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	ī.	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:

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ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area B MC	Communication and Analytical Thinking Math Competency	Effective: Summer 2019	Inactive:
CSU GE:	Transfer Area	1 2	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.

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

Problem sets

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

None

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

Exams and quizzes

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

Projects and participation

Representative Textbooks and Materials: Pre-Statistics ALEKS (software) Writing 0 - 0%

> Problem solving 5 - 20%

Skill Demonstrations 0 - 0%

> Exams 70 - 95%

Other Category 0 - 10% Pre-Statistics. Davis, Donald and Armstrong, William and McCraith, Mike. Cengage. 2019 A Pathway to Introductory Statistics. Lehmann, Jay. Pearson. 2016