Crafton Hills College
Course Outline

1. Discipline: Mathematics

2. Department: Mathematics

3. Course Title: Intermediate Algebra part C

4. Course I.D.: MATH 095C

5. Prerequisite(s):
> MATH 095B: Intermediate Algebra Part B

Corequisite(s): None

Departmental Recommendation(s): None

6. Semester Units: 1.5

7. Minimum Semester Hours:

Lecture: 16   **Lab:** 24   **Clinical:** 0   **Field:** 0   **Independent:** 0

8. Need for the Course:
Success in any transfer-level mathematics course demands a knowledge of intermediate algebra. For this reason, CSU and other four-year institutions require that it be a minimum prerequisite to any mathematics course that is to be transferable and Crafton Hills has made the intermediate algebra level the minimum requirement for an AA degree. Many Crafton Hills students are unable to complete the traditional MATH 095 course even after repeating the course. MATH 095C, which is a lecture/lab course, addresses this need. MATH 095C offers the same material in a different format to address different learning styles, provides the support of a lab component and permits more flexibility in scheduling allowing more than one semester for the same material if needed. There is a significant amount of research which shows that more time with the same format does not help the student succeed. Thus a different type of format is required and provided by this course. This course is Associate Degree applicable and when MATH 095ABC are completed will meet the AA degree requirement as equivalent to MATH 095.

9. Goals for the Course:
MATH 095B provides the continuation of the material started in MATH 095A and MATH 095B part of the material of the traditional intermediate algebra course. This course is necessary for students to be successful in subsequent transferable mathematics courses. The alternative format is designed to address more varieties of learning styles and provide the student with a better chance of success. Combined with Math 095A and MATH 095B it is equal to MATH 095 which addresses part of the quantitative analysis portion of the General Education Philosophy and minimum AA mathematics competency requirement.

10. Catalog Description:
Study of operations with functions; distance and midpoint; introduction to exponential and logarithmic functions; graphs of the basic functions and their translations. MATH 095ABC is the equivalent to MATH 095. Credit cannot be granted for both MATH 095C and MATH 095. All three parts, MATH 095ABC are needed to meet the AA degree requirement.

11. Schedule Description:
Study of operations with functions; distance and midpoint; introduction to exponential and logarithmic functions; graphs of the basic functions and their translations. MATH 095ABC is the equivalent to MATH 095. Credit cannot be granted for both MATH 095C and MATH 095. All three parts, MATH

095ABC are needed to meet the AA degree requirement.

12. Entrance Skills:
A. Requisite Skills:
Upon entering this course, students must be able to:
1. Define, evaluate, and simplify polynomials
2. Solve linear and literal equations
3. Solve systems of linear equations in two variables including applications
4. Use linear equations of two variables to graph.
5. Solve and graph the solution to introductory level linear inequalities in one and two variables
6. Use set and interval notation.
7. Apply the laws of exponents to rational exponents and relate to radicals in order to translate exponential notation to radical notation and radical notation to exponential notation.
8. Apply the laws of exponents to rational exponents and relate to radicals in order to perform the four arithmetic operations.
9. Solve and graph compound first degree inequalities.

B. Recommended Skills:
None

13. Course Objectives:
Upon satisfactory completion of the course, students will be able to:
1. Use principles of analytical geometry to: Graph simple functions and relations with their translations, including symmetry and major features for basic cubics, absolute value, reciprocal functions stressing the use of asymptotes, parabolas, and circles centered at the origin. See attached file for examples of level of difficulty.
2. Apply the definition of relations, polynomial functions up to degree 3, and rational functions in order to: use function notation to evaluate functions, determine domain and range, perform the four arithmetic operations, compose functions, find inverses, determine if functions are even or odd.
3. Use principles of analytical geometry to: use the distance formula and mid-point formula.
4. Use the definition of logarithmic and exponential functions to translate from logarithmic to exponential and exponential to logarithmic forms of an equation. See atttachment for examples.
5. Use one and two variables to construct a variety of models that represent a wide range of hypothetical applications involving the above skills.
6. Write with and use proper mathematical notation for exercises within this course.

14. Representative Texts and Instructional Materials:
Gustafson, R., & Frisk, P. (2008). *Beginning and Intermediate Algebra an Integrated Approach* (5/e). Pacific Grove CA: Brooks/cole Thompson Learning.

Dugopolski, M. (2006). *Elementary & Intermediate Algebra* (2/e). New York NY: McGraw Hill.

Lial, M., Hornsby, J. & McGinnis, T. (2008). *Beginning and Intermediate Algebra: Graphs and Models* (3/e). San Francisco, CA: Addison Wesley.

Martin-Gay, K. Elayn (2005). *Beginning and Intermediate Algebra* (3/e). Upper Saddle River, NJ: Pearson/Prentice Hall.

Wright, F. (2004). *Intermediate Algebra* (5/e). Charleston,SC: Hawkes Learning Systems.

Video tapes and computer tutorial programs that cover the topics of this course are available in the Math Center, Learning Center and at the Reserve Desk in the library.

15. Course Content:
A. Applying the definition of relations and functions to
1. Use function notation to evaluate functions
2. Determine the domain and range
3. Perform the four arithmetic operations
4. Compose functions
5. Find inverses of functions

6. Determine if functions are even or odd
    B. Using the principles of analytical geometry to
        1. Apply the distance formula and the mid-point formula
        2. Graph simple functions and their translations using major features including symmetry
            for:
                a. Parabola
                b. Absolute value
                c. Cubic
                d. Inequalities (2 dimensional linear systems and parabolas)
                e. Reciprocal function with translations and stressing the use of asymptotes
        3. Circles
                a. Centered at the origin
                b. Introduction to translations involving completing the square
    C. Definition of logarithmic and exponential functions
        1. Translating from exponential form to logarithmic form and from logarithmic form to
            exponential form
        2. Introduction to graphing logarithms and exponential functions.
    D. Use of one and two variables to construct a variety of models that represent a wide range of
        hypothetical applications
    E. Writing with and use of proper mathematical notation.

16. Methods of Instruction:

    A. Lecture/Lab
    B. Guest Speakers
    C. Collaborative Group Work
    D. Computer-aided Instruction
    E. Reading Assignments
    F. Guided Instruction
    G. Class Activities
    H. Class Discussions
    I. Other: This course will combine lecture and lab activities to provide the student with alternative
        learning methods. It is important for any instructor teaching this course to keep the directed
        instruction to no more than 30% of the total hours per week. The lab portion of the course
        should consist of some combination of the following components: cooperative group interaction
        for working problems; reading assignments and activities from study skills texts or texts on
        ways to deal with math anxiety; computer tutorials component and/or other Math Center
        activities appropriate to the course. The lab component may incorporate individual sessions
        and /or group sessions. Developmental texts or software with diagnostic tests may be used to
        determine which topics warrant the most attention.

17. Assignments and Methods of Evaluation:

    Students will be required to do at least two hours of homework for each hour of lecture. Students will be directed
    to show their work and write using proper mathematical notation. Homework will consist of problems chosen from
    the textbook, supplemental materials, or computer software. Students may also be asked to complete computer
    enhanced assignments, quizzes or projects, participate in in-class demonstrations, and other classroom activities
    appropriate for laboratory activities. A minimum of three examinations including a comprehensive final exam will
    be given not all of which can be take home problems. The comprehensive final is to be written in such a manner
    that material from MATH 095A and MATH 095B is incorporated. The same or similar final to MATH 095 is
    suggested due to the equivalency of the courses.   Readings and activities pertaining to study skills, mathematics
    avoidance and anxiety will also be required. Materials illustrating the students growth using mathematics will be
    used to create a portfolio similar to the one started in MATH 095A&B .

    Comprehensive final exam 25%-40%

    Tests and quizzes 35%-70%

Mathematics portfolio 2%-5%

Homework 0%-10%

Projects and other activities 0%-10%

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