J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: MTE 7 **Credits:** 1

Course Title: Rational Expressions and Equations

Course Description: Includes simplifying rational algebraic expressions, solving rational algebraic equations, and solving applications that use rational algebraic equations. Credits not applicable toward graduation. Prerequisite: placement recommendation or MTE 6. Lecture 4 hours per week for ¼ semester.

General Course Purpose: This course is designed to give the student understanding and practice in simplifying and combining rational expressions, solving rational equations, and using rational equations in applications.

Course Prerequisites and Co-requisites:
Prerequisite: placement recommendation or MTE 6

Student Learning Outcomes:
Upon completing the course, the student will be able to
a. Identify the real values of the variable for which a rational algebraic expression having a linear or quadratic denominator is undefined;
b. Express a rational algebraic expression having negative exponents as an equivalent expression without negative exponents;
c. Simplify a rational algebraic expression;
d. Evaluate a rational algebraic expression given specific integral values for each variable;
e. Perform addition and subtraction of rational algebraic expressions having like denominators;
f. Find the Least Common Denominator (LCD) of two or more rational algebraic expressions;
g. Perform addition and subtraction of rational algebraic expressions with unlike denominators;
h. Multiply rational algebraic expressions and express the product in simplest terms;
i. Use factorization to divide rational algebraic expressions and express the quotient in simplest terms;
j. Simplify complex fractions;
k. Divide a polynomial by a monomial;
l. Perform polynomial long division having binomial divisors of the form $ax + b$;
m. Solve rational algebraic equations;
n. Write a rational equation to match the information given in an application problem; and
o. Solve an application problem using rational equations.

Major Topics to Be Included:
a. Rational algebraic expressions
b. Combination of rational algebraic expressions
c. Rational algebraic equations
d. Applications of rational algebraic equations

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