MAT-183: PROBABILITY AND STATISTICS HONORS

Time Stamp:
Thu Jun 13 2024 14:34:44 GMT-0500 (CDT)

Approval Path

a. Fri, 21 Apr 2023 20:29:56 GMT
Alexis Thurman (athurman): Approved for MATH Chair
b. Tue, 09 May 2023 18:21:32 GMT
Aslihan Cakmak (acakmak): Approved for BMET Dean
c. Tue, 03 Oct 2023 18:13:57 GMT
John Soltes (jsoltes): Approved for General Education Committee Chair
d. Tue, 06 Feb 2024 19:00:56 GMT
Christine Kelly (ckelly): Rollback to MATH Chair for Curriculum Committee Chair
e. Thu, 08 Feb 2024 20:30:26 GMT
Alexis Thurman (athurman): Approved for MATH Chair
f. Mon, 12 Feb 2024 20:28:48 GMT
Aslihan Cakmak (acakmak): Approved for BMET Dean
g. Tue, 05 Mar 2024 18:32:24 GMT
John Soltes (jsoltes): Approved for General Education Committee Chair
h. Tue, 07 May 2024 12:50:41 GMT
Christine Kelly (ckelly): Approved for Curriculum Committee Chair

History

a. May 5, 2018 by mshepard
b. Oct 15, 2018 by magro
c. Nov 10, 2018 by magro

Date Submitted: Fri, 21 Apr 2023 18:22:04 GMT

Last approved: Sat, 10 Nov 2018 09:12:26 GMT

Last edit: Tue, 07 May 2024 12:49:44 GMT

Course Type:
Credit

Credit Type:
Institutional

Course Prefix:
MAT

Course Number:
183

Course Capacity:
15

General Education?
Yes

Department:
Mathematics (MATH)

Division:
School of Business, Mathematics, Engineering and Technologies

Course Title:
Probability and Statistics Honors

Abbreviated Course Title:
Probability & Statistic Honors

Effective Date:
Spring 2023

Credit Hours:
Lecture: 4
Lab:
Recitation:
Clinical:
Cooperative:
Studio:
TOTAL: 4

Catalog Credits:
4

Course Fee:
No

General Education Information
Categories:
Mathematics

Category Learning Outcomes Which Will Be Achieved:
Use quantitative analytical skills to evaluate and to process numerical data.

Integrated Goals:
Ethical Reasoning and Action
Information Literacy

Integrated Goals Learning Outcomes Which Will Be Achieved:
Understand ethical issues and situations.
Demonstrate critical thinking.

Address an information need by locating, evaluating and effectively using information.

Catalog Course Description:
An introduction to the principles of statistical methods. The course will integrate spreadsheet software to cover such topics as descriptive statistics, correlation, regression, probability, binomial and normal distributions, sampling, elementary hypothesis testing and confidence intervals. This course will also cover ethical issues in statistics. Comprehensive case studies will be covered throughout the semester. An introduction to the use of statistical software to analyze large data sets will be emphasized. GPA of 3.3 or higher, CCM Honors student or permission of CCM Honors is required to take this course.

Catalog Prerequisites:
A petition granted by CCM Honors is needed to register for this course.

Crosslisted
No

Textbooks:

Title	Ed	Author(s)	Publisher	ISBN	Req/Rec
Fundamentals of Statistics	4th	Sullivan	Pearson		Required

Supplemental Materials:
Minitab: ISBN-13: 978-0-321-59282-8
R: ISBN-13: 978-0-321-59283-5

Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation and/or equipment limitations:
(Information will be used to determine differential funding category.)

Course Content:

Topics
Introduction; data collection; observational studies, experiments, sampling techniques
Frequency distributions, statistical graphs, stem-and-leaf plots
Dot plots, shapes of distributions, time series graphs
Measures of central tendency and dispersion, grouped data
Measures of position and outliers, 5-number summary, box plot
Scatter diagrams, correlation, least-squares regression, coefficient of determination
Influential observations, analysis of outliers
Probability rules, addition rule, complements, independence and multiplication rule
Conditional probability and general multiplication rule
Counting techniques
Discrete probability distributions, binomial probability distribution
Normal probability distribution: properties, applications, assessing normality
Sampling distributions
Population proportions: Confidence intervals about a populations proportion Populations means
Confidence intervals about a population mean, population standard deviation known and unknown
Sampling distributions
Population proportions: Confidence intervals about a populations proportion Populations means
Confidence intervals about a population mean, population standard deviation known and unknown
Introduction to Hypothesis testing – Hypothesis tests for a population proportion
Hypothesis tests for a population mean – population standard deviation known and unknown
Ethical issues in statistics
*Technology Project (mandatory)
*Presentation of Technology Project (optional) – Applications using statistical technology

Statement of Course Learning Outcomes:

Learning Outcomes
Distinguish among different methods of random sampling used for data collection
Compute measures of descriptive statistics
Construct confidence intervals for the mean and interpret the results
Conduct hypothesis tests for the mean and interpret the results when σ is known and unknown
Conduct hypothesis test and confidence intervals for proportions
Construct and derive least-squares linear regression equations
Compute binomial probabilities
Recognize statistics presented in a misleading manner
Analyze and portray statistical information in an ethical way
Evaluate and think critically about statistical information and be able to use the information effectively.

Statement of Relation to Curriculum(s):
MAT-130 is an optional course in Business Administration and other programs.

Format for offering the course:

(check all that apply)
Traditional

Key: 3889