MTH 220 Course Syllabus  
2017 / FALL  
MTH 220.013  
Introduction to Probability and Statistics

Instructor: Jacob Turner, Ph.D.  
Department: Mathematics and Statistics  
Email: turnerja2@sfasu.edu  
Phone: 936-468-1692  
Office: 342 NM  
Office Hours:

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1230-2</td>
<td>10-1130</td>
<td>2:3:30</td>
<td>10-1130</td>
<td>By appointment</td>
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</tbody>
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Class meeting time and place: 12:30 pm - 1:45 pm, TR, Mathematics 214

Course Description: Probability, random variables, mean and variance, binomial distribution, normal distribution, statistical inference, and linear regression.

Text and Materials:

<table>
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<tr>
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<tbody>
<tr>
<td>The Case Study Manual</td>
<td>Freely available in D2L</td>
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</tbody>
</table>

TI-83/84 Calculator (Recommended)

Course Requirements:

Homework, In Class Exercises, Exams, and Final Exam

Course Calendar:

Course outline:  

• Descriptive Statistics  
  o Graphical Display of Data  
  o Measures of location  
  o Measures of Dispersion  

• Probability Distributions  
  o Random Variables  
  o Discrete Distributions  
    □ Binomial Distribution  
  o Continuous Distributions  
    □ Normal Distribution

• Sampling Distributions  
  o Random Samples  
  o Central Limit Theorem

• Statistical Inference  
  o Estimation  
    □ Point Estimation  
    □ Interval Estimation

Approximate time spent  

10%  
20%  
10%  
40%
Grading Policy: The final average will be computed using the following weights:

- **MyStatLab HW and Group Exercises 10 %**
  - Due on almost every Thursday before class begins.

- **Two midterm exams 50 %**
  - Cannot be dropped
  - Given in Lecture Sections

- **Project 10 %** (In class group presentation, 2-3 member groups)

- **Final exam 30 %**
  - Mandatory and comprehensive
  - Cannot be dropped

**Homework and Group Exercises** (Due on almost every Thursday before class begins)

Homework problems will be assigned through MyStatLab. At times throughout the semester, we will do some group exercises. Participation is required so if you miss class that day, then you will not receive credit for the assignment that day.

**Quizzes and Group Exercises**

Will be given regularly in most lectures. Class attendance will be a part of the Quiz grade. You will receive a zero score for the quiz if you leave before the class ends. There are no make-up quizzes. This includes quizzes missed because of being late to class.

**Exams (Oct 3, Nov 2)**

There are no make-ups for missed exams, so make every effort to be at class on exam day. If you know ahead of time that you will miss an exam, see me at least one class before the scheduled exam and we will work something out. Department policy requires that you bring and be recognizable from either your SFASU Student ID or another valid photo ID before you are permitted to take each exam.

**Final Exam**

The final exam is comprehensive and counts 25% toward the final grade. The final exam schedule is **Tuesday, Dec 12, 10:30am-12:30pm**.

**Project (Dec 5)**

You can select any topic as long as it is related inferential procedures. That is, you have to use both hypothesis testing and confidence interval methods to answer appropriate questions related to the population (s) of the selected project. You have to inform me what you are going to do to make sure you are on the right track (get my approval). Projects can be completed in groups of 2-3 class members and all members must participate in all project activities including the final class presentation. A portion of your grade will be based on peer evaluation from the other members of your group.
<table>
<thead>
<tr>
<th>#</th>
<th>Week of</th>
<th>Topic(s)</th>
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<tbody>
<tr>
<td>1</td>
<td>August 28</td>
<td>Syllabus and Introduction (Graphical Displays and Descriptive Statistics)</td>
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<tr>
<td>2</td>
<td>September 4</td>
<td>Statistical Inference, Sampling</td>
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<td>3</td>
<td>September 11</td>
<td>Case 1A Probability Binomial Distribution</td>
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<td>4</td>
<td>September 18</td>
<td>Case 1B Normal Distribution</td>
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<td>5</td>
<td>September 25</td>
<td>CS 1B Conclusions Big Picture Discussion</td>
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<td>6</td>
<td>October 2</td>
<td><strong>Midterm</strong></td>
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<td>7</td>
<td>October 9</td>
<td>Case 2A Conclusion Additional Hypothesis Testing</td>
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<td>8</td>
<td>October 16</td>
<td>Case Study 2B Central Limit Theorem</td>
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<td>9</td>
<td>October 23</td>
<td>Case Study 3A</td>
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<tr>
<td>10</td>
<td>October 30</td>
<td>Errors in Hypothesis Testing 3A practice</td>
</tr>
<tr>
<td>11</td>
<td>November 6</td>
<td>Case Study 4 Correlation &amp; Regression</td>
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<tr>
<td>12</td>
<td>November 13</td>
<td>Case Study 4 4 Practice</td>
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<tr>
<td>13</td>
<td>November 20</td>
<td>Thanksgiving Break</td>
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<tr>
<td>14</td>
<td>November 27</td>
<td>Case Study 5</td>
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<tr>
<td>15</td>
<td>December 4</td>
<td><strong>Project Presentations (10%)</strong></td>
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<td>16</td>
<td>December 11</td>
<td><strong>Comprehensive Final Exam (25%) on Dec 12, 10:30am for Section 013</strong></td>
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Grading Scale:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>% Scale</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
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<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>below 59</td>
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Core Objectives (CO):
1. **Critical Thinking** [CO 1]: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. **Communication Skills** [CO 2]: to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. **Empirical and Quantitative Skills** [CO 3]: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Expectations and Class Rules:
I expect you to come to class ready and prepared. This includes keeping up to date with reading the case study manual, completion of all HWs, active participation during class room exercises, and studying the material regularly. Given that this course is TR, it is imperative that you study the material at least 2 or 3 times between Thursday and the following Tuesday.

ALL cell phones are to be turned OFF and put away. If someone violates this rule (texting, playing games, etc.), then the person must leave the class room for that class period without any further delay according to the professor’s instructions. No food in the classroom. Don’t leave the classroom in the middle of the lecture.

Attendance Policy:
Attendance is expected and will be reflected in everything you submit. It will be increasingly difficult to get a good grade or even pass if you miss class regularly. When a student misses class, s/he is expected to proactively and promptly acquire the missed information before the next calendar class day and meet all requirements administered by the instructor and the student must: **Submit an official, dated note from attending doctor, parent, or supervisor, depending on the nature of the absence.** Documentation must be submitted promptly.

General Education Core Curriculum
This course has been selected to be part of Stephen F. Austin State University’s core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives.

Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L through LiveText, the assessment management system selected by SFA to collect student work for core assessment. LiveText accounts will be provided to all students enrolled in core courses through the university technology fee. You will be required to register your LiveText account, and you will be notified how to register your account through your SFA e-mail account. If you forward your SFA e-mail to another account and do not receive an e-mail concerning LiveText registration, please be sure to check...
your junk mail folder and your spam filter for these e-mails. If you have questions about LiveText call Ext. 1267 or e-mail SFALiveText@sfasu.edu.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to LiveText this semester, and the date the assignment(s) should be uploaded to LiveText. Not every assignment will be collected for assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment in LiveText this semester.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in LiveText</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Presentation Focusing on Describing Statistical Data</td>
<td>TBD</td>
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<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas though written, oral, and visual communication.</td>
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<tr>
<td>Empirical and Quantitative Skills</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
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<tr>
<td>Teamwork</td>
<td>To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.</td>
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<tr>
<td>Personal Responsibility</td>
<td>To include the ability to connect choices, actions and consequences to ethical decision-making.</td>
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<td>Social Responsibility</td>
<td>To include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.</td>
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**Academic Integrity (Policy A-9.1)**

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

The penalty for a student found cheating on any part of an assignment, quiz, or exam in this class will range from a grade of zero on the work to a grade of F in the course, and may result in additional, more severe disciplinary measures. A student who allows another to copy his work and the student copying the work are both guilty of cheating. Do your own work. Do not show your completed work to others. Do not allow others to copy your work.

**Definition of Academic Dishonesty**

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at [http://www.sfasu.edu/policies/academic_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp).
**Withheld Grades Semester Grades Policy (A-54)**
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**Students with Disabilities**
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices](http://www.sfasu.edu/disabilityservices).

**Acceptable Student Behavior**
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1 [http://www.sfasu.edu/policies/student_conduct_code.asp](http://www.sfasu.edu/policies/student_conduct_code.asp)). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

**Program Learning Outcomes:**
This is a general education core curriculum course and no specific program learning outcomes for this major are addressed in this course.

**Student Learning Outcomes (SLO):** At the end of MTH 220, a student who has studied and learned the material should be able to:
1. Exhibit an understanding of basic probability rules and concepts  [CO:1,3]
2. Demonstrate an understanding of different probability models and ways they are used in statistical inference. [CO: 1, 2, 3]
3. Demonstrate an understanding of point estimation of population parameters. [PLO: 1,3]
4. Demonstrate an understanding of interval estimation about population parameters and inference that can be drawn from such techniques. [CO:1,3]
5. Demonstrate an understanding of hypothesis testing concerning population parameters and inference that can be drawn from such techniques. [CO:1,3]