

July 18, 2013

1. College: **Science and Mathematics**
2. Department: **Mathematics and Statistics**
3. Course status: **existing; does not require modification**
4. Course prefix and number: **MTH 220**
5. Course title: **Introduction to Probability and Statistics**
6. Course catalog description: **Probability, random variables, mean and variance, binomial distribution, normal distribution, statistical inference and linear regression.**
7. Number of semester credit hours: **3**
8. Estimated total course enrollment per year: **800**
9. Course prerequisites and/or required qualifications for enrolling in the class: **Two years of high school algebra and one year of high school geometry and TSI complete/exempt status in mathematics. Additionally, minimum math score of 250 on THEA, 21 on ACT, 500 on SAT or a C or higher in MTH 099 or higher excluding MTH 110, 127 and 129.**
10. Course **is/will be** available online.
11. Foundational Component Area: **Mathematics**
12. Explain why this course fits into this foundation component area: **Students will be instructed on the use of tools of probability (distributions, expected values and axioms/laws) and statistics (estimation, hypothesis tests) to make logical conclusions about random processes observable in real world phenomena. Students will apply statistical procedures to solve problems involving real data sets in fields including engineering, physical sciences, social sciences, medical science, business and economics.**
13. Core Objectives
 - Critical Thinking - Students will be instructed in using laws of probability, random variables and probability distributions so that models of real world events can be explored. Students will demonstrate knowledge in these areas by applying proper probability models to physical scenarios they are presented with in class. Additionally, students will be instructed in the philosophical thinking that is embodied in statistical inference. Students will demonstrate their proficiency in this mode of thinking by correctly establishing the need for certain data to be collected, the setting up of hypothesis to be tested and by choosing and appropriate statistical method to attack the particular data-driven problem.
 - Communication Skills - Students will be instructed as to how statistical information should be communicated to be sure that the meaning is clear. This instruction will include how to use complete and correct notation, how to visually organize statistical information and how to provide supporting justification for conclusions. In homework, quizzes, various other assignments (computing) and exams, the students will demonstrate written and visual communication skills by constructing tables, graphs and sequential arguments to support conclusions.
 - Empirical and Quantitative Skills - Students will be instructed on using empirical and quantitative skills to draw conclusions about how patterns seen in real data sets mimic theoretical properties of probability models. Additionally, students

will demonstrate proficiency in quantitative skills through the calculation of appropriate summary measures for data and their choice of appropriate confidence interval formulas and hypothesis test procedures for statistical inference problems. In homework, quizzes, various other assignments (computing) and exams, the students will manipulate and analyze the data collected from physical real-world experiments.

Contact person for questions about this submission:

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