

Lamar University  
Department of Mathematics

**MATH 1342-02 Elementary Statistics** (3 hour course)

Fall 2017 Syllabus

11:30-12:25 MWF, LUCAS 118

<b>Instructor:</b>	Natalie Svyeshnikova
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<b>Office Hours:</b>	MW 11:00 – 11:30, 12:30 - 1:45, 3:15-3:45 TR 9:25 – 10:00, 3:20 – 3:45, or by appointment
<b>Text:</b>	Statistics: Informed Decisions Using Data by Michael Sullivan III, Pearson, 5th Edition
<b>Web Page:</b>	Blackboard
<b>Prerequisites:</b>	350 TSI, TSI Exempt, or TSI Complete
<b>Calculator/Other</b>	TI- 83 or TI-83 plus or TI-84 plus is required for this course. All graded assignments will be required to be completed on <i>graph paper</i> . NO EXCEPTIONS!

**Catalog Description:** Non-calculus based introduction to statistics, statistical measures of data, statistical description of data, elementary probability, random variables, binomial and normal distributions, estimation, testing hypotheses. Prepares for: MATH 3370 Offered: Fall, Spring, Summer

**MATH 1342 Learning Outcomes:** Upon completion of the course, the student will:

1. Demonstrate skills necessary for analyzing and summarizing data;
2. Gain a working knowledge of descriptive statistical methods and their applications;
3. Define probability and probability distributions, particularly the normal distribution;
4. Distinguish between descriptive and inferential statistics and apply the concept of hypothesis testing;
5. Define statistics, discuss data types, contrast qualitative and quantitative data, and examine common applications of data analytical methods using real-world examples and data;
6. Develop procedures for listing and grouping quantitative data, both in tabular and graphical format;
7. Present basic descriptive statistical measures of location (mean, median, mode) and variability (range, variance, standard deviation);

8. Introduce the concept of probability and probability distributions, including the binomial and normal distributions;
9. Illustrate the concept of random samples and sampling distributions (of the mean) as a transition from descriptive to inferential statistics;
10. Distinguish between a sample and a population;
11. Calculate point and (confidence) interval estimates for a population mean using a large sample.
12. Present methods for hypothesis testing of a population mean using a large sample;
13. Present methods for hypothesis testing of differences between two population means.
14. Present methods for analyzing data from normal populations;
15. Describe (via calculation and graphs) statistical relationships between two variables.

**Core Curriculum Outcomes:** Upon completion of this course, the student will demonstrate his or her abilities to think critically, communicate quantitative information, and apply mathematical concepts:

1. **Critical Thinking:** Develop a logical, consistent plan to solve a problem, recognize consequences of the solution, and articulate a reason for choosing solution method.
2. **Communication Skills:** Use and present quantitative information in connection with an argument or problem solution and explicate it in an effective format.
3. **Empirical and Quantitative:** Construct and present a detailed problem statement with evidence of relevant contextual factors and possible approaches for solving the problem, then implement a solution and review the results.

**Lectures/Discussions:** Material will be introduced in class; students are then expected to explore the subject matter and prepare solutions, questions, and/or observations for class discussions. Please see the attached list of text sections, topics, and problems.

**Blackboard:** Course materials will be posted on Blackboard. Students are expected to check Blackboard on a regular basis.

**Grading Policies:**

- Your course grade will be based upon homework, quizzes, 4 regular exams, and one final exam.
- I will notify you at least one week prior to any exam.
- My grading scale will be the standard 10% grading scale (90-100 A, 80-89 B, 70-79 C, 60-69 D, 0-59 F)

4 tests @ 100 points each	400 points
1 final exam @ 200 points	200 points
4-8 Graded Assignments	200 points
4 homework quizzes	200 points
Total possible points	1000 points

**Attendance Policy:** All students are expected to attend each class meeting. If you must miss a class for any reason, you are responsible for any material discussed during that session. No make-up exams will be given and no late work will be accepted. Each student will begin the semester with an attendance grade of 50. A student is allowed up to three absences. After the third absence the student's attendance grade will be reduced by five points for each subsequent absence.

*Homework:* Students are expected to complete all their Homework assignments. Each assignment will have a specific due date. No late work will be accepted!

*Quizzes and Graded Assignments:* There are going to be in-class and take-home quizzes and graded assignments students are expected to complete. I will announce in class the dates of the quizzes one week in advance.

*Exams:* There will be four regular exams. The date and material covered for each exam will be announced in class at least one week in advance.

*Makeup Exams:* I do not give makeup exams. I do, however, understand that emergencies arise. Should you find yourself in a situation where you will miss an exam you must inform me as soon as you know you will be missing the exam or as soon as possible after you missed the exam and the reason for missing the exam. **If you so inform me and you are granted an excused absence** then I will replace ONE missed exam with your final exam score. You may only replace a missed exam with the final if you have talked to me and gotten an excused absence for the missed exam!

The only exception to my makeup policy is for those students who are required to be absent on exam day for a school sponsored event (sports teams, student conventions, etc.). If you are required to miss the exam you must provide me with a letter from the department sponsoring the event in advance of the day of the exam. Only then will I arrange a makeup exam.

*Comprehensive Final Exam:* There will be a *comprehensive* final exam at the end of the semester.

***Final Exam Date/Time: 12/11/2017 at 11:30 am.***

**Disclaimer:** While I have made sincere efforts to ensure that this syllabus is correct, changes may be required. Any substantive changes will be announced during a regularly scheduled class. If you find an error or omission, please advise me at once so that the other members of the class may be notified.

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Department of Mathematics  
Important Information for Students

Lamar University expressly prohibits intimidation and harassment of students, faculty, staff, or applicants. <http://students.lamar.edu/academic-support/code-of-conduct.html>

**Drop Policy:** Please make note of the three dates indicated in this drop policy. Any drop will be your responsibility; I will not drop a student from the course.

***September 20, 2017:*** (Census Date-Six Drop Rule does not apply) A student may drop or withdraw without consulting with the instructor. The Six Drop Rule does not apply to a drop before 5:00 PM.

***October 06, 2017:*** (Six Drop Rule applies) A student may drop or withdraw from the course without academic penalty and receive a Q, however, the Six Drop Rule applies. The student will consult with the instructor and the Records Office to initiate a drop.

***November 10, 2017:*** (Six Drop Rule applies) Last day to drop or withdraw with academic penalty; the student must be passing the course at the time of the requested drop in order to receive a Q. The drop form, including all required signatures, must arrive in the Records Office by no later than 4:00 PM. No drop is allowed after this date except in extreme extenuating circumstances. Any “late drop” must be approved by the instructor, department chair, college dean, and provost.

**Academic Integrity:** Students are expected to maintain complete honesty and integrity in their academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Students are specifically warned against all forms of cheating and plagiarism. The *Lamar University Student Handbook* clearly reads: “Any student found guilty of academic dishonesty in any phase of academic work will be subjected to disciplinary action. Punishable offenses include, but are not limited to, cheating on an examination or academic work which is to be submitted, plagiarism, collusion, and the abuse of source materials.” One aspect of the *Handbook’s* definition of cheating includes “purchasing or otherwise acquiring and submitting as one’s own work any research paper or other writing assignment prepared by an individual or firm.” Plagiarism is defined as “the appropriation and the unacknowledged incorporation of another’s work or ideas into one’s own and submitted for credit.” Faculty members in the College of arts and Sciences investigate all cases of suspected plagiarism. Any student who is found cheating in this course will receive a course grade of F.

<http://students.lamar.edu/student-handbook.html>

**Accommodations through the Disability Resource Center:** Lamar University is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is located in the Communications building room 105. Office staff collaborate with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g.,

mental health, attentional, learning, chronic health, sensory, or physical), please contact the DRC at [409-880-8347](tel:409-880-8347) or [drc@lamar.edu](mailto:drc@lamar.edu) to arrange a confidential appointment with the Director of the DRC to explore possible options regarding equitable access and reasonable accommodations. If you are registered with DRC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course. <http://www.lamar.edu/disability-resource-center/>

**Incomplete Grades:** The grade of "I" may be given when any requirement of the course, including the final examination, is not completed. Arrangements to complete deficiencies in a course should be made with the instructor prior to the end of the semester or term. Incomplete work must be finished during the next long semester or the Records Office will change the "I" to the grade of "F." While the extension may be granted by the instructor with the approval of his/her Department Chair and Academic Dean, once the "I" is changed to an "F" it cannot be changed back to an "I." In this case, either a "change of grade" procedure must be initiated or the course must then be repeated if credit is desired. The instructor may record the grade of "F" for a student who is absent from the final examinations and is not passing the course.

**Campus Closure:** In the event of an announced campus closure in excess of four days due to a hurricane or other disaster, students are expected to login to Lamar University's website's homepage for instructions about continuing courses remotely. <http://lamar.edu>

**Emergency Procedures:** Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at: <http://www.lamar.edu/about-lu/administration/risk-management/index.html>

Following are procedures for the first two:

**Severe Weather:**

- Follow the directions of the instructor or emergency personnel.
- Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building.
- Stay in the center of the room, away from exterior walls, windows, and doors.

**Violence/Active Shooter:**

- **CALL** - 8-3-1-1 from a campus phone (880-8311 from a cell phone). Note: Calling 9-1-1 from either a campus phone or cell phone will contact Beaumont City Police Dispatch rather than University Police.
- **AVOID**- If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.

- **DENY-** Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.
- **DEFEND-** Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

**Course Evaluations:** You will have an opportunity to evaluate all aspects of this course in a formal process to be completed online near the end of the term. You will receive an email reminder through your LU account.

### **Mathematics 1342 – Elementary Statistics (3 hour course)**

Textbook: Statistics: Informed Decisions Using Data by Michael Sullivan III, Pearson, 5th Edition

#### Sections and Suggested Problems:

- 1 1.1 Introduction to the Practices of Statistics 10/even numbered
- 2 1.2 Observational Studies versus Designed Experiments 19/even numbered
- 3 1.3 Simple Random Sampling 26/ even numbered
- 4 1.4 Other Effective Sampling Methods 34/ even numbered
- 5 1.5 Bias in Sampling 40/1-15 (even numbered)
- 6 1.6\* Design of Experiments 49/1-32 (even numbered)
- 7 2.1 Organizing Qualitative Data 70/ odd numbered
- 8 2.2 Organizing Quantitative Data 88/ 1- 48 (odd numbered)
- 9 2.3 Additional Displays of Quantitative Data 98/ 1- 20 (odd numbered)
- 10 2.4 Graphical Misrepresentation of Data 106/ odd numbered
- 11 3.1 Measures of Central Tendency 126/1- 40 (odd numbered)
- 12 3.2 Measures of Dispersion, 141/1- 48 (odd numbered)
- 13 3.3 Measures of Central Tendency and Dispersion from Grouped Data 152/1- 14 (odd numbered)
- 14 3.4 Measures of Position and Outliers 161/1- 31 (even numbered)
- 15 3.5 The Five-Number Summary and Boxplots 169/1- 15 (odd numbered)
- 16 4.1 Scatter Diagrams and Correlation 190/1-14, 15-47 (odd numbered)
- 17 4.2 Least-Squares Regression 205/ 1-4, 5-30 (even numbered)
- 18 4.3\* Diagnostics on the Least-Squares Regression Line 220/ 1-13, 15-32 (even numbered)
- 19 4.4\* Contingency Tables and Association 233/ 1-11 (odd numbered)
- 20 5.1 Probability Rules 257/1- 49 odd numbered
- 21 5.2 The Addition Rule and Complements 269/1- 43 odd numbered
- 22 5.3 Independence and the Multiplication Rule 277/1-10, 11- 30 (even numbered)
- 23 5.4 Conditional Probability and the General Multiplication Rule 286/1- 40 (even numbered)
- 24 5.5 Counting Techniques 299/1- 4, 5-70 (even numbered)
- 25 5.6 Putting It Together: Which Method Do I Use? 305/1-32 (odd numbered)
- 26 6.1 Discrete Random Variables 324/1-34 (even numbered)
- 27 6.2 The Binomial Probability Distribution 339/1-46 (even numbered)
- 28 6.3\* The Poisson Probability Distribution 347/1-24 (odd numbered)
- 29 6.4\* The Hypergeometric Probability Distribution (online)
- 30 7.1 Properties of the Normal Distribution 362/1-12
- 31 7.2 Applications of the Normal Distribution, 374/1- 4, 5-50 (even numbered)
- 32 7.3 Assessing Normality 381/1-13 (odd numbered)
- 33 7.4 The Normal Approximation to the Binomial Probability Dist. 385/1-28 (even numbered),
- 34 8.1 Distribution of the Sample Mean 403/1-28 (odd numbered)

- 35 8.2 Distribution of the Sample Proportion 413/1- 24 (odd numbered)  
 36 9.1 Estimating a Population Proportion 431/1- 43 (odd numbered)  
 37 9.2 Estimating a Population Mean 443/1-8, 13-20 (odd numbered)  
 38 10.1 The Language of Hypothesis Testing 478/1-8, 9-39 (odd numbered)  
 39 10.2 Hypothesis Tests for a Population Proportion 490/1-30 (even numbered)  
 40 10.3 Hypothesis Tests for a Population Mean 500/1- 20 (even numbered)  
 41 11.1 Inference about Two Population Proportions 533/1-23 (odd numbered)  
 42 11.2 Inference about Two Means: Dependent Samples 543/1-10 (odd numbered)  
 43 11.3 Inference about Two Means: Independent Samples 554/1-15 (odd numbered)  
 \*Optional Sections

<i>Statistics 1342-02</i> <i>MWF 11:30-12:25</i> <i>Lucas 118</i>	<i>Monday</i>	<i>Wednesday</i>	<i>Friday</i>
<b>Week 1</b> (08/30)	<i>Harvey</i>	<i>Harvey</i>	<i>Harvey</i>
<b>Week 2</b> (09/04)	<i>Labor Day</i>	1.1-1.3	1.4-1.6
<b>Week 3</b> (09/11)	1.1-1.6	2.1	2.2, 2.3
<b>Week 4</b> (09/18)	3.1	3.2, 3.3	3.3, 3.4
<b>Week 5</b> (09/25)	3.5	4.1	4.2, 4.3
<b>Week 6</b> (10/02)	<b>Exam 1</b>	5.1, 5.2	5.1, 5.2
<b>Week 7</b> (10/09)	5.3-5.5	5.3-5.5	6.1
<b>Week 8</b> (10/16)	6.1, 6.2	6.2	<b>Exam 2</b>
<b>Week 9</b> (10/23)	7.1	7.1	7.2
<b>Week 10</b> (10/30)	7.3	7.4	8.1
<b>Week 11</b> (11/06)	8.1	8.2	8.2
<b>Week 12</b> (11/13)	<b>Exam 3</b>	9.2	9.2, 9.1
<b>Week 13</b> (11/20)	9.1	10.1	<b>Thanksgiving</b>
<b>Week 14</b> (11/27)	10.2	10.1-10.2	10.3
<b>Week 15</b> (12/04)	10.3	<b>Exam 4</b>	<i>Review</i>
<b>Week 16</b> (12/11)	<b>Final</b> <b>11:30-12:25</b>		