COURSE DISCIPLINE : MATH

COURSE NUMBER : 136B

COURSE TITLE (FULL) : Statistics B

COURSE TITLE (SHORT) : Statistics B

CALIFORNIA STATE UNIVERSITY SYSTEM C-ID :

CATALOG DESCRIPTION

MATH 136B is the second 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 sampling theory, confidence intervals, hypothesis testing, and decision making. 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+.

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

Prerequisite: MATH 136A.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	MATH	136A	Statistics A	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;	Yes
2	MATH	136A	Statistics A	analyze real world results, interpret the output of a technology-based statistical analysis and identify flaws in statistical reasoning;	Yes
3	MATH	136A	Statistics A	identify the standard methods of obtaining data and identify advantages and disadvantages of each;	Yes
4	MATH	136A	Statistics A	calculate probability using the basic laws of probability;	Yes
5	MATH	136A	Statistics A	use linear regression analysis for estimation and inference, and interpret the statistics;	Yes
6	MATH	136A	Statistics A	calculate and present results using sound statistical reasoning, accurate statistical terminology and technology such as spreadsheets, graphing calculators or StatCrunch.	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 normal distribution, the t distribution and the basic laws of probability;

5   describe sampling distributions, distinguish them from population distributions and analyze the role played by the Central Limit Theorem ;

6   compute confidence intervals of population means, proportions and standard deviations; identify the basic concept of hypothesis testing including Type I and II errors, finding and

7   interpreting levels of significance including p-values, selecting the appropriate techniques for testing a hypothesis from one and two populations and interpreting the result;

8   perform chi-square tests using chi-square tables and statistical software or calculator;

9   use linear regression and ANOVA analysis for estimation and inference, and interpret the statistics;

10   calculate and present results using sound statistical reasoning, accurate statistical terminology and technology such as spreadsheets, graphing calculators or StatCrunch.

STUDENT LEARNING OUTCOMES

1   employ and demonstrate an understanding of the rules and properties of the normal distribution as well as related sampling distributions.

2   apply confidence intervals and hypothesis testing to form conclusions about realistic data.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Probability and Sampling Distributions • Continuous probability models • The Central Limit Theorem	3	3	6
2	Inferences Using Sample Means, Proportions, and Standard Deviations • Confidence intervals for the population proportion and mean • One and two-sample hypothesis tests of population proportions and means; Z-test and Student's t-test • Type I and Type II errors • Chi-square distribution • Linear regression and ANOVA analysis for estimation and inference • Accurate presentation of inferential conclusions	27	27	54
3	Algebra Review • Linear inequations with one variable, including absolute values and compound inequalities • Exponents in the context of scientific notation • Solving equations with one radical	3	3	6
4	Math Study Skills Content • Time management • Critical thinking skills • Goal setting Transferring/ career exploration 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

☐ 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, Mihcael	9780134606675	2018