Statistics
MATH 0133
4 credits

Description: This is an introductory statistics course and covers methods of summarizing data, descriptive statistics, probability and probability distributions, sampling distributions, the central limit theorem, hypothesis testing, analysis of variance, and regression analysis. Mathematical derivations and formulas are stressed.

Prerequisite: MATH 0098

Textbook: The recommended text for the course is *Elementary Statistics A Brief Version,* 6th Edition by Bluman.
Other textbooks will be considered by the faculty liaison on case-by-case basis.

The following topics should be covered in this course:

The Nature of Probability and Statistics
    1-1 Descriptive and Inferential Statistics
    1-2 Variables and Type of Data
    1-3 Data Collection and Sampling Techniques
    1-4 Observational and Experimental Studies

2. Frequency Distribution and Graphs
    2-1 Organizing Data
    2-2 Histograms, Frequency Polygons, and Ogives
    2-3 Other Types of Graphs
    2-4 Paired Data and Scatter Plots

3. Data Description
    3-1 Measure of Central Tendency
    3-2 Measure of Variation
    3-3 Measure of Position
    3-4 Exploratory Data Analysis

4. Probability and Counting Rules
    4-1 Sample Spaces and Probability
    4-2 The Addition Rules for Probability
    4-3 The Multiplication Rules and Conditional Probability

5. Discrete Probability Distributions
        5-1 Probability Distributions
        5-2 Mean, Variance, Standard Deviation, and Expectation
        5-3 The Binomial Distribution

6. The Normal Distribution
        6-1 Normal Distributions
        6-2 Application of the Normal Distribution
        6-3 The Central Limit Theorem
        6-4 The Normal Approximation to the Binomial Distribution

7. Confidence Intervals and Sample Size
        7-1 Confidence Intervals for the Mean when σ is known
        7-2 Confidence Intervals for the Mean when σ is unknown
        7-3 Confidence Intervals and Sample Size for Proportions
        7-4 Confidence Intervals for Variances and Standard Deviation

8. Hypothesis Testing
        8-1 Steps in Hypothesis Testing – Traditional Method
        8-2 z Test for a Mean
        8-3 t Test for a Mean
        8-4 z Test for a Proportion

9. Testing the Difference Between Two Means, Two Proportions, and Two   Variances
        9-1 Testing the Difference between Two Means: Using the z Test
        9-2 Testing the Difference between Two Means of Independent Samples   Using the t Test
        9-3 Testing the Difference between Two Means: Dependent Samples
        9-4 Testing the Difference between Proportions

10. Correlation and Regression
        10-1 Correlation
        10-2 Regression
        10-3 Coefficient of Determination and Standard Error of Estimate

11. Chi-Square and Analysis of Variance
        11-1 Test for Goodness of Fit
        11-2 Test Using Contingency Tables

Course objectives: Upon successful completion of this course, students will be able to understand the basic concepts in descriptive statistics, probability and inferential statistics, and apply these concepts to a wide range of fields.

Grading: The final grade will be determined using a variety of assessment methods including quizzes and exams.

Pitt Grading System:

All courses required to satisfy associate and baccalaureate degree requirements-including all courses required for a major, a minor, or general education-must be taken for letter grades, with the exception of those courses designated as graded S and NC only. Pitt-Bradford uses 13 earned letter grades. They are listed below with their equivalent quality point values.

A+	4.00
A	4.00 superior achievement
A-	3.75
B+	3.25
B	3.00 meritorious achievement
B-	2.75
C+	2.25
C	2.00 adequate achievement
C-	1.75
D+	1.25
D	1.00 minimal achievement
F	0.00 failure

Academic Integrity and Plagiarism: Members of a university community, both faculty and students, bear a serious responsibility to uphold personal and professional integrity and to maintain complete honesty in all academic work. Violations of the code of academic integrity are not tolerated. Students who cheat or plagiarize or who otherwise take improper advantage of the work of others face harsh penalties, including permanent dismissal. The academic integrity guidelines set forth student and faculty obligations and the means of enforcing regulations and addressing grievances.

Grades: Grade criteria in the high school course may be different from the University standards. A CHS student could receive two course grades, one for high school and one for the University transcript. In most cases, the grades are the same. Grading standards should be explained at the beginning of the course.

Transfer Credits: Grades earned in CHS courses appear on an official University of Pittsburgh transcript and the course credits may be eligible for transfer to other colleges and universities. Students should contact potential colleges and universities in advance to be sure their CHS credits will be accepted. If students will attend any University of Pittsburgh campus, grade earned in the course will count toward the student grade point average at the University. At the University of Pittsburgh, the CHS course supersedes any equivalent AP credit.

Drops and Withdrawals: Students should monitor their progress in a course. A CHS teacher can contact the program administrators to request a drop or withdrawal. Dropping or withdrawing from the CHS course has no effect on enrollment in the high school credits.