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

**Semester:** Winter 2018

**Course:** Stat 226: Applied Probability and Statistics, 4 Credits

**Class Time and Room:** MWF 1:20 pm - 2:27 pm in Mathematics and Science Center (MSC) 124

**Faculty:** Michael Lawlor; Office MSC 387, e-mail: mrlawlor@oakland.edu

**Office Hours:** W 6 -7 PM, F 12-1 PM, or by appointment.

**Supplemental Instruction (SI):** The SI is scheduled from 2:40 PM to 3:47 PM in MSC 386. The instructor is TBD.

**Course Description:** Introduction to probability and statistics as applied to the physical, biological and social sciences and to engineering. Applications of special distributions and nonparametric techniques. Regression analysis and analysis of variance. Satisfies the university general education requirement in the formal reasoning knowledge foundation area. Prerequisite(s) or Corequisite(s): MTH 122 with a grade of 2.0 or higher or MTH 154 with a grade of 2.0 or higher.

**Text:** Probability and Statistics for Engineering and the Sciences, $8^{th}$ Edition written by Jay L. Devore, and published by Duxbury in 2012.

**Calculator Policy:** You can use your calculator on all tests and homework assignments. To receive full credit on the test and homework, be sure to show all the necessary work for setting up a calculation. Using a calculator to store formulas is not allowed.

**Software:** Computer laboratories are not a formal part of this course. However, you can use any statistical software you like, e.g. SAS, R, Splus, Minitab, SPSS.

**Tests:** Your final is Monday, April $23^{th}$ from 3:30 - 6:30 PM and is worth 30% of your grade. You will have two midterms each worth 20% of your grade. Dates are tentatively scheduled for February $14^{th}$ and April $9^{th}$.

**Quizzes / Attendance:** You will have random attendance quizzes. These will be after Exam 1, and will be one problem (or part of a problem) from an exam. They will be designed to be about 5 minutes. This will be worth 5% of your grade.

**Homework:** Homework will be assigned and graded regularly. There will be 14 homework assignments, or about 1 a week. Homework will be worth 25% of your overall grade. No late homework will be accepted. See the schedule for more details.

**Emergency Closing:** If the university is closed at the time of a scheduled test, the test will be given during the next class period after the university reopens. The Oakland University emergency closing number is 370-2000.

**Grading Policy:** The grading scale is $\geq$ 95% is a 4.0, 80% - 94.9% is a 3.0 - 3.9, 65% - 79.9% is a 2.0 - 2.9, 50% - 64.9% is a 1.0 - 1.9, and anything less than a 50% is a 0.0. Grades will be evenly interpolated (meaning if an 80% is exactly a 3.0, then an 83% would be a 3.2). This applies throughout the B - D grades. You should always check any addition / subtraction on any graded task.

**Make-up Policy:** There will not be any make-up tests. If you miss the midterm and have a valid excuse, your grade will be determined by re-weighting your final (to 50%).

**ACADEMIC DISHONESTY:** 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 responsible for academic misconduct may get a 0.0 in addition to any penalty assigned by the Academic Conduct Committee. You must read the Academic Conduct Regulations of Oakland University. Working with others on homework is not cheating unless indicated by the instructor; handing in an assignment that has essentially been copied from someone else is cheating. Looking at someone else's work during an exam is cheating. Receiving help from someone else or consulting unauthorized material during an exam is cheating. Giving such assistance, even unintentionally, also constitutes cheating.

**CLASSROOM ETIQUETTE:** Act in a manner that allows yourself and those around you the ability to concentrate on lecture. This includes, but is not limited to, arriving early or on time, leaving after class has ended, not talking during lecture unless asking a question to Dr. Lawlor, and eating/drinking quietly/silently.

**IMPORTANT DATES:**

- January 3: Classes begin.
- January 15: Martin Luther King Jr. Day.
- January 17: The last day for 100% tuition reimbursement, registration, to add a class (with permission), and a no-grade drop.
- February 17-25: Spring Break.
- March 14: The last day for official withdrawal, and the last day drops are accepted.
- April 16: Last day of our class.
- April 23: Final Exam 3:30 P.M. to 6:30 P.M.

**Tentative Syllabus:** (subject to change) See the Excel file named "Schedule".

**Warning with regards to missing class:** I understand that sometimes things occur where you may not be able to make it to a class. I feel that attendance is important. If you happen to miss a random attendance day, and have a valid reason, your attendance grade will be re-weighted without that quiz. If you miss a non-attendance day, please keep in mind that I reserve the right to spend more/less time on any topic/chapter than what is listed in the schedule. I reserve the right to change the midterm dates and the homework due dates. You are responsible for anything said in class, this includes changing any dates for either the homework or the midterms. If you miss class, I suggest getting the notes from someone who was in class ASAP. Additionally, you should ask your classmate about any announcements that were made.

**E-mail Etiquette:** You should write an e-mail as if it were a formal letter. It should have (at a minimum) a subject line (e.g. Stat 226 Homework 3 Questions), a greeting, a body, and a closing. It should be both self-contained and concise. Lastly, be proactive not reactive. The earlier you let me know of an issue/potential conflict, the more options I will have in resolving the matter.

| Lecture Information | | | Homework Information | |
|---|---|---|---|---|
| Date | Topic(s) | Chapter | Due Date | Topics |
| 3-Jan | Introduction: Populations, Samples, and Processes | 1 | | |
| 5-Jan | Pictorial and Tabular Methods in Descriptive Statistics | 1 | | |
| 8-Jan | Measure of Location | 1 | | |
| 10-Jan | Measure of Variability | 1 | 1 | 1/3 1/5 material |
| 12-Jan | Sample Spaces and Events; Properties of Probability | 2 | | |
| **15-Jan** | **no class** | | | |
| 17-Jan | Counting Techniques | 2 | 2 | 1/8 1/10 material |
| 19-Jan | Conditional Probability | 2 | | |
| 22-Jan | Independence | 2 | 3 | 1/12 1/17 material |
| 24-Jan | catch up | | | |
| 26-Jan | Random Variables and their Probability Distributions | 3 | 4 | 1/19 1/22 material |
| 29-Jan | Expected Values and Variances | 3 | | |
| 31-Jan | Bin, Hyp, NB, and Poi | 3 | | |
| 2-Feb | catch up | | 5 | 1/26 1/29 material |
| 5-Feb | Continuous RVs and Probability Density | 4 | | |
| 7-Feb | Distribution Functions and Expected Values | 4 | | |
| 9-Feb | Normal Distributions | 4 | 6 | 1/31 2/2 2/5 material |
| 12-Feb | Gamma and Other Continuous Distributions | 4 | | |
| **14-Feb** | **Test # 1 Chapters 1 to 4** | | | |
| 16-Feb | Jointly Distributed Random Variables | 5 | 7 | 2/7 2/9 material |
| 26-Feb | Expected Values, Covariance, and Correlations | 5 | | |
| 28-Feb | Statistics and Their Distributions | 5 | 8 | 2/12 2/16 material |
| 2-Mar | Distributions of Sample Means | 5 | | |
| 5-Mar | Point Estimates | 6 | | |
| 7-Mar | Methods of Point Estimation | 6 | 9 | 2/26 2/28 3/2 material |
| 9-Mar | Confidence Intervals (CIs) | 7 | | |
| 12-Mar | Large-Sample CIs for Mean and Proportion | 7 | | |
| 14-Mar | Small-Sample CIs for Mean and Proportion | 7 | 10 | 3/5 3/7 3/9 material |
| 16-Mar | CIs for Population Variance | 7 | | |
| 19-Mar | Hypothesis Testing about a Population Mean | 8 | | |
| 21-Mar | Hypothesis Testing about a Population Proportion | 8 | 11 | 3/12 3/14 3/16 material |
| 23-Mar | P-Values | 8 | | |
| 26-Mar | CIs for a Difference of Two Means | 9 | | |
| 28-Mar | Two-Sample t Tests | 9 | 12 | 3/19 3/21 3/23 material |
| 30-Mar | Paired t Tests and Tests for Two Proportions | 9 | | |
| 2-Apr | Inferences Concerning Two Populations Variances | 9 | 13 | 3/26 3/28 material |
| 4-Apr | Single-Factor ANOVA | 10 | | |
| 6-Apr | Multiple Comparisons in ANOVA | 10 | 14 | 3/30 4/2 4/4 material |
| **9-Apr** | **Test # 2 Chapters 5 to 9** | | | |
| 11-Apr | More on Single-Factor ANOVA | 10 | | |
| 13-Apr | Simple Linear Regression | 12 | | |
| 16-Apr | Simple Linear Regression | 12 | | |
| 17-Apr | Last day of Classes | | | |
| 18-Apr | Study Day | | | |
| **23-Apr** | **Final Exam** | | **3:30 - 6:30 PM** | |