Akademie für Internationale Bildung (AiB)
Lafayette Engineering Program – Spring 2024

COURSE SYLLABUS
MATH 286 Probability & Statistics

Course Duration
January 9 – May 1, 2024

Instructor
James Welker
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Office Hours
Office hours are scheduled after class meetings or by appointment.
Throughout the program, you can contact you instructor to discuss personal questions.

Course Materials
William Navidi – Colorado School of Mines, *Statistics for Scientists and Engineers*, 3rd ed., McGraw Hill, New York, NY, 2011. ISBN: 987-0-07-337633-2
We will cover Chapters 1, 2 and 4 to 7 almost in their entirety.
Additional material might also be taken from Jay L. Devore – *Probability and Statistics for Engineering and the Sciences*, 8th ed., Brooks/Cole Cengage Learning - ISBN-13: 978-0-538-73352-6

Course Description
The course can be broken out into several main units. Most topics are covered in the following chapters / subchapters of the textbook.

Chapter 1:	Sampling and descriptive statistics, graphical summaries
Chapter 2:	Probability, basic ideas, counting methods, conditional probability, random variables
Chapter 4:	Commonly used distributions: Bernoulli distribution, binomial distribution, Poisson distribution, normal distribution, exponential distribution
Chapter 5:	Confidence intervals (CI): large-sample CI, CI for proportions, small-sample CI, CI for the difference between two means, CI for the difference bewteen two proportions, small-sample CI for the difference bewteen two means, CI with paired data
Chapter 6:	Hypothesis testing (HT): large-sample HT for a population mean, HT for a population proportion, small-sample HT for a polulation mean, large-sample HT for the difference between two means, HT for the difference between two proportions, small-sample HT for the difference between two means, HT with paired data
Chapter 7:	Correlation and simple linear regression: what is correlation, the least-squares line

Objectives
The objective of *Statistics for Scientists and Engineers* is to supply students with some important ideas in realistic settings, showing connections to industry and scientific research. All standard introductary toppics are covered, namely descriptive statistcs, probability, conficence intervals, hypothesis tests and linear regression.

Learning Outcomes

For a one-semester course, the workbook contains enough material to select from, so there are a number of options. With three units per week we will be able to work on issues of Probability and Probability Distributions in the first part of the semester (chapters 1 to 4) and concentrate on Confidence Intervalls and Hypothesis Test as well as linear/nonlinear regression on the second part of the semester (chapters 5-9, 12/13).

Assignments

Homework will be assigned daily. It will cover problems taken from the sections covered during class. The problems are the minimum expected for you to succeed in the course; it is essential for you to do many problems to feel comfortable with the material. Many problems on quizzes and exams will reflect problems assigned in the daily homework, so although this is work that has to be turned in, but *will not be directly graded*, it will have a *significant impact* on your success in the course. *Reading* the assigned sections will be also generally be specified as part of the daily homework assignment.

Grading

Students are expected to:

- Attend and actively participate in class
- Give presentations of selected problems in front of the auditorium
- Put some effort in doing homework from class to class
- Give support to each other and treat everybody with respect

Grade Composition

There will be several components to your grade in this course. We will have two midterm exams, a cumulative final exam and approx. 10 in class quizzes. Additionally, we will have "two-student-teams" in class presentations on specific statistical projects that students might choose from the fields of sports, medicine, business etc. held within the last units of the statistics course of the semester.

We will compute the grades out of 100 points (percent).
You can earn points as follows:

• Quizzes (approx. 10)	20 pts (weakest quiz will be eliminated)
• Course Project	20 pts (at the end of the course)
• Midterm Exams (2)	40 pts (2x 20 points)
• Final exam	20 pts

Attendance

Students are required to attend class. Any unexcused absence leads to point deduction. You will be asked to complete a substitute assignment for any missed class.

Meeting Schedule

WEEKLY TIMEFRAME OF THIS COURSE - REFER TO AIB SCHEDULE

Grading Scale

A	to students scoring between	100.00%	and	94.00 %
A-	to students scoring between	93.99	and	88.00 %
B+	to students scoring between	87.99	and	84.33 %
B	to students scoring between	84.32	and	80.67 %
B-	to students scoring between	80.66	and	77.00 %
C+	to students scoring between	76.99	and	73.33 %
C	to students scoring between	73.32	and	69.67 %
C-	to students scoring between	69.66	and	66.00 %
D+	to students scoring between	65.99	and	62.33 %
D	to students scoring between	62.32	and	58.67 %
D-	to students scoring between	58.66	and	55.00 %

An overall percentage of less than 55.00% means that you have failed this course.

Academic Integrity

Students at Lafayette and AiB are part of a broader academic community, with a shared set of values and assumptions, and united by the common goals of acquiring and advancing knowledge.Within that community are many smaller, specialized communities, each with its own specific conventions for working and communicating. In general, however, intellectual endeavor involves discussing the ideas that others have already expressed; striving to understand them more deeply; applying those ideas to new and far-reaching problems; and respectfully challenging those ideas and attempting to extend or even replace them in light of new discoveries.

We share the values of the academic community, which (among other things) require us to acknowledge the contributions that others have made and to continue to add to ongoing intellectual conversations. Failure to uphold this value, either intentionally or inadvertently, is a violation of the community's standards. Moreover, certain violations of the community's standards clearly rise to the level of academic dishonesty and can have serious consequences.

Diversity, Equity, Inclusion, Respect

Every member of the AiB community has the right to expect respect in the exchange of ideas and perspectives.

In the spirit of shared humanity and concern for our community and the world, we recognize that our learning activities and design solutions can either support, or be biased against, groups of people and individuals. Thus, our international seminar is dedicated to cultivating and maintaining an equitable and culturally inclusive and welcoming environment where difference is valued, respected and celebrated. In this class we will be committed to and accountable for advancing human diversity, equity, inclusion, and respect.

This applies to:

i) our class interactions (each of your voices is vital and legitimate!)
ii) our engagement and collaborations with Triboro partners and all of its residents (their voices are vital and legitimate!)
iii) the ideas that are reflected in our work—acknowledging that landscapes and places also play a vital role in inclusion, equity, diversity and civil discourse.

We disavow systemic patterns of prejudice, including speech or actions that attempt to silence, threaten, disadvantage, belittle, or displace groups and individuals. We advocate for social and environmental justice and inclusive communities and places as we work toward an equitable, democratic, and sustainable society. As future landscape architects, you have the opportunity and responsibility to craft civic spaces and landscapes that are welcoming to all persons.

The Student Code of Conduct

The Student Code of Conduct will be followed. It is important, but since it's quite lengthy, see: https://conduct.lafayette.edu/student-handbook/student-code-of-conduct/. Seriously inappropriate behavior may result in being referred to the Office of Student Conduct, with possible sanctions including removal from the program.

Disability Accommodation

We will abide by Lafayette College policy on disability accommodation. We welcome students with disabilities into the our educational programs. The Lafayette College Campus has an office for students with disabilities. Accessibilitiy Services website provides contact information here: https://hub.lafayette.edu/disability-services/ . In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office. If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with AiB and your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations."

COVID 19 Policies and Accommodations

Lafayette Engineering students must adhere to safety guidelines because, as members of the AiB community, you share a collective responsibility to engage in simple-to-follow practices that protect the safety and health of everyone. Failure to adhere to these guidelines will disrupt the learning experiences.
If you have potential COVID-19 symptoms or have been in contact with someone who has symptoms or tests positive, you should not come to class. Call your Program Director or the AiB Emergency Number and ask for next steps. You must wear a mask appropriately (i.e., covering both your mouth and nose) in the AiB building, and maintain social distancing of at least six feet of space between individuals when possible. Anyone attending class in person without a mask will be asked to put one on or leave. Refusal to comply with AiB policies is a violation of the Student Code of Conduct. Students who refuse to wear masks appropriately may face disciplinary action for Code of Conduct violations. AiB faculty may end class if a student refuses to wear a mask appropriately.

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