



COURSE OUTLINE : MATH 136A

D Credit – Degree Applicable

COURSE ID 010506

Created: February2020

COURSE DISCIPLINE : MATH
COURSE NUMBER : 136A
COURSE TITLE (FULL) : Statistics A
COURSE TITLE (SHORT) : Statistics A

CATALOG DESCRIPTION

MATH 136A is the first part of a two course sequence in college level Statistics. MATH 136A and MATH 136B collectively are equivalent to MATH 136 Statistics. Topics in this course include the nature of statistical methods, types of data, introductory probability, experimental design, and regression analysis. Emphasis is placed on the application of statistical concepts to real world data, development of statistical reasoning, and the interpretation of results.

CATALOG NOTES

This course may not be taken for credit by students who have completed MATH 136 or MATH 136+. This course alone will not satisfy transfer GE requirements.

Total Lecture Units: 2.00

Total Laboratory Units: 0.50

Total Course Units: 2.50

Total Lecture Hours: 36.00

Total Laboratory Hours: 36.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 72.00

Total Out-of-Class Hours: 72.00

Prerequisites: MATH 30, MATH 30+, MATH 30E, MATH 90, MATH 90+, or MATH 90EF. Recommended

Preparation: ENGL 101.



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ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	MATH	30	Intermediate Algebra and Pre-Statistics	solve linear equations and inequalities;	Yes
2	MATH	30	Intermediate Algebra and Pre-Statistics	find the equation of a line and interpret the slope and intercept;	Yes
3	MATH	30	Intermediate Algebra and Pre-Statistics	solve applied problems;	Yes
4	MATH	30	Intermediate Algebra and Pre-Statistics	graph functions (linear, exponential, logarithmic);	Yes
5	MATH	30+	Intermediate Algebra and Pre-Statistics with Support	solve linear equations and inequalities;	Yes
6	MATH	30+	Intermediate Algebra and Pre-Statistics with Support	find the equation of a line and interpret the slope and intercept;	Yes
7	MATH	30+	Intermediate Algebra and Pre-Statistics with Support	solve applied problems;	Yes
8	MATH	30+	Intermediate Algebra and Pre-Statistics with Support	graph functions (linear, exponential, logarithmic);	Yes
9	MATH	30E	Intermediate Algebra and Pre-Statistics	solve applied problems;	Yes
10	MATH	90	Intermediate Algebra for BSTEM	solve linear equations and compound inequalities;	Yes
11	MATH	90	Intermediate Algebra for BSTEM	solve applied problems;	Yes
12	MATH	90	Intermediate Algebra for BSTEM	graph functions (linear, quadratic, exponential, logarithmic);	Yes
13	MATH	90+	Intermediate Algebra for BSTEM with Support	solve linear equations and compound inequalities;	Yes



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14	MATH	90+	Intermediate Algebra for BSTEM with Support	solve applied problems;	Yes
15	MATH	90+	Intermediate Algebra for BSTEM with Support	graph functions (linear, quadratic, exponential, logarithmic);	Yes
16	MATH	90EF	Intermediate Algebra for BSTEM	solve applied problems.	Yes
17	ENGL	101	Introduction to College Reading and Composition	Read, analyze, and evaluate a variety of primarily non-fiction readings for content, context, and rhetorical merit with consideration of tone, audience, and purpose;	Yes
18	ENGL	101	Introduction to College Reading and Composition	apply a variety of rhetorical strategies in writing unified, well-organized essays directed by a well-reasoned thesis statement with persuasive support;	Yes
19	ENGL	101	Introduction to College Reading and Composition	develop varied and flexible strategies for generating, drafting, and revising essays;	Yes
20	ENGL	101	Introduction to College Reading and Composition	analyze stylistic choices in their own writing and the writing of others;	Yes
21	ENGL	101	Introduction to College Reading and Composition	write timed, in-class essays exhibiting acceptable college-level control of mechanics, organization, development, and coherence;	Yes
22	ENGL	101	Introduction to College Reading and Composition	integrate the ideas of others through paraphrasing, summarizing, and quoting without plagiarism;	Yes
23	ENGL	101	Introduction to College Reading and Composition	find, evaluate, analyze, and interpret primary and secondary sources, incorporating them into written essays using appropriate documentation format;	Yes
24	ENGL	101	Introduction to College Reading and Composition	proofread and edit essays for presentation so they exhibit no disruptive errors in English grammar, usage, or punctuation.	Yes



EXIT STANDARDS

- 1 Describe and analyze realistic data sets both large and small from disciplines including business, social science, psychology, life science, health science and education using graphs and statistics;
- 2 analyze real world results, interpret the output of a technology-based statistical analysis and identify flaws in statistical reasoning;
- 3 identify the standard methods of obtaining data and identify advantages and disadvantages of each;
- 4 calculate probability using the basic laws of probability;
- 5 use linear regression analysis for estimation and inference, and interpret the statistics;
- 6 calculate and present results using sound statistical reasoning, accurate statistical terminology and technology such as spreadsheets, graphing calculators or StatCrunch.

STUDENT LEARNING OUTCOMES

- 1 analyze and describe univariate and bivariate data sets, including the computation of basic statistics as well as the performance of regression analysis.
- 2 employ and demonstrate an understanding of the rules of probability, including probability models such as the binomial distribution.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Descriptive Statistics <ul style="list-style-type: none"> • Graphical descriptions of data • Measures of center: mean, median, and mode • Measures of spread; standard deviation/variance, quartiles, and range • Density curves, including normal distributions • Linear regression, including residual analysis • Correlation • 2-Way Tables • Data set analysis using statistical software and or statistical calculators • Identification of confounding and lurking variables and other possible misinterpretations of statistical conclusions 	18	18	36
2	Producing Data <ul style="list-style-type: none"> • Design of sampling procedures • Design of experiments • Strengths and limitations of experimental designs 	3	3	6



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3	Probability <ul style="list-style-type: none"> • Discrete probability models • Computing probabilities using the addition and multiplication rules • Expected value • Binomial distributions 	6	6	12
4	Algebra Review <ul style="list-style-type: none"> • Linear equations with one and two variables • The rectangular coordinate system • The slope of a line • Equations of lines • Exponents in the context of scientific notation • Scientific notation 	6	6	12
5	Math Study Skills Content <ul style="list-style-type: none"> • Mindset and motivation for college success in mathematics • Test taking techniques • College support resources • Math community resources 	3	3	6
				72

OUT OF CLASS ASSIGNMENTS

- 1 homework (e.g., problem sets related to course content);
- 2 project(s) using datasets and technology culminating in a written report (e.g., analyze data provided involving price and quantity of soda and construct a scatter plot and linear regression model using StatCrunch).

METHODS OF EVALUATION

- 1 quizzes;
- 2 three or more examinations are required;
- 3 a comprehensive final examination is required.

METHODS OF INSTRUCTION

- Lecture
- Laboratory



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- Studio
- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration
- Field Activities (Trips)
- Guest Speakers
- Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Statistics, Informed Decisions Using Data	Required	Pearson	5	Print	Sullivan, Michael	0-13-413353-6	2017
Integrated Review Materials to accompany Statistics : Informed Decisions using Data	Required	Pearson	2	Print	Sullivan, Michael	9780134606675	2018