

Oakland University
College of Arts and Sciences
Department of Mathematics and Statistics

Course: STA 2221: Introduction to Statistical Methods (10930) 4 credits

Semester: Winter 2018

Instructor:	Ravi Khattree	E-mail:	khattree@oakland.edu
Office:	551 SEB	Office Phone:	248-370-3448
Class Time:	MWF 12:00-1:07 pm	Office Hours:	Mon., 1:30-2:20 pm Wed., 1:30-2:20 pm and by appointment.

Class Meeting Room: DH 200

Course (Catalog) Description: An introduction to statistical thinking and applications to industrial and similar processes. Descriptive statistics, distributions, and probability models useful in process control and systems reliability; confidence intervals, hypothesis testing, regression, and basic experimental design. Statistical concepts to be reinforced with case studies promoting problem solving skills and statistical thinking. STA 2221 cannot be used to replace STA 2226(226)

Prerequisite: MTH 1221/121 or MTH 1441/141 with a grade of 2.0 or higher or placement.

Course Objectives: The primary goal of the course is to develop statistical thinking skill in students, be able to apply such a skill to solve practical, statistical problems, and interpret results appropriately. The successful student will develop problem-solving skills and statistical thinking via several case studies that also require minimum statistical computations. The link between statistical formulas and computer outputs and interpretations of such outputs will be emphasized.

Required Text and Supporting Materials: *Basic Engineering: Data Collection and Analysis* by Stephen Vardeman and Marcus Jobe, published by Duxbury, (2001). A copy of the textbook will be available on 2 hour reserve at Kresge Library.

Expectations of Students: Attendance at every class is expected.

Grade Determination:

Tests: There will be two in-class midterm tests (tentatively scheduled for **February 7 and March 21**), each worth 100 points. The tests will be designed to meet the objectives of the course. If the university is officially closed on a scheduled exam date, the exam will be held on the next class date that the university is officially open.

Final Examination: The final examination is comprehensive. It will be given on **Wednesday April 25, 12:00-3:00 pm in the regular classroom**, unless otherwise announced prior to the exam. It is worth 200 points.

Homework: There will be a number of homework problems assigned, collected, and graded. The assignments will be worth 50 points. These assignments will be used to help the class achieve the goals and objectives of the course. Students will need to use a statistical computer package

in homework problems where it is required. Homework are always due in the beginning (not the end) of the class. Late homework assignments are not acceptable. There are no make-up homework. Additional practice problems (not to be graded) will be assigned regularly.

Attendance: Students are expected to attend every class. 50 points are assigned to attendance. There are no excused absences.

Grading Scale: Your grade in the course will be based on the total points you earn out of 500 points. There is no fixed grading scale for this course. A conversion formula from your score to Oakland University grades will be determined at the end of the course. However the following list shows the lowest possible grade that a given percentage score will earn (the grade may be higher than this): 95 -> 4.0; 80 -> 3.0; 65 -> 2.0; 50 -> 1.0.

MAKE-UP POLICY: There will be no make-up tests. If you miss a test and have a valid excuse, your grade will be determined by giving more weight to the final exam by estimating your grade in the missed test. There are no make-up homework and no excused absences.

CALCULATOR POLICY: You may use a calculator for all tests and homework assignments. However, no cell phones and hence no cell phone calculators are allowed. To receive full credit on tests, be sure to show all the necessary work for setting up a calculation.

SOFTWARE USAGE AND COMPUTER LAB: Computer software is an essential tool for applied statistics. Methods will be illustrated using SAS software package, but you are free to use other statistical software for your assignments. Some lectures may be held in 557 MSC, a computer laboratory containing several Pcs.

Academic Conduct Policy:

ACADEMIC HONESTY: Cheating is a serious academic crime. Oakland University policy requires that all suspected instances of cheating be reported to the Academic Conduct Committee for adjudication. Anyone found guilty of cheating in the course will receive a course grade of 0.0, in addition to any penalty assigned by the Academic Conduct Committee. Working with others on homework assignments does not constitute cheating; handing in an assignment that has essentially been copied from someone else does. Receiving help from someone else or from unauthorized written materials during tests is cheating, so is using a calculator or cell phones as an electronic “crib sheet” or a communication device. Signing for someone else on attendance sheet or asking someone else to do so for you is also an academic misconduct.

Important Dates

January 3	Classes begin
January 15	Martin Luther King Jr. Day (no class)
January 17	Last Day to Add; Last Day to “no grade drop”
February 17	Winter Recess Begins at 10:00 p.m.
February 26	Classes resume at 7:30 a.m.
March 14	Last Day to Official Withdrawal (No Grade)
April 17	Last Day of Classes
April 19-25	Final Exam Period
April 25	FINAL EXAM Wednesday, 12:00-3:00 PM: in regular classroom

SYLLABUS (SUBJECT TO CHANGE)

Week	Date	Topics	Text Reference
1	Jan. 3	Introduction	Sec. 1.2
	Jan. 5	Introduction	Sec. 1.2
2	Jan. 8	Elementary Descriptive Statistics	Sec. 3.1
	Jan. 10	Elementary Descriptive Statistics	Sec. 3.2
	Jan. 12	Elementary Descriptive Statistics	Sec. 3.3
3	Jan. 17	Relationship Between Variables	Sec. 4.1
	Jan. 19	Relationship Between Variables	Sec. 4.2
4	Jan. 22	Relationship Between Variables	Sec. 4.2
	Jan. 24	Probability Theory & Computation	A1, A3
	Jan. 26	Introduction of SAS	
5	Jan. 29	Probability Theory & Computation	A1, A3
	Jan. 31	Probability Applications	A2
	Feb. 2	Probability:Discrete Random Variables	Sec. 5.1
6	Feb. 5	Review for Test 1	Sec. 1.2,3.1-3.3, 4.1-4.2,A1-2
	Feb. 7	Test 1	
	Feb. 9	Probability:Discrete Random Variables	Sec. 5.1
7	Feb. 12	Probability:Continuous Random Variables	Sec. 5.2
	Feb. 14	Probability:Continuous Random Variables	Sec. 5.2
	Feb. 16	Probability:Continuous Random Variables	Sec. 5.2
8	Feb. 19,21,23	Winter Recess, NO CLASS	
9	Feb. 26	Data Collection: Sampling	Sec. 2.2
	Feb. 28	Data Collection: Experiment	Sec. 2.3
	Mar. 2	Statistical Inference	Sec. 6.1-3
10	Mar. 5	Statistical Inference	Sec. 6.1-3
	Mar. 7	Statistical Inference	Sec. 6.1-3
	Mar. 9	Statistical Inference	Sec. 6.1-3
11	Mar. 12	Statistical Inference	Sec. 6.1-3
	Mar. 14	Statistical Inference	Sec. 6.1-3
	Mar. 16	Statistical Inference	Sec. 6.1-3
12	Mar. 19	Review for Test 2	
	Mar. 21	Test 2	
	Mar. 23	Multisample studies	Sec. 7.1
13	Mar. 26	Multisample studies	Sec. 7.1
	Mar. 28	Multisample studies	Sec. 7.4
	Mar. 30	Multisample studies	Sec. 7.4
14	Apr. 2	Multisample studies	Sec. 7.2
	Apr. 4	Multisample studies	Sec. 7.2
	Apr. 6	Multisample studies	Sec. 7.2
15	Apr. 9	Multisample studies	Sec. 7.2
	Apr. 11	Inference Related to Simple Linear Regression	Sec, 9.1
	Apr. 13	Inference Related to Simple Linear Regression	Sec. 9.1
16	Apr. 16	Review for Final Exam	
	Apr. 18	Study period starts	
17	Apr. 25	FINAL EXAM, 12:00-3:00 PM, 200 DH	