



Probability and Applied Statistics

CSIS 3327

Spring 2022

TR 6:00 PM -
7:50 PM

PROBABILITY AND APPLIED STATISTICS – CSIS 3327

STOCKTON UNIVERSITY

Course Description and Details

Foreword

Welcome to Probability and Applied Statistics here at Stockton University. Statistics is a major research tool in almost all disciplines, either as part of the research process or for understanding and evaluating the research efforts of others. Together we will explore the mysteries of data to have a better understanding of the world we live in.

Background

Probability and Applied Statistics is an introduction to probability, statistics, and stochastic processes. Emphasis on models and applications relevant to the study of computer science. The prerequisites being Calculus 2 along with Programming and Problem Solving 2. This course will familiarize you with statistical thinking, language, and techniques, thus equipping you to intelligently address these (and other) questions that have real life consequences and effects. Statistical concepts and methods are presented in a manner that emphasizes understanding the principles of data collection and analysis as well as the theory behind it. The course will be devoted to discussions of how statistics is used in the real world. Learning will be assessed through problem solving exercises, quizzes, writing exercises, exams, and case analyses.

Course Description

This course provides students with the fundamental knowledge of problem solving using statistics along with a working vocabulary and the foundation needed for further studies. Engaging activities, examples, and real world datasets will be used, taking applications across a wide range of disciplines with a particular focus on business, computer science and information systems. This course will also focus on improving students' computer skills for statistical analysis, with Excel and Java programming.



Instructor: Byron Hoy

Email: Byron.Hoy@stockton.edu

Office Hours: By appointment

Lecture MCF 201: 6:00 pm – 7:50 pm T

Lab MCF 222: 6:00 pm – 7:50 pm R

Course Details

Probability and Applied Statistics

Attributes: Q1- Quant Reasoning Intensive

Required Materials

Textbook

Mathematical Statistics with Applications. 7th Edition. Wackerly et al.
ISBN-13: 978-0-495-11081-1

Excel

We will use statistics features for visualizing data.

Java

JDK and IDE. For project work.

Computer

Access to a laptop or desktop computer and a USB flash drive.

Course Goals

The goals of this course are to a) motivate students to explore and internalize the major concepts of statistical thinking and b) to provide the learners with the analytical skills necessary to understand and make sense of today's information explosion.

This course is but a single step of a grander journey. Students who complete this course shall be able to demonstrate the following:

2. Analytical Skills

Outcome 2.1: Graduates will be able to integrate and synthesize data to produce information and reach conclusions.

3. Communication Proficiency

Outcome 3.1: Graduates will be able to deliver information in a persuasive, logical, and organized manner.

Outcome 3.2: Graduates will be able to create technical and informational documents.

This course focuses on the following

Stockton Essential Learning Outcomes:
Communication Skills, Critical Thinking,
Quantitative Reasoning

The course also supports these additional
Stockton Essential Learning Outcomes:
Information Literacy and Research,
Teamwork & Collaboration, Program
Competence, Ethical Reasoning

COURSE TIP

This course builds progressively (**and aggressively!**) on previously covered material. Therefore, it is essential to attend all classes and keep up with the reading and the assignments.



Class Structure

Classes are divided into two formats. Lectures will cover major topics found in the text. Typically half of the lab will be spent as a "hands on" lecture; the other half will be spent as time for in class work. Classes will begin promptly on time in order to try and end on time. Please do your best to get to class before the start of the hour. Students are expected to attend all lectures with exceptions permitted in case of illness and emergencies. Attendance counts towards your participation grade.

There is reading assigned weekly. This course is organized around a set of learning goals for the class, and experience (both in and out of class) that address each learning goal. These learning experiences may involve one or more of the following elements: a PowerPoint presentation, a textbook reading, a handout, a reading from the web, a short lecture, individual and group exercises, and discussions. One cannot master the material in this course without actively engaging in it and that engagement needs to go well beyond just showing up twice a week. Expect to spend 2-3 hours of outside time per class. So you are IN class 4 hours a week, plus need to find time OUT of class of 4-6 more hours. If you can't see how you will fit in that much time, then drop something else or wait and take the class another semester when you can devote the time you need to this class.



Grading

This class is graded on a 10,000 point scale. You earn points by completing various tasks such as homework, quizzes, programming assignments, and attending classes. In order to achieve an "A" grade in this class, your cumulative points must be over 9,000.



Scale:	9,001+ A	Weight:	40%	Projects
	8,001-9000 B		30%	Exams
	7,001-8,000 C		20%	Homework and Quizzes
	6,001-7,000 D		10%	Attendance and Participation
	0-6000 F			

I reserve the right to add +’s and -’s to your final grade. Fear not, these would likely only influence your grade in a positive manner. For example: take a student who has been working diligently *all* semester and has earned a grade of C+, this fringe case may warrant a small boost to a B- grade instead.

Homework and Quizzes are worth up to 250 points apiece. There will be at least eight total instances of some combination of homework and quizzes. Homework and Quizzes combined will account for 20% of your grade.

Exams are worth up to 1,500 each. There will be two of them. Although they are not cumulative exams, the material in this course builds on itself, so it is wise to be familiar with previously covered material. Exams make up 30% of possible points that may be earned in this course.

Projects are worth at least 1000 points each. There will be at least four graded projects. Consider projects as your graded “professional” work. They will be grounded in what could potentially be assigned to you as an actual deliverable should you work in this field. Projects will account for 40% of possible points that may be earned in this course.

Attendance and Participation, this is a gift that begins at 1,000 points and may be deducted from. Attendance and participation will count for 10% of your final grade.

Schedule

Week	Topic	Reading	Programming Assignment
1	Review	Ch 1	
2	Probability	Ch 2	
3		Ch 2	Project 1 Due
4	Discrete Random Variables	Ch 3	
5		Ch 3	
6	Continuous Variables	Ch 4	
7		Ch 4	Project 2 Due
8	Midterm		
9	Multivariate Probability	Ch 5	
10		Ch 5	
11	Functions of Random Variables	Ch 6	Project 3 Due
12		Ch 6	
13	Sampling Distributions	Ch 7	
14		Ch 7	
15	Final Exam		Final Project Due

Course Policies and the Fine Print

Classroom

Quizzes exams, classwork, and other graded materials will be submitted through blackboard. You can reach out to me in private with direct messages, emails, or asking me directly during our class periods.

Classroom Courtesy

This class may involve in-class discussion of topics on which you and your classmates may have differences in opinion. Please be respectful of others always. In an online classroom, this would include keeping your microphone in a muted or push to talk state.

Late Work

Late assignments will lose one full letter grade **per day** late. If you ever find yourself falling behind, please check in with me ASAP (that means before the due date!); I am glad to help or try and work something out!

Academic Honesty

The seriousness of plagiarism and other academic violations of academic integrity

cannot be overstated. Please review the Academic Honesty Policy in the Student Handbook, and ask me if you have any questions regarding its application to this course. The consequences of academic dishonesty are not worth the risks.

Academic Tutoring Center

If you are struggling, falling behind, or need a place to study, I would suggest the Math Center located on the main campus room J105. They are typically staffed with students who have survived Programming and Problem Solving and would be happy to help.

Special Accommodations

Any student who feels they may need an accommodation due to a disability or requesting special accommodations, please reach out to the Wellness Center located in the West Quad Building room 110.

Avoid Missing Exams

Just as you are expected to come to every class, you are expected to come to each test.

If you are going to miss a test or the final, you must get in touch with me BEFORE class on the day it was given. Choosing not to show up and not to even call, is choosing to get a zero on that test/final. Possible excuses for not getting in touch are pretty much limited to: providing an accident report for an accident that happened within the hour preceding class, providing documentation that you were in the E.R. (not sick; in the E.R and in the hours leading up to class), or convincing me you were confined somewhere without a phone (say a locked ward or in police custody) for the entire test day.

Closing Remarks

I hope to offer a challenging and engaging learning environment that you shall all benefit from and one day fondly reminisce to. I look forward to working with each of you, and I hope for each person in this class to have a wonderful and successful semester!