UNIVERSITY of MASSACHUSETTS DARTMOUTH
Charlton College of Business
Decision and Information Sciences

COURSE:	BUSINESS STATISTICS, POM 212 ONLINE Prerequisite: Elements of College Math Enhanced – MTH 107 Sophomore standing
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COURSE DESCRIPTION:

This one-semester online course examines both descriptive and inferential statistics as applied to business. Topics covered include graphical and tabular methods of data presentation, probability theory and distributions, hypothesis testing, tests of goodness of fit & independence, & regression. Emphasis is placed on concepts, applications and the proper use of statistics to collect, analyze and interpret data. Throughout this course students will use computer software to perform statistical analyses. Students will learn how to make decisions using facts and the techniques of data analysis. Students will also use the Internet to supplement classroom learning. We emphasize the use of technology in solving statistics problems, and address global issues of interest. Particular emphasis is placed on ethical issues associated with data analysis, and the impact on business stakeholders, both domestic and international.

COURSE OBJECTIVES:

Upon completion of this course, you will be able to perform various statistical techniques, understand their assumptions, and how to apply them to various cases:

From this course you will:

- *Be introduced to statistical thinking and the ethical use of statistical methods*
- *Be able to use Microsoft Excel to conduct statistical analyses*
- *Be able to work with tables and charts for business and industrial data*
- *Understand basic probability and probability distributions*
- *Be able to calculate measures of central tendency and dispersion*
- *Be introduced to the methods of regression & correlation analysis*
- *Understand how to utilize hypothesis-testing techniques to test business assumptions*
- *Be able to apply tests of goodness of fit and independence to data*
- *Be able to apply statistical techniques to real-life applied cases*
- *Understand how to use the regression model for prediction and forecasting in business.*

COMPETENCIES AND CONTACT HOURS

Competencies	**Contact**	**Hours**
The student will be introduced to statistical thinking, definitions, techniques of organizing and describing information, Regression Analysis, Correlation Analysis, ethical pitfalls and misuse in the collection & presentation of data, and use of statistical functions in Microsoft Excel for data analysis.		
The student will understand:		
• Variables, types of data and levels of measurement and ethical considerations	3	03
• Methods of summarizing and displaying data	4	07
• Measures of location and dispersion for a single variable	4	11
• Probability theory	1	12
• Discrete distributions: Binomial, Poisson & Hypergeometric	4	16
• Continuous probability distributions: Uniform, Normal & Exponential	5	21
• Sampling distributions of the mean and proportion, sampling methods	3	24
• Confidence interval estimation for large and small samples; t-distribution	4	28
• Hypothesis Testing for means and proportions for single populations	4	32
• Two population hypothesis tests: differences between two samples	4	36
• Tests of goodness of fit and independence	2	38
• Estimation and prediction using simple linear regression	4	42

COURSE MATERIAL

Text: Statistics for Business and Economics,
Anderson, Sweeney & Williams

Software: Microsoft Excel

myCourses: PowerPoint slides used are available in PDF format at myCourses

CLASSROOM POLICY:

This course will be conducted online using myCourses website. Being an online course it is extremely important to meet the deadlines for the assignments. Note that all weekly assignments can be completed anytime, up until 11:59pm each Sunday. For working out some of the statistical problems, we will use Excel software. In statistical analysis course some of the key concepts are linked to each other and delaying understanding of such concepts can cause difficulty for a smooth progress in the course. Therefore students having any difficulty with quizzes and homework assignment or understanding of key concepts should contact the instructor for any help needed.

COMMUNICATION POLICY:

Include POM212 in the subject area for all email communications.

EVALUATION POLICY:

Exams:

There will be four tests throughout the semester, which will be announced at least one week in advance. Statistical tables and formulae required in the exam will be provided when necessary.

Online Quiz:

There will be eleven online quizzes available on myCourses after the completion of each chapter. The online quizzes needs to be finished before the corresponding test. The online quizzes will not be available after the test.

Homework:

For homework assigned in a class, a due date will be indicated. On-time homework submissions will be graded out 100% and those submitted late will be graded only out of 50%.

Presenatation:

Each student will be required to make a presentation of their choice related to the class. The available time will be 5 to 7 minutes. The topic can be picked from articles in the following link: http://flip.it/f5XfI. More details will be available on the course website.

These test results, online quizzes, and homework scores will determine your grade for the course. Given below is the break-up.

Evaluation Type	Score
Tests	40%
Online quiz on course website	25%
Homework	25%
Presentation	10%
TOTAL	100%

CLASS SCHEDULE*

Month	Date	Chapter/Section
		Chapter-1 Data and Statistics: 1.1-1.6 Data & data sources, Misuse of data, **ethics** in statistical analysis & reporting Scales of measurement, Cross-sectional & time series data, Descriptive & Inferential statistics, Exercises and homework involving **global** companies
		Chapter-2 Tabular & Graphical Presentations: 2.1-2.4 *Frequency distribution, bar graph, pie chart, histogram, cuml. distribution* *Scatter plot with examples of **global** warming and **global** stock markets,* *crosstabulation, PivotTable in Microsoft **Excel** with homework assignment.*
		Chapter-3 Descriptive Statistics: Numerical Measures: 3.1-3.4 Mean, median, mode, percentiles, range, standard deviation, coefficient of variation, z-scores, the empirical rule, 5-number summary, box plots, Use of statistical functions in Microsoft **Excel**.
		Test#1 on Chapters 1, 2, & 3
		Chapter-5 Discrete Probability Distributions: 5.1-5.6 *Expected value & variance, Binomial experiments, The Binomial distribution* *Poisson and Hypergeometric distributions* *Using statistical functions in Microsoft **Excel**, Exercises and homework involving **global** companies.*
		Chapter-6 Continuous Probability Distributions: 6.1-6.4 Uniform distributions, The Normal curve. Standard normal distribution, Normal approximation of Binomial probabilities, Calculations using standard normal table Exponential probability distribution, Using statistical functions in Microsoft **Excel** to calculate probabilities for continuous distributions.
		Test#2 on Chapters 5 & 6
		Chapter-7 Sampling and Sampling Distributions: 7.1-7.8 *Sampling distribution of means & proportions,* *Sampling distribution of proportions, standard error of the mean.* *Central limit theorem, Finite & infinite populations, Random sampling using Microsoft **Excel***
		Chapter-8 Interval Estimation: 8.1-8.4 Sampling error, Large and small sample cases, Means & proportions. σ estimated by s, the 't' distribution, Determination of required sample size, Interval estimation using Microsoft **Excel**
		Chapter-9 Hypothesis Testing: 9.1-9.6 *Null & alternative hypotheses, Type I & Type II errors* *Population Mean, one and two tailed tests, large & small sample cases,* *Population proportion tests, Hypothesis testing with Microsoft **Excel***
		Test#3 on Chapters 7, 8, & 9
		Chapter-10 Difference Between Means of Two Populations: 10.1, 10.2, & 10.4 Inferences about the difference between means, s values known & unknown Hypothesis testing about μ1-μ2, s known and unknown, Inferences about the differences between two population proportions with Microsoft **Excel**
		Chapter-12 Tests of Goodness of Fit and Independence: 12.1 & 12.2 *Multinomial populations, The χ-squared distribution.* *Contingency tables, Tests of Goodness of fit and independence using **Excel***
		Chapter-14 Simple Linear Regression: 14.1-14.3 Simple linear regression model, Estimated regression equation. Least squares method, Sample correlation coefficient, R-sq, Regression with Microsoft **Excel** and interpretation of regression equation
		Test#4 on Chapters 10, 12, & 14

*The class schedule is tentative, and is subject to change at the instructor's discretion.