

Elements of Statistics 1 (CRN: 1672)
Fall 2026
MATH 130.01 (3 credits), _Tu_Th_, 9:30A-10:45A, Wickersham 101

Course Description: Derivation of basic formulas; measures of central tendency and variability; probability and normal curve; sampling and hypothesis testing; confidence intervals. No credit toward a math or four-year computer science major, or under block G2 for majors in the College of Science and Technology except for nursing majors and allied health technology majors. Prerequisite: any 100-level MATH course or math placement testing/evaluation before registration. MATH 234 and MATH 235 are equivalent courses, credit will not be given for MATH 130, 234 and/or 235.

Prerequisites: Mathematics placement (MPT 130) or any 100-level mathematics course is the prerequisite for this course.¹

Instructor: Dr. Buchanan

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Office Hours: 02:00P-03:00P (M-F) or by appointment

Email: Robert.Buchanan@millersville.edu (preferred)

Textbook: *Essential Statistics*, 2025 Release, William Navadi and Barry Monk, McGraw Hill Publishing, New York, NY (2025) ISBN: 978-1-264-66413-9.

Students may purchase a physical copy of the textbook plus the access code for the [ALEKS](#) website accompanying the textbook. Optionally students may purchase just the access code for the [ALEKS](#) website which includes an online copy of the book. You must have the access code to complete the homework assignments. You will also need a basic scientific calculator such as the [TI-30X IIS](#) or a graphing calculator such as the [TI-84 Plus](#). Students will need a calculator on tests and the final examination. Students who do not bring a calculator on test days and the final examination day may be at a significant disadvantage.

Objectives: MATH 130 is an introductory probability and statistics course requiring no prior background in these topics. Students will need some skills with elementary algebra and a calculator. Throughout this course and semester the instructor plans:

- to introduce students to elementary probability and its applications,
- to introduce students to some basic methods of statistical analysis,
- to provide enough statistical training so that students can read research articles, communicate with statisticians, and interpret computer outputs involving means, standard errors, significance levels, confidence limits and other fundamental measures, and
- to introduce students to a statistical computing package (*StatCrunch*) and use this package to solve problems in probability and statistics.

Course Contents: The sections of the textbook to be covered this semester will include:

- Basic Ideas (Chap. 1)
- Graphical Summaries of Data (Chap. 2)
- Numerical Summaries of Data (Chap. 3)
- Probability (Chap. 4)
- Discrete Probability Distributions (Chap. 5)
- The Normal Distribution (Chap. 6)

¹Credit will not be granted for both MATH 130 and MATH 234/235.

- Confidence Intervals (Chap. 7)
- Hypothesis Testing (Chap. 8)
- Inferences on Two Samples (Chap. 9).

Americans with Disability Act: If you have a disability that requires accommodations under the Americans with Disabilities Act, please present your letter of accommodations and meet with me as soon as possible so that I can support your success in an informed manner. Accommodations cannot be granted retroactively. If you would like to know more about the Millersville University Office of Learning Services, please contact the office at 717-871-5554.

Attendance: Students are expected to attend all class meetings and to participate in the learning and assessment process. Merely attending class will not earn you a passing grade. Regular class attendance (see [Class Attendance Policy](#)) includes being on time to class and actively engaging and participating in classroom activities. It does not include texting, listening to personal music players, browsing the internet, playing video games, checking email, *etc.* Students engaging in these types of activities may be asked to leave the classroom. Students wearing headphones over their ears or ear buds within their ears will be judged to be not actively attending class. Please do not wear headphones or ear buds during class. Do not expect a warning or announcement of these sanctions. If you cannot regularly attend class due to a time conflict with another class or activity, you should wait until a later semester to take this course. If you must be absent from class you are expected to keep up with the course materials covered and homework assigned during your absence. After each class meeting, copies of the materials presented in class will be available through the online component of this course. Students who miss a test should provide a valid excuse, otherwise you will not be allowed to make up the test. Tests should be made up within one week of their scheduled date.

Homework: Students are expected to do their homework and participate in class. Students should expect to spend a minimum of three hours outside of class on homework and review for every hour spent in class. Homework problems from the textbook will be assigned after nearly every class meeting. The homework will be completed on-line through the [ALEKS](#) website. You should work all of these problems (if necessary, repeatedly until your solution is correct) and periodically review them when studying for tests and the final examination since the test and exam problems will be similar in wording and difficulty to the exercises in the textbook. Graded assignments may also include exercises making use of a calculator and/or computer software such as *Excel*. Through a licensing agreement with the Microsoft Corporation, every student has access to the Microsoft Office Suite of software which includes *Excel*. Students without personal computers may use *Excel* in any of the campus computer laboratories.

Discussion between students on homework assignments is encouraged, but each student must submit their own solutions to the homework assignments.

Students must register with the [ALEKS](#) website by September 12, 2025 at 05:00P using the access code which came with the purchased course materials. In addition to the access code, you may be asked for the following information:

Class Name: MATH 130 Elements of Statistics 1 Fall 2026

Class Code: JHXTY-66XWC

If you have not purchased the access code, you may register with a valid credit card, or PayPal account, or you may still register with the [ALEKS](#) website for free 14-day access. Once registered you will have 14 days to purchase and enter the access code. After 14 days your account will be locked (but nothing lost or deleted) until you enter the access code. There are no excuses for not registering with [ALEKS](#).

For best results when using the [ALEKS](#) website, please run any suggested web browser compatibility checks to ensure your browser settings do not conflict with the site. Based on past experience, 99%

of technical difficulties with [ALEKS](#) result from incorrect browser settings on a student's computer. Unfortunately I cannot provide troubleshooting and IT support for students using [ALEKS](#). If you encounter problems please click on the "Support" link at the top of the [ALEKS](#) login page. In the case of technical issues which cannot be solved before an assignment is due, you may use the campus computer labs to access [ALEKS](#).

Tests: There will be three in-class tests and a comprehensive final examination. The tests are tentatively scheduled for

- September 22, 2026 (Tuesday)
- October 22, 2026 (Thursday)
- November 19, 2026 (Thursday)

Missed tests must be made up as soon as possible, preferably within one week of the originally scheduled test date.

The comprehensive final examination is scheduled for Wednesday, December 9, 2026, from 2:45P–4:45P.

Grades: Course grade will be calculated as follows.

Tests	50%
Exam	25%
Homework	25%

Tests and the final examination will be graded individually on a 100-point scale. Graded homework assignments may consist of a variable number of problems worth a variable number of points. All homework assignments will be weighted equally. I keep a record of students' test, homework, and exam scores. Students should also keep a record of graded assignments, tests, and other materials. As an example of the calculation of the numerical course grade, suppose a student's three test grades were 87, 78, and 70 (out of a maximum of 100 points on each test), the student's final examination grade was 71 (again, out of a maximum of 100). Suppose seven homework assignment were collected and the student's grades were 32/40, 38/50, 50/60, 20/40, 27/50, 40/40, and 23/40. This hypothetical student's numerical course grade would be calculated according to the formula

$$\begin{aligned}
 & \frac{87 + 78 + 70}{3} \cdot 0.50 + 71 \cdot 0.25 \\
 & + \frac{32/40 + 38/50 + 50/60 + 20/40 + 27/50 + 40/40 + 23/40}{7} \cdot 25 \\
 & = 39.17 + 17.75 + 18.57 \\
 & = 75.48
 \end{aligned}$$

The course letter grades will be calculated as follows. I will not "curve" course grades.

90-92	A–	93-100	A		
80-82	B–	83-86	B	87-89	B+
70-72	C–	73-76	C	77-79	C+
60-62	D–	63-66	D	67-69	D+
		0-59	F		

The last day to [withdraw](#) from a course (and receive the W grade) is Friday, October 30, 2026 at 11:59P. Course withdrawal forms are submitted online.

Calculator Policy: Frequently examples, homework exercises, and tests will make use of a calculator. The Department of Mathematics recommends the TI-30X IIS scientific calculator or TI-83/84/85/86 graphing calculator. The TI-89/92, TI-Inspire, or any other calculator with symbolic or computer algebra capabilities is not permitted to be used in this course. During the in-class tests and the final examination, only recommended and approved calculators may be used. Smartphones, tablets, or laptops emulating calculators may not be used on tests and the final examination. If you do not have an approved calculator, please borrow one from a friend to use on tests and the final examination. The department's administrative assistant has a limited number of calculators that can be borrowed for the duration of a test or final examination.

Course Repeat Policy: An undergraduate student may not take an undergraduate course of record more than three times ([Academic Policy: Undergraduate Studies COURSE REPEATS](#)). A course of record is defined as a course in which a student receives a grade of A, B, C, D, (including + and -) F, U, Z or W. The academic department offering a course may drop a student from a course if the student attempts to take a course more than three times. If this is your fourth or greater attempt to complete this course, you may appeal this policy to the chair of the [Department of Mathematics](#).

Inclement Weather Policy: It is the intent of the University to remain open and adhere to full operations, including normal class schedules, whenever possible. Irrespective of the university's decision to suspend operations, cancel classes, or modify class starting/ending times, students, faculty and staff are urged to use their discretion and best judgment during severe weather conditions in deciding whether they can safely commute to work or classes ([Policy on Delays & Cancellations](#)). If we should miss a class day due to a school closing because of weather, any activities planned for that missed day will take place the next time the class meets. For example, if a test is scheduled for a day that class is canceled on account of snow, the test will be given the next time the class meets.

Cell Phones: Silence (or better yet, turn off) all cellular telephones upon entering the classroom. Leaving class to initiate or receive a telephone call will not be tolerated and students doing so will not be re-admitted to the classroom until the following class meeting. Texting or tweeting during class interferes with the learning process. Students distracted by their cell phones are not engaged in class and will find, over the course of the semester, that learning and course grade will suffer.

Title IX Reporting Responsibilities: Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred, to the person designated in the [University Protection of Minors policy](#). Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: www.millersville.edu/titleix.

Academic Honesty: Students are required to avoid plagiarism, falsification of their work, cheating (including assisting others in cheating), and other forms of academic misconduct. For more information including definitions and examples of academic dishonesty, please see the [Academic Honesty Policy](#). Additional information can be found in the article, [What is Academic Integrity?](#)

Land Acknowledgement: Millersville University would like to recognize the Native peoples of the lower Susquehanna River basin, those known and those unknown to us, who have stewarded the land, upon which Millersville University sits, for thousands of years. We acknowledge that the land on which we gather, study, and work is the ancestral land of the Conestogas, Susquehannocks, Shawnee, and others.

One group, the Shenks Ferry people, had a village adjacent to the campus. We pay our respects to the traditional occupants and caretakers of this land.

Other University Policies: Students may wish to consult the links provided below outlining Millersville University's policies on:

- [Inclusion Statement](#)
- [Chosen names](#)
- [Student rights under FERPA](#)
- [Student conduct and community standards](#)

Final Word: Mathematics is not a spectator sport. What you learn from this course and your final grade depend mainly on the amount of work you put forth. Daily contact with the material through homework assignments and review of notes taken during class is extremely important.