



BROWARD COMMUNITY COLLEGE COURSE OUTLINE

LAST REVIEW: 2008-2009

NEXT REVIEW: 2013-2014

STATUS: A

COURSE TITLE: Engineering Technology Math II

COMMON COURSE NUMBER: MTB 1326

CREDIT HOURS: 4

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS:

(Voc. Course ONLY)

Lecture: **64**

Lab:

Clinic:

Other:

PREREQUISITE(S): MTB 1325 with a grade of C or better

COREQUISITE(S): None

PRE/COREQUISITE(S):

COURSE DESCRIPTION: This is the second course of a two term sequence designed for electronics and computer engineering technology students. Topics include systems of linear equations, factoring and fractions, roots and radicals, quadratic equations, complex numbers, exponentials and logarithms, trigonometry, analytical geometry and linear inequalities. Calculators will be used to solve problems after the basic principles have been mastered. Prerequisite: MTB 1325 with a grade of C or better.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

UNIT TITLES

1. Systems of Linear Equations
2. Factoring and Fractions
3. Roots and Radicals
4. Quadratic Equations
5. Complex Numbers
6. Exponentials and Logarithms
7. Trigonometry
8. Analytic Geometry
9. Linear Inequalities



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EVALUATION: Upon successful completion of this course, the students should be able to demonstrate the algebraic skills necessary in technology areas and the required skills necessary in trigonometry, logarithms, complex numbers and analytic geometry.

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills*:

Please highlight in **green** font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Write clearly and coherently	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: (highlight in green ALL that apply) (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

** General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*



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UNITS

Unit 1

General Outcome:

- 1.0 The students shall be able to solve linear equations.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 1.1 Solve systems of linear equations in two variables by graphing.
- 1.2 Solve systems of linear equations in two variables by elimination and substitution.
- 1.3 Solve systems of linear equations in three variables by elimination.
- 1.4 Solve systems of linear equations using determinants of orders two and three.
- 1.5 Solve word problems involving systems of linear equations.



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Unit 2

General Outcome:

- 2.0 The student shall be able to factor and reduce expressions and be able to add, subtract, multiply and divide algebraic fractions.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1 Recognize the product of a sum and difference.
- 2.2 Recognize the square of a binomial.
- 2.3 Factor the difference of two squares.
- 2.4 Factor the sum and difference of two cubes.
- 2.5 Reduce algebraic expressions containing fractions.
- 2.6 Multiply and divide algebraic fractions.
- 2.7 Add and subtract algebraic fractions.
- 2.8 Simplify complex fractions.
- 2.9 Solve word problems involving fractional equations.



Unit 3

General Outcome:

3.0 The students shall be able to simplify radical expressions.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 3.1 Find roots of given numbers.**
- 3.2 Simplify radicals.**
- 3.3 Add and subtract radicals.**
- 3.4 Multiply and divide radicals.**
- 3.5 Multiply binomials containing radicals.**
- 3.6 Solve radical equations.**
- 3.7 Solve word problems involving radical equations.**



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Unit 4

General Outcome:

4.0 The students shall be able to solve and graph quadratic equations.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 4.1 Solve quadratic equations by factoring.
- 4.2 Solve quadratic equations by completing the square.
- 4.3 Solve quadratic equations using the quadratic formula and determine the nature of zeros of a quadratic by using the discriminant.
- 4.4 Determine the vertex and axis of symmetry of conic sections and sketch their graphs.
- 4.5 Express and solve higher order equations that can be put in quadratic form.



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Unit 5

General Outcome:

5.0 The students shall be able to perform complex operations.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 5.1 Solve quadratic equations having solutions which are complex numbers.**
- 5.2 Add, multiply, subtract and divide complex numbers in rectangular form.**
- 5.3 Express complex numbers in polar, rectangular and exponential forms.**
- 5.4 Add, subtract, multiply and divide complex numbers in all forms.**
- 5.5 Solve applied problems involving complex numbers.**



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Unit 6

General Outcome:

- 6.0 The students shall be able to perform computations involving exponentials and logarithms.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 6.1 Define and graph exponential and logarithmic functions.
- 6.2 Express numbers, given in exponential form, in logarithmic form and vice versa.
- 6.3 Use a hand held calculator to compute logarithms and antilogarithms.
- 6.4 Use the properties of logarithms to simplify expressions and solve logarithmic and exponential equations.
- 6.5 Use logarithm and semi-logarithm graph paper.
- 6.6 Solve word problems involving the use of exponentials and logarithms.



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Unit 7

General Outcome:

7.0 The students shall be able to demonstrate required skills in trigonometry.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

7.1 Solve triangles using the Law of Sines and the Law of Cosines.

7.2 Graph functions of the form $y = a \sin (bx + 0)$, $Y = a \cos (bx + 0)$ and $y = a \tan (bx + 0)$.

7.3 Solve trigonometric identities.

7.4 Solve trigonometric equations.



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Unit 8

General Outcome:

8.0 The students shall be able to use and plot conic sections.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 8.1 Use the distance formula.
- 8.2 Recognize and plot the circle.
- 8.3 Recognize and plot the parabola.
- 8.4 Recognize and plot the ellipse.
- 8.5 Recognize and plot the hyperbola.



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Unit 9

General Outcome:

9.0 The students shall be able to solve and graph linear and quadratic inequalities in one and two variables.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the students shall be able to:

- 9.1 Define linear inequalities.**
- 9.2 Graph a linear inequality in one variable.**
- 9.3 Graph a quadratic inequality in one variable.**
- 9.4 Graph a linear inequality in two variables.**
- 9.5 Recognize a quadratic inequality in two variables.**