

# Des Moines Area Community College

## Course Information – EFFECTIVE Aug. 2006

Acronym/Number MAT 773

Historical Ref. MATH 411

Title Applied Math II

Credit Breakout	<u>3</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>
	(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

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- 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. ( $K = \frac{1}{2} ab \sin C$ )

**COMPETENCIES REVIEWED AND APPROVED BY:**

MAT 773

**DATE:** \_\_\_\_\_

**FACULTY:**

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Effective date January, 2005

by: Frank Trumpv

Campus: A B C U N W OC

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Revision(s): 6/93