UNIVERSITY OF GUAM
UNIBETSEDÅT GUAHAN

COLLEGE OF NATURAL & APPLIED SCIENCES
Division of Mathematics & Computer Sciences

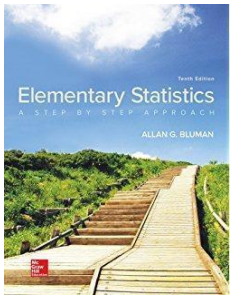
Course: MA151-05 Introductory Statistics

Semester: Fanuchånan (Fall) 2024 **Meeting Times:** MW 4pm-5:20pm **Room:** SC120

Instructor: Dr. Jonathan Christian A. Bernardo **Email:** bernardoj@triton.uog.edu

Office Hours/Location: Immediately After Class and online

Telephone: 671-997-6320



Catalog Description: This course presents statistical methods as applied to the description and display of data, and to drawing conclusions from statistical data, and introduces the basic probability theory needed to understand and use the techniques of elementary statistics. Prerequisite: Grade of C or better in MA085b or MA089, completed within the previous 3 semesters, or placement.

Textbook: *Elementary Statistics, A Step by Step Approach*, 10th ed. by Allan G. Bluman. ISBN: 978-1-259-75533-0

Topic Sequence:

Topic	Textbook Section
Intro to Stats & Syllabus	1-1, 1-2
Sampling Techniques	1-3, 14-1
Observational Studies & Experimental Designs	1-4
Simulations	14-3
Test on Chapter 1 and 14	
Histograms, Frequency Polygons, and Ogives	2-1, 2-2
Other Graphs - Bar, Pareto, Time, Pie, Dotplots, Stem and Leaf	2-3
Measures of Central Tendency	3-1
Measures of Variation	3-2
Measures of Position	3-3
Five-Number Summary and Boxplots	3-4
Scatterplots and Correlation	10-1
Line of Best Fit	10-2
Test on Chapter 2, 3, and 10	

Sample Spaces & Probability	4-1
Addition Rules for Probability	4-2
Multiplication Rules & Conditional Probability	4-3
Counting Rules	4-4
Test on Ch 4	
Probability Distributions	5-1, 5-2
Binomial Distribution	5-3
Other Distributions	5-4
The Normal Distribution	6-1
Applications of the Normal Distribution	6-2
The Central Limit Theorem	6-3
Test on Chapter 5 and 6	
Cumulative Final Exam	

Student Learning Outcomes (SLOs):

Course SLOs:	Program Learning Outcomes (PLOs)	University Learning Outcomes (ILOs)	GE QR Learning Outcomes	Method of Assessment
Understand the fundamental ideas of statistics, such as variability, types of variables, distribution, association, and sampling.	MA PR-1	ILO-1 ILO-2 ILO-3	QR-5	Assignments, quizzes, and tests
Construct and interpret graphical summaries of data: histograms, boxplots, bar and pie graphs.	MA PR-1 MA PR-3 MA PR-4	ILO-1 ILO-2	QR-1 QR-2	Assignments, quizzes, tests, and project
Calculate and interpret the numerical summaries of data. Use statistics appropriate to the shape of the data distribution to compare center (median, mean, mode) and spread (interquartile range, standard deviation) of two or more different data sets.	MA PR-1 MA PR-3 MA PR-4	ILO-1 ILO-2	QR-3 QR-4	Assignments, quizzes, tests, and project
Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of outliers.	MA PR-1 MA PR-3 MA PR-4	ILO-1 ILO-2 ILO-3	QR-4 QR-5	Assignments, quizzes, and tests
Define, and apply the concepts of sample	MA PR-1 MA PR-3	ILO-1 ILO-2	QR-3	Assignments, quizzes,

space, events, probability, random variables and their distributions to calculate elementary probabilities.	MA PR-5	ILO-6		and tests
Compute conditional probabilities and use them to determine the independence of events, apply the Bayes' rule.	MA PR-1 MA PR-5 MA PR-6	ILO-1 ILO-2 ILO-6	QR-3 QR-4	Assignments, quizzes, and tests
Use the sampling distribution of the sample mean to calculate probabilities.	MA PR-1 MA PR-3	ILO-1 ILO-2	QR-3 QR-6	Assignments, quizzes, and tests
Represent data of two quantitative variables on a scatter plot, compute and interpret the correlation, and describe how the variables are related.	MA PR-1 MA PR-2 MA PR-3 MA PR-4	ILO-1 ILO-2	QR-1 QR-2 QR-4 QR-6	Assignments, quizzes, tests, and project
Compute the linear regression to make and interpret the model in the context of the data. Use the linear regression to make predictions.	MA PR-1 MA PR-2 MA PR-3 MA PR-4 MA PR-6	ILO-1 ILO-2 ILO-3	QR-1 QR-2 QR-4 QR-6	Assignments, quizzes, tests, and project

QR GE Learning outcomes

UOG students will be able to apply analytical and QR reasoning to address complex challenges and everyday problems by:

1. Interpreting information presented in a mathematical and graphical form;
2. Representing information in a mathematical and graphical form;
3. Effectively calculating using quantitative data;
4. Analyzing quantitative information in order to scrutinize it and draw appropriate conclusions;
5. Evaluating the assumptions used in analyzing quantitative data
6. Communicating quantitative information in support or refutation of an argument.

Math Program Learning Objectives

MA PR-1: Demonstrate critical thinking, problem solving skills and ability to use mathematical methods by identifying, evaluating, classifying, analyzing, synthesizing data and abstract ideas in various contexts and situations.

MA PR-2: Exhibit a sound conceptual understanding of the nature of mathematics, and demonstrate advanced mathematical skills in mathematical analysis, modern algebra and other mathematical discipline(s).

MA PR-3: Argue and reason using mathematics, read, create and write down logically correct mathematical proofs, use exact mathematical language and communicate mathematics efficiently orally, in writing and using information technology tools.

MA PR-4: Apply abstract thinking, mathematical methods, models and current practices in the sciences, including state-of-the-art mathematical software, to solve problems in theoretical mathematics or in a diverse area of mathematical applications.

MA PR-5: Show maturity in mathematical knowledge and thinking that prepares and encourages students to pursue graduate studies in mathematics or in related fields.

MA PR-6: Demonstrate an appreciation of and enthusiasm for inquiry, learning and creativity in mathematical sciences, a sense of exploration that enables them to pursue lifelong learning and up-to-date

professional expertise in their careers through various areas of jobs, including governmental, business or industrial jobs in mathematics, related sciences, education or technology.

Institutional Expected Student Learning Outcomes

UOG Expected Student Learning Outcomes

Some of the expected fundamental knowledge, skills, and values that the University of Guam student will have demonstrated upon completion of any degree are:

ILO1: Mastery of critical thinking & problem solving

ILO2: Mastery of quantitative analysis

ILO3: Effective oral and written communication

ILO4: Understanding & appreciation of culturally diverse people, ideas & values in a democratic context

ILO5: Responsible use of knowledge, natural resources, and technology

ILO6: An appreciation of the arts & sciences

ILO7: An interest in personal development & lifelong learning

Grading:

Attendance	10%
Quizzes	35%
Tests	35%
Cumulative Final Exam	20%
Total	100%

Letter grades will be assigned as follows:

90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
0 – 59%	F

- Homework will be assigned but not collected or submitted for grades.
- Quizzes will generally be given once a week during the last 20 minutes of class and will be based on homework. Homework and notes may be used on quizzes.
- All tests and the final exam are closed book and closed notes. However, a formula sheet such as the one provided at the back of the textbook may be used. Your formula sheet cannot have any examples or explanations.
- Clear, complete, and correct work must always be shown to receive full credit for free response answers.
- You are responsible for keeping track of your grades.

Student Studying Requirements: In order to succeed in this class, you will need to put in the appropriate amount of study time outside of class. You are expected to spend 1 to 1½ hours of outside study for each hour inside the classroom. During this study time, you should read the textbook, study the example problems, do your homework in an organized and legible manner, and prepare your questions for the following class meeting. Keep in mind that you may need to do additional problems from the textbook to fully master a topic, even if those problems were not assigned. Find a study buddy or a study group who you can work with regularly outside of class. Studying math means practicing solving problems. If you prepare yourself well each day, you will find this course enjoyable and will feel like you are learning a lot. However, if you are frequently unprepared, as in you are not doing your homework, you will be overwhelmed and will feel like this course is moving way too fast for you. Be prepared!

Calculator/Technology: You are required to have a standalone calculator, i.e., TI-84 for this course. Phone calculator apps, iPads/tablets, laptops, or any other electronic device is not permitted during quizzes and tests. No calculator sharing is permitted during quizzes and tests. The use of AI is not permitted on quizzes, tests, or the final exam. Although you will be using a calculator for this course, you must show clear, complete, and correct work as appropriate to receive full credit.

Attendance: Attendance for this course is mandatory. You are paying tuition to learn from your professor and classmates. Get your money's worth by coming to class and being prepared and ready to learn. Be on time.

Make-up policy: There are absolutely no make-ups for quizzes for any reason. Tests may be made up if there is an extenuating circumstance, such as your hospitalization, death in the immediate family, or deployment. Vacation travel or a change in work schedule are not extenuating circumstances. If you have a job, work your schedule out with your boss. If you are planning a trip, schedule it during breaks. For extenuating circumstances, you must inform me immediately and provide proof such as a doctor's note or military orders in order to make up the test. It is your responsibility to make the necessary arrangements with me.

Tobacco-Free/Smoke-Free/Vape-Free Campus: University of Guam is a tobacco-free/vape-free campus. Thank you for not using tobacco/vape products on campus, and for helping make UOG a healthy learning and living environment. http://www.uog.edu/smoke-free-uog

Academic Integrity Policy: Academic Integrity is about performing in your role as student in ways that are honest, trustworthy, respectful, responsible, and fair (see www.academicintegrity.org for more information). As a student, you are to complete your academic assignments in the manner expected by the instructor. Academic dishonesty, including but not limited to cheating, plagiarism, or unauthorized use of AI may result in suspension or expulsion from the University. Refer to the UOG Student Handbook and Code of Conduct for more information.

Notification of Rights Under FERPA: The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. These rights for students, parents and school officials can be viewed at http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html.

UOG Disabilities Policy: In accordance with the Americans with Disabilities Act (ADA) of 1990 and the Rehabilitation Act of 1973, the University of Guam does not discriminate against students and applicants on the basis of disability in the administration of its educational and other programs. The University offers reasonable accommodations for a student or applicant who is otherwise qualified, if the accommodation is reasonable, effective and will not alter a fundamental aspect of the University's program nor will otherwise impose an undue hardship on the University, and/or there are no equivalent alternatives. Students are expected to make timely requests for accommodation, using the procedure below.

ADA Accommodation Services: If you are a student with a disability who will require an accommodation(s) to participate in this course, please contact the Student Counseling and Advising Service Accommodations office to discuss your specific accommodation needs confidentially. You will need to provide Ms. Sallie Sablan with an accommodation letter from the Student Counseling and Advising Service Accommodations counselor. If you are not registered, you should do so immediately at the Student Center, Rotunda office #4, Ph/TTY: 735-2460, to coordinate your accommodation request.

CollegeNET Course Evaluations: Course evaluations will be available for students to complete during the three-week period before the semester ends. You can access the course evaluations by clicking on "CollegeNET Course Evaluations" in the drop-down log in menu on the University of Guam's website (www.uog.edu). You will need to know your Webadvisor username. Completion of course evaluations may be substituted as extra-credit towards final exam per instructor's discretion and upon proof of completion.

Tutoring: The CNAS Math Tutor Lab is located at the Agriculture and Life Sciences Building in Room 230 (ALS230). MA085/094 students will have priority at the tutor lab and can book an appointment at uogmathlab.org If you fail to book an appointment, you will then be helped as a walk-in on a first come-first serve basis. Non-MA085/094 students will be helped as a walk-in only on a first come-first serve basis. Please refer to the website for more information. To contact the tutor lab, please call 735-2064 or email mathtutorlab@triton.uog.edu. Additionally, the TRiO Programs offers tutoring services to students who meet certain eligibility requirements. For more information, check out their website: http://www.uog.edu/trio-programs-home.

Disclaimer: This syllabus is subject to change.