Tompkins Cortland Community College

Master Course Syllabus

Course Discipline and Number: MATH 200 **Year: 2020-2021**
Course Title: Statistics **Credit Hours: 3**

Attendance Policy: *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

Services for Students with Disabilities: *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for accommodations. All course materials are available in alternate formats upon request.*

Course Description

A study of the application of statistical procedures to the analysis of experimental data. Topics covered include methods of presentation of data, measures of central tendency and dispersion, sampling techniques, elementary probability, hypothesis testing, confidence intervals on both one and two populations, and linear regression and correlation. Use of the binomial, the normal, the student's T, and the chi-square distributions are covered. A TI-83, TI-83 plus, or TI-84 graphing calculator is required. MATH 200 fulfills the SUNY General Education Mathematics requirement. Prerequisites: C or better grade in MATH 098 or MATH 120 or equivalent; RDNG 099 if required by placement testing; prior completion or concurrent enrollment in ENGL 100. 3 Cr. (3 Lec.) Fall and spring semesters.

Course Context/Audience

MATH 200 is a required course in the following degree programs: Biotechnology, Business Administration, Computer Forensics, Computer Information Systems, Computer Science, Environmental Studies, International Business and the Manufacturing Management Technology certificate program. For other programs, it can be used to fulfill a math elective requirement. Additionally, the course satisfies the SUNY GEN ED Mathematics requirement.

Basic Skills/Entry Level Expectations

Writing: WC College level writing skills are required. See course co-requisites or pre-requisites.

Math: M4 MATH 098 if required by placement testing.

Reading: R2 Before taking this course, students must have a C or better in RDNG 099 or assessment indicating that RDNG 099 was not required.

Course Goals

As a result of successfully completing this course, the student will be able to:

1. Collect representative sample data for a particular population.
2. Clearly present data with tables and graphs.
3. Describe data with measures of central tendency, measures of position, and measures of dispersion.
4. Demonstrate an understanding of the purpose of correlation and regression analysis.

5. Demonstrate knowledge of the concepts of basic probability and the binomial and normal distribution.
6. Make a decision about one or two populations after doing a confidence interval or a hypothesis test.

Course Objectives/Topics

Objective/Topic	# Hours
The student will recognize basic definitions pertaining to statistics, and various sampling procedures.	3 Hours
The student will be able to collect, organize, and present data. This is descriptive statistics.	6 Hours
The student will be able to construct linear regression lines and interpret the information from both the linear regression line and the linear correlation.	3 Hours
The student will have an understanding of basic probability concepts.	6 Hours
The student will be able to apply his/her knowledge of basic probability to the binomial distribution and the normal distribution.	6 Hours
The student will be able to recognize the concepts of sample variability and how they apply to hypothesis testing.	6 Hours
The student will be able to determine the appropriate hypothesis test for the given information. The tests include one or two populations involving numeric data, and one or two populations involving attribute data. The distributions involved are the normal and the student's t.	9 Hours
The student will understand the use of the multinomial experiment which requires the chi-square distribution.	3 Hours
The student will demonstrate in review sessions and on exams that they have attained each of the prior eight objectives.	3 Hours

General Education Goals - Critical Thinking & Social/Global Awareness

CRITICAL THINKING OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
Students will be able to ➢ develop meaningful questions to address problems or issues ➢ gather, interpret, and evaluate relevant sources of information ➢ reach informed conclusions and solutions ➢ consider analytically the viewpoints of self and others	Students will need to understand the type of problem they are working with in order to use the appropriate method of solving. Students must collect data, organize it and interpret their results. Students must write an interpretation of their results. Home work and/or activities and tests/projects.

SOCIAL/GLOBAL AWARENESS OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
➢ Students will begin to understand how their lives are shaped by the complex world in which they live. ➢ Students will understand that their actions have social, economic and environmental consequences.	Students will have to evaluate through hypothesis testing or confidence intervals various social, environmental and economic issues

Instructional Methods
The main teaching method should be the lecture format. Group work should be infused into the class sessions. Out-of-class projects should be included. Overall, homework assignments should be designed to enhance the student's critical thinking skills.

Methods of Assessment/Evaluation

Method	% Course Grade
Excel Labs	0 - 10%
Field Project	5 - 10%
Final Exam	30 - 35%
Unit Tests/Quizzes	25 - 30%
Midterm	20 - 25%

Text(s)
Fundamentals of Statistics, Sullivan, Michael, 4th Edition, © 2014 Pearson Prentice-Hall
Required (A third edition of a customized version of this text exist for TC3 students)
MyStatLab recommended
Stan Brown's On-line Text - optional

Bibliography
Mario F Triola. Elementary Statistics. 9th Edition. Boston, MA: Person Education Inc. © 2004.

Ron Larson and Betsy Farber. Elementary Statistics Picturing the World. 3rd edition. Upper Saddle River, NJ: Pearson Education, Inc. © 2006.

Charles H Brase and Corrinne P Brase. Understandable Statistics Concepts and Methods. 6th edition. Boston, MA: Houghton Mifflin Co. © 1999.

Other Learning Resources

Audiovisual: Against All Odds: Inside Statistics The Annenberg/CPB Collection
Electronic: Some sections will require MyMathLab for homework assignments.
Other: The TI-83 or TI-84 (any variation) graphing calculator.