Des Moines Area Community College

Course Information – EFFECTIVE Aug. 2006

Acronym/Number MAT 773 **Historical Ref.** MATH 411

Title Applied Math II

Credit Breakout

3	3	0	0	0
(credit	lecture	lab	practicum	work experience)

PREREQUISITE(S): MAT 772 or equivalent

COURSE DESCRIPTION:
A course in algebra and trigonometry for technicians. Topics covered include polynomials, equations, systems of linear equations, factoring, quadratic equations, trigonometry, powers, roots, and logarithms.

COURSE COMPETENCIES:
During this course, the student will be expected to:

1. Perform fundamental algebraic operations with polynomials
   - 1.1 Find the sum of 2 polynomials.
   - 1.2 Find the difference of 2 polynomials.
   - 1.3 Find the product of 2 polynomials.
   - 1.4 Find the quotient of 2 polynomials.
   - 1.5 Use order of operations to evaluate expressions.
   - 1.6 Simplify an expression.
   - 1.7 Calculate the value of an expression with exponents.
   - 1.8 Calculate radicals involving perfect squares and other numbers.

2. Solve algebraic equations having variables in both members, parentheses, and fractions.
   - 2.1 Translate phrases and sentences written in words into algebraic form.
   - 2.2 Solve linear equations involving one step transformations using the addition property of equality.
   - 2.3 Solve linear equations including one step transformations using the multiplication property of equality.
   - 2.4 Solve linear equations involving two transformations.
   - 2.5 Solve linear equations for one variable in terms of other variables.
   - 2.6 Evaluate a literal equation given the other variables' values.
   - 2.7 Use an equation to solve a given word problem.

3. Solve linear systems by graphing, addition, and substitution.
   - 3.1 Plot a given ordered pair of numbers on a graph.
   - 3.2 Name the coordinates given a point on a graph.
   - 3.3 Determine ordered pairs which satisfy a given linear equation.
   - 3.4 Graph a linear equation on a coordinate plane.
   - 3.5 Recognize parallel, intersecting, and coinciding lines when given systems of 2

simultaneous equations.
3.6 Solve system of equations by graphing method.
3.7 Solve system of equations by elimination method.
3.8 Solve system of equations by substitution method.

4. Factor algebraic expressions including general trinomial.
4.1 Remove the greatest common monomial factor.
4.2 Factor a trinomial which is the product of 2 binomials.
4.3 Factor a binomial which is the difference of 2 squares.
4.4 Factor polynomials completely.

5. Solve quadratic equations by factoring, the quadratic formula, and graphing.
5.1 Use factoring to solve quadratic equations.
5.2 Use the quadratic formula to solve quadratic equations.
5.3 Use graphing to solve quadratic equations.
5.4 Write models for verbal problems that produce quadratic equations.
5.5 Solve models.

6. Use geometric concepts and formulas to solve problems.
6.1 Use the Pythagorean Theorem.
6.2 Use similarity in solving applied problems.
6.3 Demonstrate the relationships between central angles, arcs, and inscribed angles.
6.4 Explain the intersection of lines and circles.
6.5 Calculate the angles formed by circles and lines.
6.6 Calculate the measure of an angle in both degrees and radians.
6.7 Calculate the area and volume of plane figures.
6.8 Calculate the lateral surface area, total surface area, and volume of geometric solids (prisms, cylinders, pyramids, cones, and spheres).

7. Use trigonometric ratios to find sides and angles of right triangles.
7.1 Define the 6 basic trig ratios in relation to a right triangle.
7.2 Use trigonometric ratios to find angles of a right triangle.
7.3 Use trigonometric ratios to find sides of a right triangle.
7.4 Use trigonometric ratios to solve given applied problems.

8. Graph sine and cosine functions.
8.1 Define the components of a graph.
8.2 Graph the functions showing the components (amplitude, period, and phrase shift).

9. Solve oblique triangles.
9.1 Solve for missing parts of a triangle by Law of Sines.
9.2 Solve for missing parts of a triangle by Law of Cosines.
9.3 Show the ambiguous case involving Law of Sines.
9.4 Solve the ambiguous case.
9.5 Use trig area formula. (K=1/2 ab sin C)

COMPETENCIES REVIEWED AND APPROVED BY:

MAT 773

DATE: _____

FACULTY:
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6.

Effective date **January, 2005**

by: **Frank Trumpy**

Campus: **A** **B** **C** **U** **N** **W** **OC**

extension: **6388**

Revision(s): **6/93**