MATH 161 Course Outline as of Fall 2020

CATALOG INFORMATION

Dept and Nbr: MATH 161 Title: MATH PREP STATS/LIB ARTS
Full Title: Mathematics Preparation for Statistics and Liberal Arts
Last Reviewed: 10/22/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	4.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00 Total Student Learning Hours: 210.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Survey of fundamental algebra topics, probability and exploratory data analysis needed to prepare students for transfer-level statistics and liberal arts mathematics courses.

Advisory: This course is NOT intended for math, science, computer science, business, or engineering majors.

Prerequisites/Corequisites:
Completion of MATH 150 or MATH 151 or MATH 150B or AB705 placement into Math Tier 1 or higher

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Survey of fundamental algebra topics, probability and exploratory data analysis needed to prepare students for transfer-level statistics and liberal arts mathematics courses.

Advisory: This course is NOT intended for math, science, computer science, business, or engineering majors. (Grade or P/NP)
Prerequisites/Corequisites: Completion of MATH 150 or MATH 151 or MATH 150B or AB705 placement into Math Tier 1 or higher
Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	B	Communication and Analytical Thinking	Summer 2019	
	MC	Math Competency		
CSU GE:	**Transfer Area**		Effective:	Inactive:
IGETC:	**Transfer Area**		Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Create linear and exponential models using real world data in the context of application problems.
2. Find and analyze summary statistics for categorical and quantitative data.
3. Create and analyze graphical representations for categorical and quantitative data.
4. Create and interpret functions graphically, verbally, and algebraically.

Objectives:
At the conclusion of this course, the student should be able to:
1. Evaluate, apply, and simplify algebraic expressions.
2. Use linear expressions, equations, and inequalities in application problems.
3. Produce data through random sampling and analyze the data collected.
4. Analyze real data sets by finding measures of central tendency, position, and spread, and by constructing various charts and graphs.
5. Use data to calculate and analyze the slope, y-intercept, and equation of a line in two variables and construct a graph of the linear equation and regression line.
6. Apply linear and exponential functions for regression analysis to solve application problems.
7. Solve and analyze basic probability problems using ratios, proportions, two-way tables and percentages.

8. Consistently apply effective learning strategies for success in college.

Topics and Scope:

I. Arithmetic Operations, Formulas and Algebraic Expressions
- A. Arithmetic of signed numbers and interpretation of inequalities
- B. Operations with fractions, proportions, ratios and percent
- C. Measurement and unit conversion
- D. Exponents, square roots, scientific notation
- E. Order of operations and simplifying algebraic expressions
- F. Evaluating formulas
- G.Introduction to Sigma Notation
- H. Introduction to Factorials

II. Exploratory Data Analysis
- A. Quantitative versus categorical data
- B. Collecting data
- C. Frequency and relative frequency tables
- D. Constructing and reading bar charts, dot plots, and histograms
- E. Measures of center: mean and median
- F. Measures of spread: range and standard deviation
- G. Quartiles and box plots

III. Linear Equations and Inequalities
- A. Solving general linear equations with application problems
- B. Solving formulas with application problems
- C. The rectangular coordinate system and plotting ordered pairs
- D. Graphs of linear equations
- E. Find and interpret slope, rate of change and y-intercept
- F. Writing, solving and graphing one-variable linear inequalities

IV. Functions
- A. Function notation, models and applications
- B. Graphing various functions, models and applications
- C. Constructing and analyzing scatterplots
- D. Regression line, prediction and interpretation

V. Exponential Functions
- A. Integer and rational exponents
- B. Exponential functions and their graphs
- C. Exponential growth and decay
- D. Exponential regression, prediction and interpretation
- E. Introduction to logarithms

VI. Probability
- A. Introduction to probability, notation and rules
- B. Conditional probability
- C. Probability and proportions calculated from two-way tables

VII. Technology - Use of Technology (Calculator or Computer Software) to Evaluate Formulas, Calculate Probabilities, Analyze Data, and Find Statistics

VIII. Topics Related To Developing Effective Learning Skills
A. Study skills: organization and time management, test preparation and test-taking skills
B. Self-assessment: using performance criteria to judge and improve one's own work, analyzing and correcting errors on one's test
C. Use of resources: strategies identifying, utilizing, and evaluating the effectiveness of resources in improving one's own learning, e.g., peer study groups, computer resources, lab resources, tutoring resources

Assignment:

1. Reading outside of class (0-60 pages per week)
2. Problem sets (1-8 per week)
3. Quizzes (0-4 per week)
4. Projects (0-10)
5. Exams (2-6)
6. Final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Problem sets	Problem solving 5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Exams and quizzes	Exams 70 - 95%

Other: Includes any assessment tools that do not logically fit into the above categories.

Projects and participation	Other Category 0 - 10%

Representative Textbooks and Materials:
Pre-Statistics ALEKS (software)

Pre-Statistics. Davis, Donald and Armstrong, William and McCraith, Mike. Cengage. 2019

A Pathway to Introductory Statistics. Lehmann, Jay. Pearson. 2016