OAKLAND UNIVERSITY
DEPARTMENT OF MATHEMATICS AND STATISTICS
STUDENT INFORMATION SHEET AND SYLLABUS

COURSE: STA2220 , Introduction to Statistical Concepts and Reasoning, (10173) 4 Credits

SEMESTER: Winter 2018

Class Time and Room; Monday & Wednesday: 5:30 – 7:17 PM, Room SFH 163

Faculty: Dr. Sabah Saleem, Office: 393 MSC, Email:sdsaleem@oakland.edu

OFFICE HOURS: MW: 12:00 – 1:00 PM,
TR: 10:00 – 11:00 AM

PREREQUISITES: A 2.0 or better in MTH 012 or equivalent course at another school or placement "R". Students are sometimes unaware, until after they have taken a college mathematics or statistics course, how much more emphasis is placed in college courses on understanding and applying concepts, as opposed to learning to perform routine computations. Indeed, understanding of concepts and their applications are the central issues of college-level work. Students who have not been in such courses often underestimate the amount of time and hard work needed to succeed.

CATALOG DESCRIPTION: Statistical ideas and thinking relevant to public policy, quality improvement, and physical and social sciences. Data collection and presentation; association; normal distribution; probability and simulation; and confidence intervals, p-values and hypothesis testing. *Satisfies the university general education requirement in the Knowledge Area of Formal Reasoning.*

COURSE OBJECTIVES:

The primary goal of this course is to introduce the concepts which form the basis for statistical methods, and the proper usage of those methods, to students with minimal mathematical sophistication. The successful student will develop an appreciation and understanding of (1) purposes and methods of exploratory data analysis, (2) methods for obtaining useful and meaningful data by sampling and experimentation, (3) basic ideas of probability as the foundation of statistical inference, and (4) basic concepts and methods for statistical inference.

This course addresses the following general education learning outcomes:

1) The student will demonstrate knowledge of one or more formal reasoning systems such as computer programming, mathematics, statistics, linguistics or logic.

Particularly, successful students in this course will demonstrate knowledge of statistical thinking, and be able to apply it in order to read, understand, model, and solve problems across a variety of applications. Every section of the text includes examples and exercises that involve applying statistical reasoning in order to reach conclusions based on data.

2) The student will demonstrate application of formal reasoning to read, understand, model and solve problems across a wide variety of applications.

The course contributes to the Natural Science and Technology objective of demonstrating the ability to develop and test hypotheses, draw conclusions, and report findings. Statistical reasoning is one of the foundations of the scientific method.

This course also addresses the following general education "Cross-Cutting Capacities":

1) Critical thinking. Solving statistics problems involves the following skills identified as part of the capacity for critical thinking: (a) ability to clearly formulate questions and problems, (b) ability to gather and assess relevant information using abstractions to interpret it effectively, (c) ability to come to well-reasoned conclusions and solutions and test them against relevant criteria, (d) ability to recognize and assess the assumptions, implications, and consequences of alternative theories.

2) Social awareness. Many examples in the course illustrate the application of statistical methods in order to better understand important social issues. ("Statistical thinking will one day be as necessary for effective citizenship as the ability to read and write" H.G. Wells, 1904)

TEXTS: *The Basic Practice of Statistics*, 7th Edition, by Moore, Notz and Fligner published by Freeman. The material to be covered is shown in the detailed syllabus (see last page). You are expected to purchase a copy of this textbook, and should bring it with you to class. Copies of the text and student solutions manual are available on 2-hour reserve at Kresge Library as are some other statistics textbooks.

CALCULATOR POLICY: For this course you will need a calculator with basic statistical operations like mean and standard deviation. You may use the calculator on all tests, quizzes, and homework assignments, and it is important to learn to use it effectively. In particular, you should know how to do complex calculations without writing down intermediate answers, and be aware of how many digits of accuracy you can expect an answer to have. *To receive full credit on tests, be sure to show all the statistical work necessary for setting up a calculation before using the calculator*. During tests, use of cell phones is prohibited so cell phone calculators are not allowed.

COMPUTER USAGE: Computer laboratories are not a formal part of this course. However, there are some excellent statistics packages available which are capable of performing many of the calculations that one does in a course such as this. Interested students should talk to the instructor about getting access to such systems and experiment with them. The CD-ROM in the text is also a useful study aid.

ATTENDANCE: Attendance and participation are vital for success in this course. Students are expected to participate based on the guidelines below. To be in attendance means:

- Be on time for each Class.
- Stay the full period. (Do NOT leave early.)
- Do not take or receive calls, messages, etc.
- No electronics should be out during the class. (No cellphones, laptops, tablets, etc.)
- Come prepared. Arrive with a pencil, textbook, and paper.
- Students should not regularly leave the class.

TESTS: There will be 3 class tests (worth 100 points each) scheduled for Feb.5 , March 5, and April 2, 2018**.** These tests, as well as any quizzes and the final examination (see below) are closed book tests.

QUIZZES: There will be Five Quizzes in the semester. All Quizzes will be taken on Wednesday. The date & materials for each quiz will be announced in class on Monday. The Quizzes worth 100 points.

FINAL EXAM: **The final examination is comprehensive**. It will be given on April 25 , from 7:00 –9 :45 PM. It is worth 200 points.

EMERGENCY CLOSING: If the University is closed at the time of a scheduled test, quiz, or examination (for example, because of snow), it will be given during the next class period when the University reopens. The Oakland University emergency closing number is 248-370-2000.

GRADING POLICY and SCALE:

Grading Criteria		Scale	
Test 1:	100 pt	95% – 100%:	4.0
Test 2:	100 pt	80% – 94.9%:	3.0 – 3.9
Test 3:	100 pt	65% – 79.9%:	2.0 – 2.9
Quizzes:	100 pt	50% – 64.9%:	1.0 – 1.9
Final Exam:	200 pt	Less than 50%:	0.0

MAKE-UP POLICY: **No make-up exams will be given.**

There is no make-up exam. There is no make-before, either. You need not give your instructor a reason to miss an exam. I will enter zero for the missed exam but the final exam score will replace the score of the lowest regular exam scores. Therefore, it will replace the score of a missed regular exam.

Final exams cannot be re-scheduled. They cannot be taken before nor taken after the date scheduled by the registrar's office. If you have a documented reason to miss a final exam (a medical emergency sent you to the E.R., for instance), you will get a grade of INCOMPLETE and will be given an additional semester to take a final exam to complete the course and get your grade.

No make-up exam and no adjustment will be given to a student who enrolls in the course after the date that exam is scheduled.

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 this course will receive a course grade of 0.0, in addition to any penalty assigned by the Academic Conduct Committee. Working with others on a homework assignment 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 material during a quiz, test, or final exam is cheating, as is using a calculator as an electronic "crib sheet".

STUDY HABITS: Cultivating good work and study habits is necessary for doing well in mathematical sciences courses. You should keep on top of the subject by doing large amounts of homework (frequently working on problems not assigned), regularly reviewing earlier material, asking questions in class, and making good use of your instructor's office hours and the Academic Skills Center. If you are having difficulty with some concept or mathematical procedure, you should get it clarified as soon as possible. If you make mistakes on tests or quizzes, rework these problems with the idea that you will not make similar mistakes later. Regular reviewing of older material in the course will put you in good stead when it comes to final exam time. This will help you to avoid the usual non-retention problems students encounter at the end of the course. You should expect that doing all of these things will take at least two hours outside of class for each hour in class. Many students find it helpful to spend some of this time working with others, in study groups.

DROPPING THE COURSE: The Department of Mathematical Sciences is committed to achieving the goal of an academically sound freshman and sophomore mathematical sciences curriculum in which most conscientious Oakland University students can expect to be successful. If you are considering dropping the course and wish to discuss the matter further, you are encouraged to contact your instructor. The last day to drop a course is November 8.

IMPORTANT DATES

January 3 : Class begins; Winter 2018
January 15 : MLK day , No Class.
January 17: The last day for 100% tuition reimbursement, registration, to add a class, and a "no-grade" drop.
February 17: Midterm evaluation deadline
February 18-26: Winter Recess (no classes)
March 14: Last day of official withdraw (W grade)
April 17: Last day of classes
Wednesday April 25 : Final Exam , 7:00 - 9:45 PM

STA2220 - 10173 Tentative Syllabus (Subject to change)

Monday (M) , Wednesday (W)		
Date	**Text Reference**	**Topics**
W , January 3	Ch.1	Displaying Data
M , January 8	Ch.1 & 2	Displaying Data , Descriptive Statistics
W , January 10	Ch.2	Descriptive Statistics
M , January 15	MLK Day, No classes	
W , January 17	Ch. 3 ,	Normal Distribution
M , January 22	Ch.3	Normal Distribution
W , January 24	Ch. 4	Scatterplots , Correlation
M , January 29	Ch. 5	Regression
W , January 31	Ch.6 ,	Two-Way Tables
M , February 5	TEST 1 : Chapters : 1-5	
W , February 7	Ch. 8	Sampling
M , February 12	Ch. 8	Sampling
W , February 14	Ch. 9	Experiments
February 17 - 25	Winter Recess (no classes)	
M , February 26	Ch.12 & 13	Probability
W , February 28	Ch.12 & 13 ,	Probability
M, March 5	TEST 2 : Chapters : 6 , 8 , 9 , 12 , 13	
W, March 7	Ch. 14	Binomial Distribution
M , March 12	Ch. 15	Sampling Distributions
W , March 14	Ch. 16	Confidence Intervals
M , March 19	Ch. 20	Inference for Means
W , March 21	Ch. 20 ,	Inference for Means
M , March 26	Ch. 17	Tests of Significance
W , March 28	Ch. 18	Inference in Practice
M , April 2	TEST 3 : Chapters : 14 ,15,16,and 20	
W , April 4	Ch. 22	Inference for Proportion
M , April 9	Ch. 22	Inference for Proportion
W , April 11	Review for Final Exam	
M , April 16	Review for Final Exam	
Wednesday April .25: Final Exam.(Comprehensive) , Time: 7:00 – 9:45 PM		