Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

MAT 1440 - Excursions in Mathematics

Division: Science, Mathematics and Engineering

Department: Mathematics

Credit Hour Total: 3.0 **Lecture Hrs:** 3.0

Prerequisite(s): MAT 1270OR MAT 1340

Other Prerequisite(s): AND Other with a grade of C or better OR satisfactory score on the Sinclair Community College mathematics placement test.

Date Revised: January 2015

Course Description:

A mathematics appreciation course designed as a terminal college-level mathematics course for Liberal Arts majors. The course will explore various applications of mathematics in the behavioral, computational, managerial, and social sciences. Topics from probability and statistics, finance, graph theory, voting, and other areas of mathematics will be covered. Traditional testing (proctored or in Testing Center) is used in all on-line sections.

General Education Outcomes:

- Critical Thinking/Problem Solving Competency
- Values/Citizenship/Community Competency

Course Outcomes:

Voting Methods
Determine the outcome of an election using various voting methods: Plurality Method, Borda Count Method, Plurality-with-Elimination Method, and Method of Pairwise Comparisons; and then evaluate the fairness of each voting method using the Fairness Criteria as stated by Arrow's Impossibility Theorem

Assessment Method: Locally developed exams
Performance Criteria:

Score of 70% or better on exams

Data Organization and Analysis
Construct scatterplots, histograms and bar graphs to organize and present data; Compute measures of central tendency and variability; Compute simple probabilities; Compute z-scores for the normal distribution.

Assessment Method: Locally developed exams
Performance Criteria:

Score of 70% or better on exams

Graph Theory
Model relationships with graphs; find Euler paths/circuits and Hamiltonian paths/circuits.

Assessment Method: Locally developed exams
Performance Criteria:

Score of 70% or better on exams

Finance
Compute simple interest, compound interest and mortgage payments.

Assessment Method: Locally developed exams
Performance Criteria:

Score of 70% or better on exams

Outline:

Voting MethodsFairness Criteria and Arrow's Impossibility TheoremWeighted Voting MethodsApportionmentDescriptive StatisticsProbabilityInferential StatisticsSimple InterestCompound InterestConsumer DebEuler Graphs and CircuitsHamilton Paths and CircuitsNetworks and Trees