the semester. The content and format will vary and will be specified for each assignment. Grading of written assignments will be based both on what is presented (content) as well as the style and adequacy of the presentation (process). Written assignments should be neat, succinct, and clear. All homework assignments must be typed (12 – point font, double-spaced), printed, and handed in at the **beginning** of class on the date the assignment is due (see Late Policy for more detail).

- Examinations – Two written mid-term examinations will be administered during specified class periods this semester (see course schedule). Any student who misses an exam due to an unexcused absence will receive a 0% for that exam (see make-up exam policy).

- Projects – Students will be required to complete two individual projects throughout the course of the semester. The first will require an in-depth review of a research project and a presentation of your findings to the class. The second will require you to design and carry out a research project of your own, and present results to the class. Each student will prepare a written paper and a multimedia presentation to be delivered in front of the class for each of these projects. The second project (your own research study) will be completed in lieu of a final exam.

The aforementioned evaluation categories will contribute to your overall course grade as follows:

Quizzes	10%
In-class Lab Exercises	15%
Homework	15%
Project #1	10%
Project #2	20%
Exams (two @ 15% each)	30%
Total	100%

This class will employ a weighted grading system. To determine your grade in this course, fill in your percentage score for each evaluation category below, multiply each score by its weight, and then add the values in the final grade column to find your overall grade out of 100. In addition to handing graded assignments back to you in class, I will post grades for individual assignments and exams on blackboard. However, please remember that you **must** use the weighted grading system shown below to determine an accurate portrayal of your overall course grade. I am happy to meet with you to discuss your course progress/grade during office hours throughout the semester.

Evaluation Category	**Your Score (out of 100)**		**Weight**		**Contribution to Final Grade**
Quizzes (average)	_____	X	.10	=	_____
Lab exercises (average)	_____	X	.15	=	_____
Homework (average)	_____	X	.15	=	_____
Project #1	_____	X	.10	=	_____
Project #2	_____	X	.20	=	_____
Exam #1	_____	X	.15	=	_____
Exam #2	_____	X	.15	=	_____
	Final Grade (out of 100)			=	**_____**

Final letter grades will be determined using the following scale:

90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

The instructor reserves the right to change these values depending on overall class performance and/or extenuating circumstances.

Make-up Exams:
Make-up exams will not be given except under unusual circumstances with satisfactory written justification. Any student who misses an exam due to an unexcused absence will receive a grade of zero for that exam with no opportunity for make-up or substitution. Students who miss an exam because of a genuine emergency or university excused absence will be granted a make-up exam (provided that the reason for the absence is given prior to missing the exam – call and leave a message if you have to). Make up exams must be taken within one week of the original scheduled date. The decision of whether to give a make-up exam rests with the instructor.

Communication:
I will post course content on Blackboard (e.g., syllabus, assignments, readings, etc.), so be sure to check for new materials regularly. Your MU e-mail address will be used to make any general announcements, last minute schedule changes, etc. I recommend that you monitor your MU email and Blackboard accounts at least once a day. Also, I will only respond to emails that you send me from your official MU email address – it is the only way for me to be sure that I am responding to you (and not someone else pretending to be you).

In most cases, I will respond to emails within 24-hours. If emailed after 4:00 PM on a weekday, you should not expect a reply until at least 10:00 AM the next day (on weekends you should not expect a reply until Monday morning). I am happy to correspond with you concerning course-related matters via email, but I expect you to practice professionalism in your email messages. Below you will find a general template for composing emails:

> *Subject: Regarding [Course name/number and a brief description of the issue or question]*
>
> *Dear Dr. Graefe,*
>
> *[Here is where you state your issue or express your concern in a professional tone and with academic diction. Be brief and be clear, so that I may respond to you in the same manner.]*
>
> *Respectfully,*
> *[Your Name]*

Sending email messages without a subject or any text in the body of the message is unprofessional and is often perceived as rude. Please avoid sending attachments without clear information in the subject line and a brief message.

Classroom Learning Environment:
To maintain the best possible environment for learning, the following standards for acceptable behavior will be followed by all students in this class:

- Turn off all cell phones and pagers before entering class. Do not text during class.
- Be on time for class and don't leave early.
- Don't have conversations during class that distract others.
- Don't disparage other students – treat all class members respectfully.
- Don't use profanity in class.
- Do not use tobacco during class.

Students who violate these standards and policies will be asked to leave class.

Course Schedule and Due Dates:

This is a tentative schedule and it may change as the class progresses. Reading assignments are italicized and should be completed prior to class.

Date	Day	Topic	Assignment
8/20	M	Course intro, syllabus overview, **assign project #1**	Intro lab
8/22	W	Introduction to statistics and research, types of variables/data, level of measurement, summary statistics (central tendency, variation)	*Chapter 5*, Measurement lab part 1
8/27	M	Summary statistics, central limit theorem, confidence intervals for means	*Chapter 11*, Measurement lab part 2 (excel)
8/29	W	Summary statistics, central limit theorem, confidence intervals for proportions, intro to SPSS	*Chapter 10, Handout on CI for Proportion*, measurement lab part 3 (SPSS)
9/3	M	**No Class – Labor Day**	
9/5	W	Research Design – experiments and surveys, hypotheses, statistical techniques and assumptions, errors	*Chapter 6 (this is a little advanced in places, but describes some very important concepts)*. Sample size homework, and project update
9/10	M	Research Design – experiments and surveys, hypotheses, statistical techniques and assumptions, errors	*Assigned Readings*, hypothesis lab
9/12	W	Data analysis, presentation	Graphing lab
9/17	M	Data analysis, presentation	TBD
9/19	W	**Project #1 presentations**	**Project #1 due**
9/24	M	**Project #1 presentations**	
9/26	W	Review	
10/1	M	**Exam #1**	
10/3	W	**Go over exam #1, introduce project #2**	
10/8	M	Z scores	Z score lab
10/10	W	Data manipulation in SPSS	*Chapter 12*, manipulation lab and homework
10/15	M	Chi-Square tests	*Chapter 13*, crosstabs lab
10/17	W	t-tests	*Chapter 14*, t-test lab
10/22	M	ANOVA	*Chapter 15*, ANOVA lab
10/24	W	Review and project update	
10/29	M	Correlation and Regression	*Chapter 16*, lab
10/31	W	Project Day	
11/5	M	Review for exam #2	*Practice lab*
11/7	W	Exam #2 – **No official class meeting**	
11/12	M	**Exam #2 – No official class meeting**	
11/14	W	**Exam #2 due, project day**	
11/19	M	**No Class – Fall Break**	
11/21	W	**No Class – Fall Break**	
11/26	M	**Project #2 Presentations**	
11/28	W	**Project #2 presentations**	
12/3	M	**Project #2 presentations**	
12/5	W	**Project #2 presentations**	**Final Papers Due**

Every student is responsible for all materials presented in class, including lectures, notes, and handouts. In case you are not present for a class, you should contact me to receive information about the material presented in that class. Class attendance is very important.