NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
MTE 8 – RATIONAL EXPONENTS AND RADICALS (1 cr.)

Course Description

Includes simplifying radical expressions, using rational exponents, solving radical equations and solving applications using radical equations. Credit is not applicable toward graduation. Lecture 1 hour per week. 1 credit.

General Course Purpose

The purpose of this course is to develop competency necessary to succeed in 100-level math courses in solving applications using rational exponents and radical equations.

Course Prerequisites/Corequisites

Prerequisite: MTE 7 or qualifying placement score

Course Objectives

Upon completing the course, students will be able to:

8.1 Demonstrate the equivalence of radical and rational exponent forms.
- 8.1.1 Convert between square root and $a^{1/2}$ forms.
- 8.1.2 Convert between nth root and $a^{1/n}$ forms.
- 8.1.3 Convert between combinations of nth root and mth power and $a^{m/n}$ forms.

8.2 Compute and estimate radicals.
- 8.2.1 Calculate square roots via calculator.
- 8.2.2 Estimate square roots.
- 8.2.3 Calculate n^{th} roots via calculator.

8.3 Simplify radicals and radical expressions.
- 8.3.1 Simplify using the properties of rational exponents.
- 8.3.2 Simplify square roots.
- 8.3.3 Simplify n^{th} roots of variable expressions.
- 8.3.4 Simplify radicals by using the multiplication property of radicals.
- 8.3.5 Simplify radicals by using the division property of radicals.

8.4 Perform operations (add, subtract, multiply) on radicals and radical expressions.
- 8.4.1 Define like radicals.
- 8.4.2 Combine and simplify like radicals.
- 8.4.3 Multiply and simplify radicals.

8.5 Rationalize the denominator (one term and two terms).
- 8.5.1 Simplify radicals by rationalizing a denominator with one term.
- 8.5.2 Simplify radicals by rationalizing a denominator with two terms.

8.6 Solve radical equations.

8.7 Define the imaginary unit and imaginary numbers.
- 8.7.1 Define. $i = \sqrt{-1}$
- 8.7.2 Define imaginary numbers (e.g. $\sqrt{-25}$).

8.8 Simplify square roots of negative numbers using the imaginary unit.

8.9 Solve application problems involving radicals.
- 8.9.1 Solve problems involving right triangles.

8.9.2 Solve problems involving the Pythagorean Theorem.
8.9.3 Solve problems involving the distance formula.

Major Topics to be Included

8.1. Demonstrating the equivalence of radical and rational exponent forms.
8.2. Computing and estimating radicals.
8.3. Simplifying radicals and radical expressions.
8.4. Performing operations (add, subtract, multiply) on radicals and radical expressions.
8.5. Rationalizing the denominator (one term and two terms).
8.6. Solving radical equations.
8.7. Defining the imaginary unit and imaginary numbers.
8.8. Simplifying square roots of negative numbers using the imaginary unit.
8.9. Solving application problems involving radicals.