Texas A&M University – Corpus Christi
MATH 3342.002
Applied Probability and Statistics
Course Syllabus
Fall 2014

Course Information
Meeting Time and Place: TR 3:30 – 4:45 pm; IH-267
Instructor: Dr. Lei Jin
E-MAIL: lei.jin@tamucc.edu
Web Page Address: http://faculty.tamucc.edu/ljin1
Office Address: CI 307
Office phone: 361-825-2099
Office hours: MW 10:00-11:10 AM, 2:45-3:25 PM and TR 2:45 -3:25 PM; other times by appointment

Course Description
This is an introduction to statistical methods. Emphasis is placed on interpretation and understanding of statistical concepts. A computer statistical package will be used to work with real data. Students use data analysis to learn and detect patterns and structure in data. They explore the basic concepts of statistics such as discrete and continuous distributions, numerical summary measures, probability, sampling distributions, fitting a line to bivariate data, estimation, confidence intervals and hypothesis testing.

Prerequisites for the Course
MATH 2413, Calculus I, or the equivalent.

Textbook and Supplies
Text: Devore, Jay L., Probability and Statistics for Engineering and the Sciences, 8th edition. Although this is listed as “Required”, I will discuss in class the extent to which you really need this.
Calculator: You will need a calculator. No specific calculator is required.
Software: Excel or free statistical software ‘R’ will be used in class.

Student Learning Objectives
At the end of this course, students will be able to:
• Perform elementary probability calculations
• List important statistical distributions, both discrete and continuous, along with common uses of each in modeling settings
• Explain the relationship between probability, sampling distributions, and inferential statistics such as confidence intervals and hypothesis tests
• Explain the advantages and disadvantages of using parametric probability models and of using bootstrap methods to estimate sampling distributions, and justify why one or the other choice might be better in a given situation
• Construct confidence intervals for unknown parameters using bootstrap and parametric methods
• Perform hypothesis tests for unknown parameters using bootstrap and parametric methods
• Choose among the various inferential statistical methods from this course to answer specific research questions
• Display data graphically in an appropriate way
• Interpret and write up appropriately the results of statistical calculations to answer research questions

Instructional Methods and Activities
Classroom meetings will be primarily lecture, with some demonstrations and in-class problem solving. There will substantial homework and computer assignments.

Evaluation and Grade Assignment
The following assessments will be given during the semester:

<table>
<thead>
<tr>
<th>Homework or Quizzes</th>
<th>Three in class semester tests</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>20% each x 2 = 40%</td>
<td>35%</td>
</tr>
</tbody>
</table>

If I am able to get a HW grader, homework will be assigned roughly once a week. If I am unable to get a HW grader, weekly in-class quizzes will be given instead.

Your course grade will be determined by your weighted average of all assessments at the end of the semester using the following scale:

<table>
<thead>
<tr>
<th>Percentage Points</th>
<th>Letter Grade</th>
<th>Percentage Points</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90.0 – 100</td>
<td>A</td>
<td>80.0 - 89.9</td>
<td>B</td>
</tr>
<tr>
<td>70.0 - 79.9</td>
<td>C</td>
<td>60.0 - 69.9</td>
<td>D</td>
</tr>
<tr>
<td>59.9 or less</td>
<td>F</td>
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Tentative Course Schedule
• Weeks 1: Introduction to the course; the nature of data; samples; remedial discrete math
• Weeks 2-3: Probability (Chapter 2)
• Week 3-4: Discrete Random Variables (Chapter 3)
• Weeks 4-5: Chapter 3 and Continuous Random Variables (Chapter 4)
• Week 6: Continuous Random Variables (Chapter 4)
• Week 7: Data Exploration & Software & Simulation (Chapter 1)
• Week 8: Sampling Distributions & the Bootstrap (Chapter 5);
• Week 9: Sampling Distributions & Parametric Models (Chapter 5)
• Weeks 10-11: Confidence Intervals (Chapter 7)
• Weeks 11-12: Hypothesis Testing I: Single Means (Chapter 8);
• Week 13: Hypothesis Testing II: Comparing Two Means (Chapter 9)
• Week 14: Hypothesis Testing III: Comparing Multiple Means (Chapter 10)
• Week 15: Correlation and Regression (Chapter 12)
Class Policies

- It is your responsibility to keep track of course deadlines and due dates. Late homework assignments/quizzes are not accepted (unless this is the result of an official excused absence; adequate documentation of why your absence is necessary).

- Two semester tests will be given in class on **Sep 30th and Oct 30th**. These dates may be changed with due notice announced during class time. You are allowed to bring in **two** pages of notes, written or typed on both sides on sheet not larger than 8.5”x11”. Your name should be written in the top of the page in large and clear letters. Pages of notes and/or calculators/other electrical devices can not be shared. Cell phones cannot be used as calculators. All students should plan to take their tests at the scheduled times. If you do not have a valid written excuse and you miss a test, you will **NOT** be allowed to make up the test and you will score a zero for that test. To request a make up test, a valid written excuse must be provided within **ONE DAY** after the missed test. The make up test must be taken in three days after the scheduled test time. In the case that you have a valid written excuse and you are not able to take a make up test in time, your score of the test will be replaced by the score on your final exam with some adjustment (according to the medians of two tests). You can’t miss more than one semester test. A second missed semester test will result on a score of 0 points for that test.

- **Final exam will be administered on Wednesday, Dec 9 from 1:45 p.m. to 4:15 p.m.** It is a comprehensive examination over all material covered during the semester. ABSOLUTELY NO EARLY final examination, so make travel arrangements accordingly. A missed final exam will result on a score of 0 points.

- Attendance will be taken each class. Talking during class time and tardiness are often disruptive to the whole class and are not appreciated. If you are delayed and arrived late please do so quietly. Excessive tardiness, disruptive talking, disruptive behavior or performing activities not related to the class will be counted as absences and may cancel bonus points for attendance. Cell phones and such must be turned off before class. The instructor is NOT responsible for informing absent students what was covered in previous classes, homework or any other announcements.

- Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be
considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- A grade of incomplete ‘I’ will only be given in exceptional circumstances, such as a death in the family or personal injury that might prevent someone from taking the final exam. (Please notice that an incomplete grade can only be given to students that are passing the course but have not completed the required work for reasons beyond the students’ control). In this case, it is the responsibility of the student to notify me as soon as possible, preferably by email, and to fill the required "Incomplete Form" available from the University Registrar. If this is not done, a score of 0% will be assigned for any incomplete exams and a course grade will be computed using the criteria described above.

- University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a grade of 0% on that assignment or test.

- Although obviously I hope all goes smoothly for you this semester, events can sometimes occur that make dropping a course necessary or wise. I encourage you to consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. November 7th is the last day to drop a class with an automatic grade of “W” this term. I cannot personally assign a grade of W.

- The instructor reserves the right to make changes to the above with due notice to the students. These changes will be announced in class and each student is responsible for keeping herself/himself informed of such changes.

Legal Statements

Disabilities Accommodations

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Grade Appeals

As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

Statement of Academic Continuity

In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.