Course Syllabus
SEMESTER
School of STEM

Course Name:	**Introductory Statistics**
Course & Section Number:	**MTH213-XXX**
Meeting Day(s) & Time(s):	
Credits:	**3**
Contact Hours:	**3**
Text:	**Open Resources**
Instructor's Name:	
Office Hours & Location:	
OCC Phone:	
OCC Email:	

*Use your Owens email for course communications.

Catalog description:
This course emphasizes the understanding of statistical methods and the use of critical thinking in analyzing sets of data so as to make productive decisions. Topics covered include: descriptive statistics, measures of central tendency, measures of dispersion, graphical displays of data, concepts of probability, introduction to random variables and their probability distributions, the binomial probability distribution, the normal probability distribution, the Student-t distribution, confidence intervals, sampling techniques, the Central Limit Theorem, hypothesis testing, Type I and Type II errors, p-values, linear regression and correlation concepts

Prerequisite/Corequisites:
MTH 013 (statistics Pathway), or MTH 091 (Elementary Algebra), or ACT score of 19 or higher

Course Materials:
-Textbook: *Introductory Statistics, **by*** Illowsky and Dean. FREE - available from OpenStax in the course Blackboard site.
-Computer with reliable internet connection is required for online homework assignments.
-TI-84 or TI-84 Plus Graphing Calculator is the one used/instructed by the instructor. If you use a different graphing calculator, you are responsible for knowing the statistics commands. You may not use a cell phone calculator. Note, a basic scientific calculator will work for chapters 1-3. Online version available on course website.

What Students will Learn

Course Objectives: The purpose of Introductory Statistics is to provide the student with the essential concepts of descriptive and inferential statistics and their interpretations and applications to various academic disciplines.

Student Learning Outcomes:

Outcome	Where Assessed
1. Select and produce appropriate graphical, tabular, and numerical summaries of the distributions of variables in a data set. Summarize such information into verbal descriptions.	Online assignments, written assignments, test.
2. Summarize relationships in bivariate data using graphical, tabular, and numerical methods including scatter plots, two-way tables, correlation coefficients, and least squares regression lines.	Online assignments, written assignments, test.
3. Investigate and describe the relationships or associations between two variables using caution in interpreting correlation and association.	Online assignments, written assignments, test.
4. Use the normal distribution to interpret *z*-scores and compute probabilities.	Online assignments, written assignments, test.
5. Understand the principles of observational and experimental studies including sampling methods, randomization, replication and control.	Online assignments, written assignments, test.
6. Understand how the type of data collection can affect the types of conclusions that can be drawn.	Online assignments, written assignments, test.
7. Construct a model for a random phenomenon using outcomes, events, and the assignment of probabilities.	Online assignments, written assignments, test.
8. Use the addition rule for disjoint events and the multiplication rule for independent events.	Online assignments, written assignments, test.
9. Compute conditional probabilities in the context of two-way tables.	Online assignments, written assignments, test.
10. Introduce the concept of random variable and evaluate the expected value, variance, and standard deviation.	Online assignments, written assignments, test.
11. Evaluate binomial probabilities.	Online assignments, written assignments, test.
12. Introduce the concept of a sampling distribution and discuss the distribution of the sample mean and sample proportion under repeated sampling (Central Limit Theorem). Students should be expected to simulate or generate sampling distributions to observe, empirically, the Central Limit Theorem.	Online assignments, written assignments, test.
13. Estimate a population mean or proportion using a point estimate and confidence intervals and interpret the confidence level and margin of error.	Online assignments, written assignments, test.
14. Understand the dependence of margin of error on sample size and confidence level.	Online assignments, written assignments, test.
15. Determine the appropriate sample size for a specific margin of error and confidence level.	Online assignments, written assignments, test.
16. Given a research question involving a single population, formulate null and alternative hypotheses. Describe the logic and framework of the inference of hypothesis testing. Make a decision using a *p*-value and draw an appropriate conclusion. Interpret statistical significance.	Online assignments, written assignments, test.
17. Carry out a hypothesis test for a mean or proportion. Interpret statistical and practical significance in this setting.	Online assignments, written assignments, test.
18. Perform interval estimation and hypotheses testing for two-sample problems (e.g., difference of two means or proportions and chi-square test of independence)	Online assignments, written assignments, test.
19. Compute and interpret probabilities using the binomial probability distribution.	Online assignments, written assignments, test.

Academic Support

Disability Services Resource Center: If you have a disability or acquire one, you may be entitled to receive reasonable accommodations intended to assure you an equal opportunity to participate in and benefit from the

program. To receive more information or to register for accommodations, please contact the Disability Resource Center at 567-661-7007, email disability@owens.edu, visit https://www.owens.edu/disability/, or stop by College Hall 124.

Tutoring Services: Owens Community College offers academic tutoring and assistance in a variety of subjects including: accounting, computing, economics, mathematics, science, and writing. For more information go to: https://www.owens.edu/successcenters/.

Counseling Services: Counseling Services provides assistance to students experiencing personal, educational, interpersonal/relationship, family, social, or psychological difficulties. If you feel you may benefit from this service, please contact them at counselingservices@owens.edu. More information is at https://www.owens.edu/counseling/.

Campus and Community Connections: The Center for Campus and Community Connections (College Hall 151) is a walk-in office created to provide retention support through resource stability initiatives and community connections. Go here for more information: https://www.owens.edu/connection/ or contact connections@owens.edu

Owens Library: The Owens Library offers two locations (Toledo and Findlay) as well as online resources. For more information visit https://www.owens.edu/library/.

Students can find more information on campus resources, student support, student life, and security at this link.

General Information

Student Code of Conduct: All students are expected to follow Owens Community College's Student Code of Conduct, which includes academic honesty, encompassing plagiarism. See the Board Policy for more information.

Anti-Discrimination and Harassment & Title IX/Sexual Misconduct: All students, faculty, and staff are expected to follow Owens Community College's Anti-Discrimination and Harassment Policy and the College's Title IX Policy/Sexual Misconduct Procedures and Guidelines. The College strictly prohibits and will not tolerate harassment, discrimination, intimidation, or hostile/offensive working or learning environments.

Religious Accommodations: A student seeking an accommodation for an absence permitted under Ohio's Testing Your Faith Act must provide the instructor with a written email notice with the specific dates for an absence, and must do so not later than fourteen (14) days after the first day of instruction. Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under the policy*. The request for an alternative accommodation will be kept confidential. Students with questions about a religious accommodation under Ohio's Testing your Faith Act may contact the College's Office of Academic Affairs: provost@owens.edu. The policy may be found on the Owens website: 3358:11-2-63 Accommodation for a Student Absence for the Observance of Religious Beliefs and Practices Policy

Document Collection: Throughout the semester, your instructors may ask for a variety of assignments including tests and/or quizzes for student learning of institutional general education competencies or program assessment. Please save all your class materials until the end of the semester.

Classroom Admittance: OCC classes shall only be attended by the officially registered OCC students or perspective students, instructor of record, guest lecturer, or substitute. Visitors are not permitted to be in the classroom and should not be invited to attend or participate in the class. See FERPA regulations for more information.

Use of AI Tools: This course requires you to complete various assignments that assess your understanding and application of the course content. You are expected to do your own work and cite any sources you use properly. You are not allowed to use any artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, to complete any part of your assignments. Any attempt to use these tools will be

considered academic misconduct and will be dealt with according to the Owens Community College academic integrity policy. Students are expected to complete all work independently and without the assistance of AI-generated content. If you have any questions about what constitutes acceptable use of AI tools, please consult with the instructor *before* submitting your work.

Student Responsibilities & Instructor Expectations

Specific Course Rules

1. **Attendance** is expected during our scheduled time and will be reported, as required per financial aid. In the event of absence, the student is responsible for obtaining and learning the material missed. Notes and worksheets will be posted on Blackboard. Late assignments are subject to deductions as indicated below.
2. **Online Homework** Prior to the due date, questions may be reworked until correct - after two incorrect submissions, you will be shown the correct answer and can click on the "get a similar question" button above the question to continue working. A 'Late Pass" may be used to complete with the following stipulations:
   - If you open the assignment in Practice Mode, a Late Pass can no longer be used.
   - Any homework questions completed correctly after the due date, up until the corresponding test date, will receive **half credit**.
   - After the corresponding test is taken, homework will no longer be available for credit and a **score of 0** will be recorded and any incomplete work.

   Take advantage of the unlimited number of attempts to get the homework questions correct. If you do not understand, contact the instructor using the "Message Instructor" link at the bottom of each homework question. Explain/show me what you have tried.

3. **Written work** There will also be occasions when written work will be done in class or at home. This must be turned in for manual grading by the instructor.
   - If you are absent on a day that written work is completed in class, you must access the file on Blackboard, complete it, scan it as a single file pdf, email to instructor prior to next class period.
   - Any written work turned in after the due date is subject to a 2-point deduction per day late.
4. **Tests** will be done in class. At times, there could be an online portion to tests. Students who will be absent for a test must notify the instructor via email **PRIOR TO THE TEST DATE** so arrangements can be made for completion of the test. This will require the use of the Owens Testing Center. ***Tests cannot be taken once graded tests have been returned to the class***. Your lowest test score may be replaced by your Final Exam score, if it is to the student's benefit.
5. **Communication** for this course will be through your official Owens OZONE email. The instructor's email address is on the front page of this syllabus and provided on the course Blackboard page. I will also use Blackboard announcements. It is the student's responsibility to check email and announcements frequently (daily).

Student's Responsibility:

1. The student must submit homework, written work, and tests on time. **Be aware of due dates**.
2. The student has an active role in learning the material. Attending class, participating, and asking questions is important. The student should seek help, when needed.
3. The student should complete online homework with the intent to practice and master the material, not simply to get it done.
4. The student must help make the classroom a good learning environment by respecting classmates and the instructor. Cell phones must be put away during class. If you need to use your cell phone, step outside the classroom.
5. The student must complete coursework in an honest manner, according to the Student's Code of Conduct. https://www.owens.edu/conduct/code.pdf

How Grades are Determined

You will be evaluated using online assignments, written assignments, and tests.

Grades will be calculated on the following scale.

90% and Above	A
80% to Less than 90%	B
70% to Less than 80%	C
60% to Less than 70%	D
Less Than 60%	F

Tentative Class Schedule

Week	Section	Topic
1	1.1 – 1.4	Key Terms, Data and Sampling, Experimental Studies
2 - 3	2.1 – 2.7	Frequency Tables and Displaying Data, Bar graphs, paretos, pie graphs, dotplots & Stem-Leaf Plots, Histograms, Quartiles, Percentiles, Box Plots, Measures of Center and Spread, Distribution shapes
4	**Test 1**	**DATE**
5	3.1 - 3.4	Probability Terminology, And Vs. Or, Independent and Mutually Exclusive Events, Two Basic Rules of Probability, Contingency Tables
6	4.1 - 4.3	Discrete Probability Functions, Mean, Expected Value, Binomial Distribution, Mean, Standard Deviation, and Binomial Probability
7	**Test 2**	**DATE**
8	6.1	Standard Normal Distribution
9	6.2, 7.1, 7.3	Normal Distribution Applications, Central Limit Theorem and Applications
10	**Test 3**	**DATE**
11	8.1 – 8.3	Confidence Intervals for Means (Population SD known, Z Interval), Confidence Intervals for Means (Population SD unknown, T Interval), Confidence Intervals for Proportions, Sample size determination
12	9.1 – 9.5	Introduction to Hypothesis Tests, Errors of Hypothesis Testing for Means
13	**Test 4**	**DATE**
14	12.1 – 12.5	Scatterplots and Correlation, Significance and Linear Regression Equation, Using Regression to Make Predictions
15	11.1 - 11.3	Chi Square GOF Test, Chi Square Test for Independence
16	**Final Exam**	**Comprehensive Exam DATE**

Disclaimer: The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course. Please note that while unlikely, there is a possibility courses might need to change the delivery method due to external issues like public health concerns, weather issues, etc. If this happens, the college will communicate any changes via email and/or other communication methods.