BROWARD COLLEGE
COURSE OUTLINE

Last Review: 08/01/2010 **Next Review:** 08/01/2015

COURSE TITLE: COLLEGE ALGEBRA

COMMON COURSE NUMBER: MAC1105

EFFECTIVE TERM:

CREDIT HOURS: 3

CONTACT HOUR BREAKDOWN
(per 16 week term)

Lecture: 48 Lab: 0
Clinic: 0 Other: 0

College Placement Testing Requirements

N/A

Prerequisite

None

Corequisite

None

Pre/Corequisite

None

COURSE DESCRIPTION: A college algebra course containing topics such as solving, graphing and applying linear and quadratic equations and inequalities; exponential and logarithmic properties; linear,quadratic, rational, absolute value, square root, cubic, and reciprocal functions operations, compositions, and inverses of functions; and systems of equations and inequalities, all with applications throughout the course. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course required.

MEETS THE FOLLOWING GENERAL EDUCATION REQUIREMENTS

AA and Baccalaureate Degrees, meets Area(s):	AA/Bac-Area 5: Mathematics
AS Degree, meets Area(s):	AS-Area 5: Mathematics
AAS Degree, meets Area(s):	AAS-Area 4: Mathematics/Science AAS-Area 5: Program-Designated Courses

UNIT TITLES

1. Selected Topics in Algebra
2. Equations and Inequalities
3. Relations, Functions, and Graphs
4. Exponential and Logarithmic Properties, Functions, and Equations
5. Systems of Linear Equations and Inequalities

EVALUATION:

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Portfolio	
Short Essay	
Research Project	
Group Projects	1.0, 2.0, 3.0, 4.0, 5.0
Discussion	

Multiple Choice Tests	1.0, 2.0, 3.0, 4.0, 5.0
Presentations	
Service Learning Projects	
Pop Quizzes	1.0, 2.0, 3.0, 4.0, 5.0
Take Home Tests	1.0, 2.0, 3.0, 4.0, 5.0
Summaries and Critiques	
Reaction Papers	
Surveys	
Performance	
Short Answer Tests	1.0, 2.0, 3.0, 4.0, 5.0
Class Room Debates and Colloquia	
Blog, Wikis, Webpages	
Other **Clickers: 1.0, 2.0, 3.0, 4.0, 5.0**	

GENERAL EDUCATION Competencies and Skills:

1. Read with critical comprehension.	2.3 , 3.8 , 4.6 , 5.3
2. Write clearly and coherently.	1.4 , 2.1 , 2.3 , 2.4 , 2.5 , 2.6 , 2.7 , 3.8 , 3.9 , 3.10 , 3.15 , 4.3 , 4.4 , 4.5 , 4.6 , 4.7 , 5.1 , 5.3
3. Demonstrate literacy as appropriate within a given discipline.	Quantitative: 1.0 , 2.0 , 3.0 , 4.0 , 5.0
4. Apply problem solving skills or methods to make informed decisions in a variety of contexts.	2.3 , 3.6 , 3.7 , 3.8 , 3.10 , 3.16 , 3.18 , 4.6 , 5.3
5. Differentiate between ethical and unethical behavior.	
6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.	2.3 , 3.6 , 3.7 , 3.8 , 3.16 , 4.6
7. Demonstrate an understanding of and appreciation for human diversities and commonalities.	
8. Speak and listen effectively.	

UNITS

Unit 1 **Selected Topics in Algebra**

General Outcome

1.0 **Work with algebraic concepts.**

Specific Learning Outcomes

1.1 **Perform operations on rational expressions including complex fractions.**
1.2 **Perform long division of polynomials.**
1.3 **Perform operations with complex numbers.**
1.4 **Graph linear inequalities in two variables.**

Unit 2 Equations and Inequalities

General Outcome

2.0 **Solve radical, rational, and quadratic equations. The students shall be able to solve radical, quadratic, and absolute value inequalities.**

Specific Learning Outcomes

2.1 **Solve quadratic equations in one variable by factoring, using the square root property, completing the square, and using the quadratic formula.**

2.2 **Analyze the discriminant to determine the nature of solutions.**

2.3 **Read and solve applied problems.**

2.4 **Solve rational equations, equations quadratic in form, and radical equations including, but not limited to, those requiring double-squaring.**

2.5 **Solve quadratic inequalities in one variable, graph the solution set, and express the solution set using interval notation.**

2.6 **Solve inequalities that involve absolute value in a single variable, graph the solution sets, and express the solution set using interval notation.**

2.7 **Solve inequalities that involve rational expressions, graph the solution sets, and express the solution set using interval notation.**

Unit 3 Relations, Functions, and Graphs

General Outcome

3.0 **Work with relations, functions, and their graphs.**

Specific Learning Outcomes

3.1 **Determine if a given relation is a function.**

3.2 **Evaluate a given function using function notation.**

3.3 **Determine the difference quotient.**

3.4 **Determine the domain and range of a relation or function.**

3.5 **Determine if a function is even or odd.**

3.6 **Determine the vertex and axis of symmetry of quadratic equations and sketch their graphs.**

3.7 **Determine x- and y- intercepts.**

3.8 **Read and solve maximum/minimum problems.**

3.9 **Graph quadratic, absolute value, square root, cubic functions, and the reciprocal function using symmetry, shifting, stretching, compressing, and/or reflecting.**

3.10 **Evaluate and graph piecewise-defined functions**.

3.11 **Add, subtract, multiply, and divide two functions.**

3.12 **Determine the compositions of two functions.**

3.13 **Determine if a function is one-to-one.**

3.14 **Determine the inverse of a one-to-one function.**

3.15 **Graph a function and its inverse.**

3.16 **Determine the type(s) of symmetry exhibited by a given relation.**

3.17 **Determine the center and radius of a circle and sketch its graph.**

3.18 **Use and apply the midpoint and distance formulas.**

Unit 4 Exponential and Logarithmic Properties, Functions, and Equations

General Outcome

4.0 **Slve and graph logarithmic equations/functions and exponential equations/functions.**

Specific Learning Outcomes

4.1 **Define exponential and logarithmic functions.**
4.2 **Convert a logarithmic equation to exponential form and vice-versa.**
4.3 **Simplify and evaluate expressions using the properties of logarithms, including change of base.**
4.4 **Solve exponential equations (same and different bases)**.
4.5 **Graph exponential and logarithmic functions using shifting, stretching, compressing, and reflecting.**
4.6 **Read and solve applied problems including, but not limited to, compound interest and exponential growth and decay.**
4.7 **Solve logarithmic equations.**

Unit 5 Systems of Linear Equations and Inequalities

General Outcome

5.0 **Solve systems of linear equations and inequalities.**

Specific Learning Outcomes

5.1 **Solve a linear system of equations in two and three variables using algebraic methods.**
5.2 **Classify a linear system of equations (in two and three variables) as consistent or inconsistent. If the system is consistent, determine whether the equations are dependent or independent.**
5.3 **Read and solve word problems by modeling them with systems of linear equations.**
5.4 **Solve a linear system of inequalities by graphing.**