MATH M905S: SUPPORT FOR COLLEGE ALGEBRA

Originator
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College
Moorpark College

Discipline (CB01A)
MATH - Mathematics

Course Number (CB01B)
M905S

Course Title (CB02)
Support for College Algebra

Banner/Short Title
Support for College Algebra

Credit Type
Noncredit

Start Term
Fall 2023

Catalog Course Description
Provides review for topics necessary for success in College Algebra, including linear equations and inequalities, graphing, factoring, and rational expressions. Covers systems of linear equations, rational functions, rational exponents and radicals, complex numbers, quadratic equations, graphs of parabolas, functions, composition and inverse functions, exponential and logarithmic functions.

Additional Catalog Notes
This course requires concurrent enrollment in MATH M05.

Taxonomy of Programs (TOP) Code (CB03)
1702.00 - Mathematics Skills

Course Credit Status (CB04)
N (Noncredit)

Course Transfer Status (CB05) (select one only)
C (Not transferable)

Course Basic Skills Status (CB08)
B - The Course is a Basic Skills Course

SAM Priority Code (CB09)
E - Non-Occupational

Course Cooperative Work Experience Education Status (CB10)
N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)
L - Non-Enhanced Funding

Educational Assistance Class Instruction (Approved Special Class) (CB13)
N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)
Y - Not Applicable

Course Noncredit Category (CB22)
C - Elementary and Secondary Basic Skills

Funding Agency Category (CB23)
Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)
2 - Not Program Applicable

General Education Status (CB25)
Y - Not Applicable

Support Course Status (CB26)
S - Course is a support course

Special Characteristics Code Descriptor
LA - Learning Assistance (a form of supplemental instruction)

Field trips
Will not be required

Grading method
(P) Pass/No Pass Grading

Does this course require an instructional materials fee?
No

Repeatable for Credit
Yes
Number of times a student may enroll in this course
Unlimited

Maximum units a student may earn in this course
0

Units and Hours

Carnegie Unit Override
No

Total in-Class (full semester or term)
Total Minimum Contact/In-Class Hours (for full semester or term; not weekly)
35
Total Maximum Contact/In-Class Hours (for full semester or term; not weekly)
35

Total Student Learning

Total Student Learning
Total Minimum Student Learning Hours
35
Total Maximum Student Learning Hours
35

Student Learning Outcomes (CSLOs)

	Upon satisfactory completion of the course, students will be able to:
1	apply techniques for solving mathematical and application problems, such as finding the inverse of a one-to-one function.
2	compare and contrast methods of solution to mathematical problems, such as solving quadratic equations by more than one method.
3	describe and apply the algorithmic steps for obtaining the solution to a mathematical problem, such as solving logarithmic equations.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1	graph linear equations and test whether two lines are parallel, perpendicular, or neither.
2	write the equation of a line in point-slope form, slope-intercept form, and standard form.
3	factor polynomials including the sum and difference of cubes.
4	evaluate polynomial functions and solve polynomial equations by factoring and using the zero factor property.
5	simplify rational expressions, perform operations with rational expressions, simplify complex fractions, and determine the domain of a simple rational function.
6	divide by a polynomial using long division.
7	solve equations containing rational expressions and applications.
8	simplify rational exponent expressions using the properties of exponents and convert to radical notation.
9	put radical expressions into simplest radical form, perform operations with radicals, solve equations containing radical expressions, and determine domain of a simple radical function.
10	add, subtract, multiply and divide complex numbers.
11	solve quadratic equations by each of the following methods where applicable: factoring, the square root method, completing the square, and the quadratic formula.
12	solve equations that are in quadratic form and solve quadratic equations involving radicals and substitution.
13	solve non-linear inequalities in one variable.
14	describe the relationship between a function and its inverse geometrically and algebraically.
15	identify, describe, and simplify ratios and rates.
16	use geometric formulas to solve problems involving perimeter, circumference, and area.
17	set up a proportion and/or a percent equation to solve problems, including applications.

Course Content

Lecture/Course Content
10% A. Equations, Inequalities, and Problem Solving
 1. Linear equations and their applications in one variable
 2. Formulas and literal equations

15% B. Graphs and Functions
 1. Introduction to linear and non-linear functions
 2. Review of graphs of linear equations and slope
 3. Equations of linear functions

20.00% C. Integer Exponents, Polynomials, and Polynomial Functions
 1. Review of integer exponents, exponent rule, and conversions in scientific notation
 2. Review of polynomials and operations on polynomials

  3. Review of factoring
  4. Factoring sums and differences of two cubes
  5. Solving polynomial equations by factoring
  6. Evaluate polynomial functions

20% D. Rational Expressions
  1. Simplifying, adding, subtracting, multiplying, and dividing rational expressions
  2. Simplifying complex fractions
  3. Dividing polynomials using long division
  4. Solving rational equations and applications

20% E. Radicals, Rational Exponents, and Complex Numbers
  1. Radicals and radical functions
  2. Radical exponents
  3. Simplifying, adding, subtracting, and multiplying radical expressions
  4. Dividing radical expressions and rationalizing denominators
  5. Radical equations
  6. Complex numbers

15% F. Quadratic Equations and Functions
  1. Solving quadratic equations by the square root method, completing the square and the quadratic formula
  2. Solving equations that are quadratic in form
  3. Non-linear inequalities
  4. Rational inequalities (*optional)

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Written expression
Problem solving exercises
Skills demonstrations

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Other (specify)
Classroom Discussion
Participation

Other

Since this is a non-graded module, students receive credit for attendance to the full hours of the course.

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Class activities
Class discussions
Demonstrations
Distance Education
Instructor-guided interpretation and analysis
Instructor-guided use of technology
Lecture
Problem-solving examples
Other (specify)

Specify other method of instruction

All instructors will use best practices to provide an inclusive learning
environment that respects all forms of racial, ethnic, age, and gender
diversity, and provides for the individual needs of students of all learning
styles.

Describe specific examples of the methods the instructor will use:

Review material from previous topics as related to the current topic; provide detailed step-by-step examples.

Provide practice problems to develop proper mathematical skills and techniques.

Provide student interaction for questions and answers; group work to enhance student understanding of the concepts; and discuss application problems.

Representative Course Assignments

Writing Assignments
1. Homework problems where answers require a written explanation of the solution, such as solving a system of linear equations and identifying if the system is consistent or inconsistent, dependent or independent.
2. Graded assignments: in-class and/or homework assignments, such as factoring a trinomial whose leading coefficient is not equal to 1 requiring complete solutions using both written English and symbolic mathematical language.

Critical Thinking Assignments
1. Apply analytic techniques for solving mathematical and application problems, such as finding the inverse of a one-to-one function.
2. Describe and apply the algorithmic steps for obtaining the solution to a mathematical problem, such as solving logarithmic equations.
3. Compare and contrast methods of solution to mathematical problems, such as solving quadratic equations by more than one method.

Reading Assignments
1. Reading instructor created materials, such as a prepared handout describing the meaning of complex numbers.
2. Reading resource materials from the library or online concerning real-life applications of exponents and logarithms in economics and the sciences.

Skills Demonstrations
1. Demonstration of computational skills such as factoring or simplifying mathematical expressions.

2. Demonstration of understanding the meaning of an answer, such as interpreting the meaning of ratios and rates in an application problem.

Problem-Solving and Other Assignments (if applicable)
1. Describe and analyze the steps in solving a problem, such as identifying and labeling the several steps in a long division.
2. Demonstrate the proper use of a calculator in finding the numerical solution to an application problem involving exponents or logarithms, and expressing the answer with proper numerical rounding and proper labeling.

Outside Assignments

Representative Outside Assignments
1. Group or individual projects which require student collaboration including written mathematical answers on paper or on the board.
2. Graded assignments: in-class and/or homework assignments requiring complete solutions using both written English and symbolic mathematical language.
3. Additional problem sets provided by the instructor, such as practice exercises on simplifying expressions.

Textbooks and Lab Manuals
Resource Type
Textbook

Description
Young, Cynthia Y. *College Algebra.* 4th ed., Wiley, 2017.

Resource Type
Textbook

Description
Sullivan, Michael. *College Algebra.* 11th ed., Pearson, 2020.

Resource Type
Textbook

Description
Dugopolski, Mark. *College Algebra.* 6th ed., Pearson, 2015.

Resource Type
Textbook

Description
Blitzer, Robert F. *College Algebra: An Early Functions Approach.* 4th ed., Pearson, 2018.

Library Resources

Assignments requiring library resources
Use of textbooks on reserve. Use of computer stations available in the open access lab for any online assignments. Enrichment sources through the Library print and online resources for application problems, such as time, rate, motion examples.

Sufficient Library Resources exist
Yes

Example of Assignments Requiring Library Resources
Reading resource materials from the library concerning real-life applications of exponents and logarithms in economics and the sciences.

Distance Education Addendum

Definitions

Distance Education Modalities
Hybrid (1%–50% online)
Hybrid (51%–99% online)
100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.
Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.
Yes

Regular Effective/Substantive Contact

Hybrid (1%–50% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Use of student discussion boards to discuss concepts from the material, solutions to homework problems, general discussion of techniques in solving problems, study skills, or arranging study groups.
E-mail	Responding to student queries about material, grade information, course policies and procedures, scheduling and due dates, submitting homework assignments, or making general announcements to the class.
Face to Face (by student request; cannot be required)	Students requesting to speak to instructor in person for personal help on material, grade information, or discussion of policies and procedures.
Other DE (e.g., recorded lectures)	Posting of recorded lectures either by the instructor, recorded lessons available through campus resources, or use of public online resources available on the internet.

Synchronous Dialog (e.g., online chat)	Active live discussion with the instructor on material concepts, techniques for problem solving, feedback on solutions to problems, general chat on study skills, or answers to homework problems, quizzes or tests.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Use of student discussion boards to discuss concepts from the material, solutions to homework problems, general discussion of techniques in solving problems, study skills, or arranging study groups.
E-mail	Responding to student queries about material, grade information, course policies and procedures, scheduling and due dates, submitting homework assignments, or making general announcements to the class.
Face to Face (by student request; cannot be required)	Students requesting to speak to instructor in person for personal help on material, grade information, or discussion of policies and procedures.
Other DE (e.g., recorded lectures)	Posting of recorded lectures either by the instructor, recorded lessons available through campus resources, or use of public online resources available on the internet.
Synchronous Dialog (e.g., online chat)	Active live discussion with the instructor on material concepts, techniques for problem solving, feedback on solutions to problems, general chat on study skills, or answers to homework problems, quizzes or tests.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Use of student discussion boards to discuss concepts from the material, solutions to homework problems, general discussion of techniques in solving problems, study skills, or arranging study groups.
E-mail	Responding to student queries about material, grade information, course policies and procedures, scheduling and due dates, submitting homework assignments, or making general announcements to the class.
Other DE (e.g., recorded lectures)	Posting of recorded lectures either by the instructor, recorded lessons available through campus resources, or use of public online resources available on the internet.
Synchronous Dialog (e.g., online chat)	Active live discussion with the instructor on material concepts, techniques for problem solving, feedback on solutions to problems, general chat on study skills, or answers to homework problems, quizzes or tests.

Examinations

Hybrid (1%–50% online) Modality
On campus
Online

Hybrid (51%–99% online) Modality
On campus
Online

Primary Minimum Qualification
MATHEMATICS

Review and Approval Dates

Department Chair
10/12/2022

Dean
10/17/2022

Technical Review
10/20/2022

Curriculum Committee
11/01/2022

DTRW-I
MM/DD/YYYY

Curriculum Committee
MM/DD/YYYY

Board
MM/DD/YYYY

CCCCO
MM/DD/YYYY

Control Number
CCC000603784

DOE/accreditation approval date
MM/DD/YYYY