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COMS 3520 - Quantitative Inquiry in Communication Provides principles and basic skills necessary to critically analyze research literature; develop basic proficiencies in structuring designs basic to descriptive and experimental studies, including data collection, analysis, and presentation techniques in communication research.

- - *Requisites:* (Jr or Sr) and MATH 1200 or higher and **WARNING:** No credit for this course if the following is taken (keeps credit for the following course, as defined by department): MATH 2500 or PSY 2110 or QBA 2010 or LET 3555

- *Credit Hours:* 3
- *Repeat/Retake Information:* May be retaken two times excluding withdrawals, but only last course taken counts.

- *Lecture/Lab Hours:* 3.0 lecture
- *Grades:* Eligible Grades: A-F,WP,WF,WN,FN,AU,I
- *Learning Outcomes:*
 - Understand the role of statistics in communication research and everyday life.
 - Articulate and apply the basic principles in descriptive and inferential statistics.
 - Calculate scores needed for descriptive and inferential statistical procedures, including the following: measures of central tendency, probability, distribution, z-scores, t-statistics, ANOVA, correlation, and regression.
 - Appreciate the ethical issues in the conduct of communication research.

ECON 3810 - Economic Statistics Statistical methods are developed within an economic context. Fundamental statistical topics include descriptive statistics, basic probability theory, random variables, sampling, estimation, and hypothesis testing.

- - *Requisites:* ECON 1030 and (MATH 1350 or Math 2301 or Math 2302) and **WARNING:** No credit for both this course and the following (always deduct credit for first course taken): ISE 3040 or ISE 3200 or MATH 253 or MATH 2500

- *Credit Hours:* 3
- *Repeat/Retake Information:* May be retaken two times excluding withdrawals, but only last course taken counts.
- *Lecture/Lab Hours:* 3.0 lecture
- *Grades:* Eligible Grades: A-F,WP,WF,WN,FN,AU,I

- Learning Outcomes:
 - Apply statistical and econometric methods to analyze real-world data and interpret the economic significance of results.
 - Learn basic econometric techniques to analyze relationships between economic variables.
 - Learn fundamental statistical methods for analyzing economic data.
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MATH 2500 - Introduction to Statistics An introductory course in applied statistics. Organization of data, central tendency and dispersion, descriptive bivariate data, correlation, designed experiments, probability, random variables, binomial and normal distributions, distributions, inferences from large samples, estimation, confidence intervals and hypothesis testing. Students cannot earn credit for MATH 2500 and any of the following: COMS 3520, ECON 3810, GEOG 2710, ISE 3040, ISE 3200, PSY 1110, PSY 2110, QBA 2010.

- - *Requisites:* (MATH 1200 or 1250 or 1260 or 1321) or Math placement 2 or higher and **WARNING:** Not COMS 3520 or ECON 3810 or GEOG 2710 or ISE 3040 or ISE 3200 or PSY 1110 or PSY 2110 or QBA 2010
 - *Credit Hours:* 4
 - *General Education Code:* 1M
 - *Repeat/Retake Information:* May be retaken two times excluding withdrawals, but only last course taken counts.
 - *Lecture/Lab Hours:* 4.0 lecture
 - *Grades:* Eligible Grades: A-F, WP, WF, WN, FN, AU, I
 - *Course Transferability:* OTM Course: TMM010 Introductory

Statistics

- College Credit Plus: Level 1
- Learning Outcomes:
 - Carry out a hypothesis test for a mean or proportion. Interpret statistical and practical significance in this setting.
 - Compute conditional probabilities in the context of two-way tables.
 - Construct a model for a random phenomenon using outcomes, events, and the assignment of probabilities. Use the addition rule for disjoint events and the multiplication rule for independent events.
 - Determine the appropriate sample size for a specific margin of error and confidence level.
 - Estimate a population mean or proportion using a point estimate and confidence intervals, and interpret the confidence level and margin of error.

- Given a research question involving a single population, formulate null and alternative hypotheses. Describe the logic and framework of the inference of hypothesis testing.
- Introduce the concept of a sampling distribution. Discuss the distribution of the sample mean and sample proportion under repeated sampling (Central Limit Theorem).
- Investigate and describe the relationships or associations between two variables using caution in interpreting correlation and association.
- Make a decision using a p-value and draw an appropriate conclusion. Interpret statistical significance.
- Perform interval estimation and hypotheses testing for two-sample problems (e.g., difference of two means or proportions and chi-square test of independence).
- Select and produce appropriate graphical, tabular, and numerical summaries of the distributions of variables in a data set. Summarize such information into verbal descriptions.
- Students should be expected to simulate or generate sampling distributions to observe, empirically, the Central Limit Theorem.
- Summarize relationships in bivariate data using graphical, tabular, and numerical methods including scatter plots, two-way tables, correlation coefficients, and least squares regression lines.
- Understand how the type of data collection can affect the types of conclusions that can be drawn.
- Understand the dependence of margin of error on sample size and confidence level.
- Understand the principles of observational and experimental studies including sampling methods, randomization, replication, and control.
- Use the normal distribution to interpret z-scores and compute probabilities.

PSY 2110 - Statistics for the Behavioral Sciences Introduction to descriptive and inferential statistics with emphasis on inferential statistics. No credit for both 2110 and any of the following: MATH 2500, QBA 2010, COMS 3520.

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- *Requisites:* (MATH 1200 or MATH 1300 or MATH 2301 or Math placement level 2 or higher) and WARNING: not COMS 3520 or MATH 2500 or QBA 2010
- *Credit Hours:* 4
- *General Education Code:* 1M
- *Repeat/Retake Information:* May be retaken two times excluding withdrawals, but only last course taken counts.
- *Lecture/Lab Hours:* 4.0 lecture
- *Grades:* Eligible Grades: A-F,WP,WF,WN,FN,AU,I

- Learning Outcomes:
 - Cultivate critical thinking skills to evaluate the vast amount of statistical information present in our society.
 - Develop an understanding of basic probability theory, power analyses, and inferential testing including z-test, t-tests, analysis of variance, correlation, regression, and chi-square.
 - Formulate hypotheses and apply appropriate statistical procedures to real-world problems.
 - Identify key concepts and methods of inquiry in elementary statistics for the behavioral and social sciences including descriptive, inferential, parametric, and non-parametric statistics.
 - Perform basic statistical analyses with the aid of a computer software program.

QBA 2010 - Introduction to Business Statistics An introductory course in probability and statistics. Includes the organization of data, central tendency and dispersion, probability concepts, the concept of random variables, probability distributions, sampling distribution, estimation and hypothesis testing, simple linear regression analysis, analysis of variance, nonparametric statistical tests, and the use of Excel in statistical analysis.

- - *Requisites:* MATH 1200 or higher or math placement level 2 and
WARNING: no credit for both this course GEOG 2710 or GEOL 3050 or ISE 3040 or 3200 or MATH 2500 or PSY 2110
 - *Credit Hours:* 4
 - *Repeat/Retake Information:* May be retaken two times excluding withdrawals, but only last course taken counts.
 - *Lecture/Lab Hours:* 4.0 lecture
 - *Grades:* Eligible Grades: A-F, WP, WF, WN, FN, AU, I
 - Learning Outcomes:
 - Demonstrate application of statistical techniques to typical business analysis situations.