



BROWARD COLLEGE COURSE OUTLINE

LAST REVIEW: 2010-2011

(i.e. 2006-2007)

NEXT REVIEW: 2015-2016

(i.e. 2011-2012)

STATUS: A

(A, I, D)

COURSE TITLE: College Algebra

COMMON COURSE NUMBER: MAC 1105

CREDIT HOURS: 3

CONTACT HOUR BREAKDOWN

(Per 16 week term)

CLOCK HOURS:

(Voc. Course ONLY)

Lecture: **48**

Lab:

Clinic:

Other:

PREREQUISITE(S): MAT 1033

COREQUISITE(S): None

PRE/COREQUISITE(S):

COURSE DESCRIPTION *(750 characters, maximum)*: 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. Meets Areas 4 or 5 of the general education requirement. Recommendation of the Mathematics Department or at least a grade of "C" in the prerequisite course required.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area 5

General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area 4

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area 4

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

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

GENERAL EDUCATION Competencies and Skills *:

In the box to the right of the Competency/Skill, enter all specific **student learning outcome** unit numbers, as indicated in the course outline (i.e. 1.1, 2.7, 4.2, 4.0 and 5.12) that apply.

Course must include <u>all</u> of the following:	
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
Course must include at least <u>one</u> of the following:	
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.	

**General Education Competencies and Skills endorsed by 2010-2011 General Education Task Force*

****Required Competencies**

1) Read with critical comprehension.

The student will be introduced to the basic texts, concepts, vocabulary, and methods necessary for developing an understanding of the discipline and meeting the required benchmarks as stated in the course outline.

2) Write clearly and coherently.

The student will demonstrate an understanding and mastery of subject matter in a variety of ways, including writing. Writing activities may include both graded and ungraded essays, short answer quizzes, summaries, reactions, journals, and various other reports.

3) Demonstrate and apply literacy across all the disciplines (indicate which ones apply).

- a) **Information literacy** means understanding how to locate needed information, using the appropriate technology for the task, managing and evaluating the extracted information and using it effectively and ethically.
- b) **Technology literacy** is the ability to responsibly and effectively use appropriate technology to access, manage, integrate, or create information, and/or use technology to accomplish a given task.
- c) **Workplace literacy** is having the appropriate knowledge and skills to communicate and work with others effectively and perform job duties, whether it is through the use of computers and/or other technology.
- d) **Cultural literacy** is recognizing, understanding, and appreciating the similarities and differences between one's own culture and the cultures of others through a study of the arts, customs, beliefs, values, and history that define a culture.
- e) **Quantitative literacy** is having the ability to formulate, solve and interpret mathematical/statistical operations and graphical/tabular representations to make informed decisions.
- f) **Scientific literacy** means understanding the methodology and application of the scientific process, the physical and biological worlds, and recognizing that scientific knowledge is continuously updated or revised as new information is discovered.

g) Environmental literacy is creating a context within which environmental issues can be viewed, imparting knowledge to enhance one's ability to analyze the issues, make the connections between humans' decisions and actions and the challenges facing the environment, and instilling the desire to sustain the environment through ethical practices in both one's professional and personal lives.

4. Apply problem-solving skills or methods to make informed decisions in a variety of contexts.

The student will use acquired skills or methods to recognize, analyze, adapt, and apply critical thinking to solve problems and make informed decisions.

EVALUATION:

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

1. Portfolio	
2. Short essays	
3. Research Papers	
4. Group projects	1.0, 2.0, 3.0, 4.0, 5.0
5. Discussions (In class and online)	
6. Multiple Choice tests	1.0, 2.0, 3.0, 4.0, 5.0
7. Presentations	
8. Service Learning Projects	
9. Quizzes (pop, announced, etc.)	1.0, 2.0, 3.0, 4.0, 5.0
10. Take-home tests	1.0, 2.0, 3.0, 4.0, 5.0
11. Summaries, critiques, and analyses	
12. Reaction papers	
13. Surveys	
14. Performance	
15. Short answer tests	1.0, 2.0, 3.0, 4.0, 5.0
16. Classroom debates and colloquia	
17. Blogs, wikis, web pages	
18. Other (Please explain) - Clickers	1.0, 2.0, 3.0, 4.0, 5.0

UNITS

Unit 1 Selected Topics in Algebra

General Outcome:

1.0 The student shall be able to work with algebraic concepts.

Specific Measurable Learning Outcomes:

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

- 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.**

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Unit 2

General Outcome:

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

Specific Measurable Learning Outcomes:

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

- 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

General Outcome:

3.0 The student shall be able to work with relations, functions, and their graphs.

Specific Measurable Learning Outcomes:

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

- 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.**

Common Course Number: MAC 1105

Unit 4

General Outcome:

- 4.0 The student shall be able to solve and graph logarithmic equations/functions and exponential equations/functions**

Specific Measurable Learning Outcomes:

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

- 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

General Outcome:

5.0 The student shall be able to solve systems of linear equations and inequalities.

Specific Measurable Learning Outcomes:

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

- 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.**