MATH-1420: ELEMENTARY PROBABILITY AND STATISTICS II

Cuyahoga Community College

Viewing: MATH-1420 : Elementary Probability and Statistics II
Board of Trustees:
2009-05-28

Academic Term:
2009-08-22

Subject Code
MATH - Mathematics

Course Number:
1420

Title:
Elementary Probability and Statistics II

Catalog Description:
Second of two-semester introductory sequence in probability and statistics. Intended for students majoring in liberal arts, business, sciences, engineering, and education. Includes study of Chi-square distribution and F distribution and their applications, inferences on variances and proportions, comparing two means, categorical data, correlation, simple and multiple regression, analysis of variance, nonparametric tests and use of statistical software packages.

Credit Hour(s):
3

Lecture Hour(s):
3

Lab Hour(s):
0

Other Hour(s):
0

Requisites
Prerequisite and Corequisite
MATH 1410 Elementary Probability and Statistics I, or departmental approval: equivalent coursework.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.
II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.

For specific information pertaining to ADA accommodation, please contact your campus SAS office or visit online at http://www.tri-c.edu/accessprograms/. Blackboard accessibility information is available at http://access.blackboard.com.

Eastern (216) 987-2052 - Voice
Metropolitan (216) 987-4344 – Voice. (216) 987-4048 – TTY.
Western (216) 987-5079 – Voice. (216) 987-5117 – TTY.
Westshore (216) 987-3900 – Voice. (216) 987-4048 – TTY.
Brunswick (216) 987-5079 – Voice. (216) 987-5117 – TTY.
Off-Site (216) 987-5079 - Voice

III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status.

Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Tri-C is responsible for identifying students who have not attended a course before financial aid funds can be applied to students’ accounts.

Therefore, attendance is recorded in the following ways:

- For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

- For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student’s responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

Tri-C is required to ensure that students receive financial aid only for courses that they attend and complete. Students reported for not attending at least one of their registered courses will have all financial aid funds held until confirmation of attendance in registered courses has been verified. Students who fail to complete at least one course may be required to repay all or a portion of their federal financial aid funds and may be ineligible to receive future federal financial aid awards. Students who withdraw from classes prior to completing more than 60 percent of their enrolled class time may be subject to the required federal refund policy.

If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ‘artifacts,’ for assessment of course and program outcomes and the College's Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit.

As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available athttp://www.tri-c.edu/student-resources/documents/studenthandbook.pdf. You must also comply with the College’s Zero Tolerance for Violence on College Property available athttp://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf
Outcomes

Course Outcome(s):
Perform hypothesis tests to evaluate claims about population means proportions for one two samples.

Objective(s):
1. Identify and verify test assumptions
2. Perform hypothesis tests using small large samples
3. Perform hypothesis tests known unknown population standard deviations
4. Identify independent dependent samples for hypothesis tests
5. Determine the appropriate hypothesis test based upon a dataset.
6. Use of P-values to carry out hypothesis tests
7. Find two sample interval estimates to make inferences about population parameters

Course Outcome(s):
Apply Chi-square tests to solve problems

Objective(s):
1. Use the F test for testing two population variances
2. Use the Chi-square and F tables to carry out specific types of hypothesis tests
3. Use the Chi-square tests for population variance, Goodness-of-Fit Test for Independence

Course Outcome(s):
Apply a single factor Analysis of Variance (ANOVA) to make inferences about means of several populations

Objective(s):
1. Use the F table to carry out an ANOVA analysis
2. Identify an ANOVA model
3. Verify the ANOVA model assumptions
4. Identify the completely randomized design and a treatment effect
5. Use multiple comparison tests to determine the significant differences between means

Course Outcome(s):
Compute the correlation regression coefficients to determine the relationship between two or more variables

Objective(s):
1. Construct scatter plots to graphically represent variables relationships
2. Find the correlation regression coefficients to determine their strength and significance
3. Use Simple Linear Regression to find the line of best fit

Course Outcome(s):
Build Simple multiple Linear Regression models to solve problems involving prediction

Objective(s):
1. Build a Simple Multiple Linear Regression models to determine the line of best fit and prediction
2. Identify verify model assumptions
3. Make inferences about Beta parameters
4. Check the validity of models
5. Assess the strength of a model

Course Outcome(s):
Compute nonparametric statistics apply hypothesis tests to solve problems violating parametric assumptions

Objective(s):
1. Find various nonparametric statistics
2. Identify violations of the Central Limit Theorem and when to use nonparametric methods

Course Outcome(s):
Use a variety of technology, software packages and supplemental websites to solve probability statistics problems.
Objective(s):
1. Use Graphing Calculators, Excel and Minitab to perform statistical analysis, construct charts graphs to solve probability and statistics problems
2. Use Supplemental Websites to solve a variety of probability and statistical problems

Methods of Evaluation:
1. Periodic exams.
2. Quizzes.
3. Homework.
4. In class collaborative work.
5. Comprehensive final exam.

Course Content Outline:
1. Comparing two means
   a. Equal variances
   b. Unequal variances
   c. Paired t-test
2. Chi-square distribution and inferences on variances
   a. Chi-square distribution
   b. Interval estimation on population variance
   c. Hypothesis testing on population variance
3. Inferences on proportions
   a. Estimating a proportion
   b. Testing hypothesis on a proportion
   c. Comparing two proportions
4. The F distribution
   a. Table of the F tribution
   b. Comparing two variances
5. Categorical data
   a. Multinomial distribution
   b. Goodness-of-fit-test
   c. Testing for independence
   d. Comparing proportions
6. Correlation and simple regression analysis
   a. Correlation coefficient
   b. The simple linear regression model
   c. Inferences on correlation and regression coefficients
7. Multiple regression
   a. The model and notation
   b. The function
   c. Inferences on regression coefficients
8. Analysis of variance
   a. The model and notation
   b. Treatment effects
   c. Statistical inferences
9. Nonparametric methods
   a. One sample procedures
   b. Two sample procedures
   c. K-sample procedures
10. Use of technology, software packages and websites
    a. Use graphing calculators and software packages for analysis
    b. How to interpret results
    c. Use of supplemental websites

Resources


**Resources Other**
1. Various statistical software Packages.
2. Publisher websites.

**Instructional Services**

OAN Number:
TMMSL

Top of page
Key: 2843