COURSE INFORMATION FORM

Publish in college catalog? Yes ☑ No ☐

Course Title: Math in Society

Department/Course Number: MATH& 107

Effective Quarter: Winter 2018

Credits: 5 Variable: No ☑ Yes ☐ _____ - _____

Administrative Unit Code: GM
Department: Mathematics

Multiple Versions: No ☑ Yes ☐ _____ , _____ , _____

Maximum Class Size: 36

Long Course Description (for college catalog):

(Q,NS) College-level coverage of practical applications of mathematics methods to areas of management, social sciences, biology and other fields. Topics include discrete mathematics, graph theory, probability and statistics in everyday life. For students not preparing for calculus or the sciences.

Short Course Description (for class schedule): ***NOTE: Maximum of 240 characters***

College-level coverage of practical applications of mathematics methods to areas of management, social sciences, biology and other fields. For students not preparing for calculus or the sciences.

Prerequisites: Completion of MATH 086 or HSC 086 or TS 086 or MATH 092 or MATH 096 or MATH 098 or MATH 099 (or equivalent) with a grade of C (2.0) or higher; OR placement into MATH& 107 or higher, OR permission of a math instructor.

Co-requisites: none

Pass/Fail Option Available? Yes ☐ No ☑

Course Challenge Exam Available? Yes ☐ No ☑

Can course be repeated for credit? Yes ☐ No ☑

Number of repeats beyond initial enrollment: One ☐ Two ☐

Course Intent (*check all that apply)*:

☑ DTA Distribution/Skill
Quantitative Skills/
Area: Natural Science (Group C)

☐ DTA Elective *(check one only)*
- ☐ University Transfer List (A)
- ☐ Restricted Transfer (B/Gray area)

☐ Not allowable as an elective for DTA

☐ Fills requirement for _____ *(certificate/degree)*

☐ Other _____

Workload Information:

	Contact Hours		Percent of Load
Lecture	50	÷ 150 =	.333
Laboratory		÷ 200 =	
Science Lab		÷ 180 =	
Field Supervision		÷ 300 =	

Comments

Total: .333

Student Learning Objectives:

Upon successful completion of this course, students will be able to:

1. Recognize and compare proportional relationships.
2. Apply proportionality to solve contextual problems.
3. Calculate and compare simple and compound interest due on debt.
4. Use formulas to analyze return on investments, savings and CD's.
5. Calculate the number of outcomes in probability using the multiplication rule.
6. Distinguish between permutation and combination problems and calculate results.
7. Use the normal distribution to compute and apply probability.
8. Organize a random statistical sample.
9. Display data using histograms, box and scatter plots.
10. Compute and compare measures of central tendency and variance.
11. Use data to construct linear models of population growth.
12. Use linear models to predict populations and time horizons.
13. Use exponential growth/decay models to predict populations and time horizons.

Complete a minimum of two of the following:

14. Solve routing problems using graph theory.
15. Solve "Traveling Salesman" problems using graph theory.
16. Determine how different voting schemes relate to an election outcome.
17. Compare and contrast weighted voting systems.
18. Analyze and solve fair division problems.
19. Analyze and solve apportionment problems.
20. Use graphs and critical paths to solve scheduling problems.
21. Identify and create spanning trees and use them to find an optimal network.
22. Identify and distinguish among different types of symmetry.
23. Identify recursive replacement and self-similarity in fractals.
24. Use linear regression to make predictions.
25. Find optimal solutions using linear programming models.

Core Learning Outcomes	Introduced (I) or Assessed (A)?	If assessed, ho w is outcome measured?
CLO #1: Engage and take responsibility as active learners	I ☑ A ☐	
CLO #2: Think critically	I ☐ A ☑	Critical thinking in the mathematical context is assessed via the program-specific outcome described below.

Program Specific Outcomes	Introduced (I) or Assessed (A)	If assessed, how is outcome measured?
Interpret and manipulate Mathematical language	I ☐ A ☑	Assessed by evaluating student work using a common rubric on common test items that require students to read a word problem, identify and execute an appropriate solution strategy, using symbolic language. Each item also requires students to interpret the results in context.
Make connections between Mathematical concepts and real world problems	I ☐ A ☑	Assessed by evaluating student work on assignments and presentations that require designing mathematical solutions for real-world data sets and conditions.