Course Outline

Course Number: MTH-111
Title: College Algebra
Date Approved: 5/16/2014

Credits: 5
Length of Course: 55
For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

Grading Method: A-F or Pass/No Pass
Prerequisites: MTH-095 with a C or better or placement in MTH-111
Co-requisites: None
Recommended: WRD-098 or placement in WR-121
Required: None
Related Instruction Area: Computation
Uses Library Resources: No

Department: Mathematics
Outline Developed by: Rhonda Hull
Course Approved as: Lower Division Collegiate

Course Description:
A transfer course designed for students preparing for trigonometry, statistics, or calculus. The focus is on the analysis of piecewise, polynomial, rational, exponential, logarithmic, power functions and their properties. These functions will be explored symbolically, numerically and graphically in real life applications and mathematical results will be analyzed and interpreted in the given context. The course will also include transformations, symmetry, composition, inverse functions, regression, the binomial theorem and an introduction to sequences and series.

Student Learning Outcomes:
Upon successful completion of this course, students should be able to:
1. compute the average rate of change,
2. describe how the average rate of change applies to a relative application,
3. compute the difference quotient and explain its application in real life,
4. identify properties of piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic functions;
5. evaluate and graph piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic functions;
6. solve equations involving piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic functions;
7. apply the solving of piecewise-defined, polynomial, rational, power, radical, exponential, and logarithmic equations within real life applications and effectively describe the results in the proper context;
8. analyze and describe differences in behaviors of different types of functions both graphically and numerically,
9. demonstrate the ability to use the appropriate regression model to answer real-life questions and make predictions when given a dataset,
10. apply transformations to functions,
11. demonstrate the ability to factor polynomial functions from a graphical perspective and write equations of polynomials given a graph,
12. determine the composition of functions and demonstrate the ability to use the composition function to answer questions pertaining to a real life application,
13. compute inverses of functions represented algebraically, graphically, and numerically; (MA1)
14. use proper notation to define and evaluate of sequences and series, (MA1) (MA2)
15. solve applications involving sequences and series, particularly financial applications; (MA1) (MA2)
16. apply Pascal’s Triangle and Binomial Theorem. (MA1)

Major Topic Outline:

1. Rates of change and difference quotient.
2. Piecewise-defined functions.
3. Transformations of functions.
5. Exponential and logarithmic functions.
6. Combination, composition, and inverse of functions.
7. Sequences, series, and the binomial theorem.
Outcomes addressed by the course:
'C' - this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
'S' - this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
'P' - this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

As a result of completing the AAOT/ASOT general education requirements students will be able to:

MA: Mathematics Outcomes

C  1. Use appropriate mathematics to solve problems.
C  2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.