

MATH-131: Mathematics for the Modern World

Division: Mathematics

Course Subject: MATH

Course Number: 131

Course Title:
Mathematics for the Modern World

Course is Cross-Referenced with Another Course: No

Credit Hours: 4.00

Total Instructor(s) Contact Hours: 62.00

Total Student Contact Hours: 62.00

Course Grading Scale: A-E

Pre-requisites:

Math 080 OR 081 OR 089 with a C grade or better OR a satisfactory score on the Math placement test
AND ENG 081 with an S grade or a satisfactory score on the reading placement test

Catalog Course Description:

For students pursuing a liberal arts curriculum or a program without a specified mathematics requirement. Topics include linear and exponential growth; statistics; personal finance; and geometry, including scale and symmetry. Emphasizes techniques of problem-solving and application of modern mathematics to understanding quantitative information in the everyday world.

Goal Statement:

1. To generate an appreciation of the quantitative tools that help to present and explain issues arising in the media and students' daily lives
2. To strengthen communication skills, both written and oral, of mathematical ideas
3. To strengthen mathematical competence in modeling, personal finance, basic statistics, and geometry

Core Course Topics:

(indicates critical thinking objectives)*

1. Linear and Exponential Change
 - a. Recognize linear functions.
 - b. Find the slope of a linear function or model.
 - c. Interpret the slope of a linear function or model.
 - d. Find trend lines.
 - e. Interpret trend lines.
 - f. Find an exponential formula modeling data or a percentage-growth situation.
 - g. Solve problems involving exponential functions, such as growth, decay, doubling

- time, and half-life.*
- h. Describe how exponential and logarithmic functions are related.
 - i. Solve problems involving logarithms, such as sound volume and earthquake magnitude.*
2. Personal Finance
 - a. Calculate simple and compound interest.
 - b. Solve problems about Annual Percentage Rate and Annual Percentage Yield.*
 - c. Use formulas and amortization tables to solve problems about loans.
 - d. Use tables and formulas to solve problems about savings and annuities.
 - e. Calculate the interest paid on a credit card transaction.
 - f. Solve problems about inflation.*
 - g. Solve problems about income taxes.*
 3. Basic Statistics
 - a. Calculate mean, median, and mode, and choose the most representative number from among these.
 - b. Classify a data value as an outlier.
 - c. Calculate a five-number summary and use it to construct a box plot.
 - d. Calculate the standard deviation for a data set.
 - e. Interpret the standard deviation for a data set.
 - f. Construct a histogram.
 - g. Determine whether data are distributed normally.
 - h. Apply properties of the normal distribution, including calculating z-scores.
 - i. Calculate percentiles.
 - j. Interpret percentiles.
 - k. Apply the Central Limit Theorem.
 - l. Apply the terms "margin of error," "confidence interval," and "confidence level."
 - m. Calculate the sample size necessary for a particular confidence level.
 - n. Determine whether results are statistically significant.
 - o. Describe correlation and distinguish it from causation.
 4. Geometry
 - a. Calculate perimeters and areas of plane figures.
 - b. Solve problems involving the Pythagorean Theorem.*
 - c. Calculate surface areas and volumes of three-dimensional figures.
 - d. Apply properties of proportionality to similar figures.
 - e. Recognize rotational symmetry and reflectional symmetry.
 - f. Apply properties of rotational symmetry and reflectional symmetry.

Assessment of Academic Achievement:

All students will be required to complete a comprehensive final examination that assesses the learning of all course objectives. This exam must be weighted in a manner so that this exam score is worth a minimum of fifteen percent (15%) of the final course grade. All additional assessment of student achievement is left to instructor discretion.

General Course Requirements and Recommendations:

A scientific calculator is required of each student.

Credit for Prior College-Level Learning:	No
Course Satisfies MACRAO Requirements:	Yes
Course Satisfies MTA Requirements:	Yes
Effective Date:	01/01/2015

Division Approval Date: 04/11/2014

College Council Approval Date: 05/12/2014