

MATHCE255 - College Preparation

Algebra

General Information

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Proposal Start:	Spring 2019
Distance Education Approved:	Yes
TOP Code:	4930.62
TOP Code Name:	Secondary Education (Grades 9-12) and G.E.D.
CIP Code:	53.0201
CIP Code Name:	High School Equivalence Certificate Program
SAM Code:	E = Non-Occupational
Course Control Number:	CCC000596210
Curriculum Committee Approval Date:	04/16/2018
Board of Trustees Approval Date:	06/11/2018
External Review Approval Date:	07/09/2018
Course Description:	This course includes an introduction to basic algebra concepts, properties of real numbers, factoring, exponents and radicals, solving and graphing linear equations, polynomials and rational algebraic expressions, and linear systems of equations, solving quadratic equations and applications. Open Entry/Open Exit.
Submission Rationale:	Mandatory Revision

Faculty Minimum Qualification Requirements

Master Discipline Preferred:	Mathematics-Basic Skills: Non-Credit
Alternate Master Discipline	No value

Preferred:

Bachelors or Associates Discipline Preferred: No value

Additional Bachelors or Associates Discipline: No value

Course Development Options

Course Basic Skill Status

Course is a basic skills course.

Grading Criteria

99

Grade Options

Letter Grade methods
 Other: Closed book 90-100% = A
 80-89% = B 70-79% = C 60-69% = D
 Below 60% = F Open book: 95-100% = A
 88-94% = B 80-87%=C 70-79%=D
 Below 70% = F
 Satisfactory Progress = SP: To be awarded "SP", a student must have a minimum of one (1) successfully completed assignment, with a grade equivalent to a "C" or above.
 No Pass = NP: A student who receives "NP" has been in attendance but does not have any successfully completed assignments, with a grade equivalent to a "C" or above.

Allow Students to Gain Credit by Exam/Challenge

Rationale For Credit By Exam/Challenge

No value

Retake Policy Description

CE - Continuing Education

Allow Students To Audit Course

Course Prior to College Level

Two levels below transfer,

Associated Programs

Associated Program

No value

Award Type

No value

Transferability & Gen. Ed. Options

Request for Transferability

Not transferable

Transferability Status

Not transferable

Noncredit

Summary

Minimum Units	-	Total Course In-Class (Contact) Hours	144	Total Student Learning Hours	144
Minimum Units	-	Total Course Out-of-Class Hours	-	Faculty Load	-

Detail

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	9	-
Lab Hours	-	-
Activity Hours	-	-

Course Student Hours

Course Duration (Weeks)	16
Hours per unit divisor	48
Course In-Class (Contact) Hours	
Lecture	144
Lab	-
Activity	-
Total	144
Course Out-of-Class Hours	
Lecture	-
Lab	-
Activity	-
Total	-

Noncredit - Weekly Specialty Hours

Units and Hours

Summary

Minimum Units	-	Total Course In-Class (Contact) Hours	-	Total Student Learning Hours	-
Minimum Units	-	Total Course Out-of-Class Hours	-	Faculty Load	-

Detail

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	-	-
Lab Hours	-	-
Activity Hours	-	-

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	-
Lab	-
Activity	-
Total	-
Course Out-of-Class Hours	
Lecture	-
Lab	-
Activity	-
Total	-

Units and Hours - Weekly Specialty Hours

Requisites

Advisory

HSMTH159 - Math Fundamentals 2

OR

Entrance Skills

Skill

Rational (Optional)

No value

No value

Limitations on Enrollment

Specifications

Methods of Instruction

Activity

Distance Education

Handouts

Individualized Instruction

Instructor-Prepared Materials

Lab

Lecture

Manipulatives (Math specific)

Mediated Learning

Rationale (Optional)

Outside-of-Class Assignments Only

- Complete worksheets
- Complete textbook and workbook assignments

- Take unit tests and quizzes

Methods of Evaluation
Rationale (Optional)

Computer Assignments

Departmental Final Exam

Exams/Tests

Final Exam

Group Projects

Quizzes

Worksheets

Class Participation

Class Performance

Class Work

Competency-based written and practical tests which demonstrate the students' ability to apply skills and concepts learned to minimum standards established by the instructor

Final Class Performance

Final Performance

Homework

Lab Activities/Exercises

Textbook Rationale

No value

Textbooks
Author**Title****Publisher****Date****ISBN**

No value

No value

No value

No value

No value

Learning Outcomes and Objectives

Course Objectives

- ✓ Apply basic vocabulary, operations with signed numbers, basic properties of exponents to integers and rational numbers
- ✓ Simplify algebraic expressions using order of operations
- ✓ Translate expressions from English to algebraic expressions
- ✓ Solve linear equations and inequalities by
 - ✓ Simplifying
 - ✓ Distributing
 - ✓ Using properties
- ✓ Apply methods of solving linear equations to appropriate applications
- ✓ Define and utilize basic vocabulary of the Cartesian Coordinate System
- ✓ Slope and intercepts
- ✓ Slope-Intercept form
- ✓ Point-slope form
- ✓ Plot (x,y) coordinates
- ✓ Graph a line using a table and the slope-intercept form, $y = mx + b$
- ✓ Determine the slope of a line given a graph, equation or two points
- ✓ Find intercepts given a graph or equation
- ✓ Graph linear equations with different methods
- ✓ Apply basic properties and definitions to simplify polynomial expressions with exponents
- ✓ Add, subtract, multiply and divide polynomial expressions using exponent properties
- ✓ Factor polynomials with two, three and four terms by applying the appropriate methods
- ✓ Recognize and factor out the greatest common factor from a polynomial expression
- ✓ Factor by grouping
- ✓ Factor the difference of two squares, sum and difference of cubes, perfect-square trinomials and general trinomials
- ✓ Apply factoring strategies to solve polynomial equations and appropriate applications
- ✓ Solve quadratic equations by factoring, square root property and completing the square
- ✓ Apply the quadratic formula to solve quadratic equations
- ✓ Apply solving strategies to solve appropriate applications with quadratic equations
- ✓ Simplify rational expressions
- ✓ Perform basic operations involving rational expressions
- ✓ Obtain undefined value(s) of rational expressions
- ✓ Apply factoring techniques to simplify rational expressions
- ✓ Determine the lowest common denominator of rational expressions and equations
- ✓ Solve rational equations and appropriate applications using the methods of solving rational equations
- ✓ Solve a system of two linear equations in two variables by applying the graphing, elimination by addition, and substitution methods
- ✓ Apply solving strategies to appropriate applications with two linear equations in two variables
- ✓ Simplify, add, subtract and multiply radicals
- ✓ Divide by using the quotient rule of radicals
- ✓ Rationalize the denominator
- ✓ Represent a given scenario using an appropriate algebraic equation(s)
- ✓ Solve and interpret results in context of a given scenario
- ✓ Review algebra concepts and algebraic operations and be advised about options for further study of mathematics

CSLOs

Identify an equation as linear, quadratic or rational and solve the equation using an appropriate method.

Expected SLO Performance:

Simplify and perform operations on polynomials, rational expressions, or radical expressions at an introductory level.

Expected SLO Performance:

Course Outline

Course Outline

Lecture		
Approx. Hours	Content	Objective
12.00	Basic concepts of arithmetic and algebra <ul style="list-style-type: none"> • Basic vocabulary • Operations of fractions • Operations with signed numbers • Order of operations • Basic properties of exponents 	<ul style="list-style-type: none"> • Apply basic vocabulary, operations with signed numbers, basic properties of exponents to integers and rational numbers • Simplify algebraic expressions using order of operations • Translate expressions from English to algebraic expressions
14.00	Methods to solving <ul style="list-style-type: none"> • Linear equations • Linear inequalities • Literal equations for a variable 	<ul style="list-style-type: none"> • Solve linear equations and inequalities by <ul style="list-style-type: none"> ◦ Simplifying ◦ Distributing ◦ Using properties • Apply methods of solving linear equations to appropriate applications
16.00	Coordinate geometry <ul style="list-style-type: none"> • Cartesian Coordinate System • Coordinate plane and points • Graphing linear equations • Slope and intercepts • Slope-Intercept form • Point-slope form 	<ul style="list-style-type: none"> • Define and utilize basic vocabulary of the Cartesian Coordinate System <ul style="list-style-type: none"> ◦ Slope and intercepts ◦ Slope-Intercept form ◦ Point-slope form • Plot (x,y) coordinates • Graph a line using a table and the slope-intercept form, $y = mx + b$ • Determine the slope of a line given a graph, equation or two points • Find intercepts given a graph or equation • Graph linear equations with different methods
14.00	Exponents and polynomials	<ul style="list-style-type: none"> • Apply basic properties and definitions to simplify

	<ul style="list-style-type: none"> • Basic vocabulary, properties, and definitions of exponents and polynomials • Basic operations <ul style="list-style-type: none"> ◦ Addition/Subtraction ◦ Multiply ◦ Divide 	<ul style="list-style-type: none"> • polynomial expressions with exponents • Add, subtract, multiply and divide polynomial expressions using exponent properties
16.00	<p>Factoring</p> <ul style="list-style-type: none"> • Greatest Common Factor (GCF) • Grouping • General trinomials • Perfect-square trinomials • Difference of two squares • Sum and difference of two cubes • Strategies to factoring polynomials 	<ul style="list-style-type: none"> • Factor polynomials with two, three and four terms by applying the appropriate methods • Recognize and factor out the greatest common factor from a polynomial expression • Factor by grouping • Factor the difference of two squares, sum and difference of cubes, perfect-square trinomials and general trinomials • Apply factoring strategies to solve polynomial equations and appropriate applications
13.00	<p>Quadratic equations</p> <ul style="list-style-type: none"> • Strategies to solving quadratic equations <ul style="list-style-type: none"> ◦ Square root property ◦ Completing the square ◦ Quadratic formula ◦ Factoring 	<ul style="list-style-type: none"> • Solve quadratic equations by factoring, square root property and completing the square • Apply the quadratic formula to solve quadratic equations • Apply solving strategies to solve appropriate applications with quadratic equations
17.00	<p>Rational expressions and equations</p> <ul style="list-style-type: none"> • Basic operations with rational expressions <ul style="list-style-type: none"> ◦ Simplifying ◦ Multiplying ◦ Dividing ◦ Adding and Subtracting • Methods to solving rational equations <ul style="list-style-type: none"> ◦ Proportions ◦ Lowest common denominator 	<ul style="list-style-type: none"> • Simplify rational expressions • Perform basic operations involving rational expressions • Obtain undefined value(s) of rational expressions • Apply factoring techniques to simplify rational expressions • Determine the lowest common denominator of rational expressions and equations • Solve rational equations and appropriate applications using the methods of solving rational equations
16.00	<p>Linear systems</p> <ul style="list-style-type: none"> • Strategies to solving systems of two linear equations in two variables <ul style="list-style-type: none"> ◦ Graphing ◦ Substitution ◦ Elimination by addition 	<ul style="list-style-type: none"> • Solve a system of two linear equations in two variables by applying the graphing, elimination by addition, and substitution methods • Apply solving strategies to appropriate applications with two linear equations in two variables

15.00	<p>Radicals</p> <ul style="list-style-type: none"> • Basic vocabulary for a radical expression <ul style="list-style-type: none"> ◦ Root/index ◦ Radicand ◦ Radical • Basic operations with radical expressions <ul style="list-style-type: none"> ◦ Simplifying ◦ Multiplying and dividing ◦ Rationalizing a denominator • Addition and subtraction 	<ul style="list-style-type: none"> • Simplify, add, subtract and multiply radicals • Divide by using the quotient rule of radicals • Rationalize the denominator
8.00	<p>Mathematical Modeling</p> <ul style="list-style-type: none"> • Distance • Mixture • Investment • Mark-up and Discount • Quadratic equations • Rational equations • Linear equation 	<ul style="list-style-type: none"> • Represent a given scenario using an appropriate algebraic equation(s) • Solve and interpret results in context of a given scenario
3.00	<p>Cumulative Review</p>	<ul style="list-style-type: none"> • Review algebra concepts and algebraic operations and be advised about options for further study of mathematics

Distance Education Addendum

1. Is the method of delivery 100%online or hybrid? Please select one.

100% Online

2. Title 5 (55204) states that “Any portion of a course conducted through distance education includes regular effective contact between instructor and students, through group or individual meetings, orientation and review sessions, supplemental seminar or study sessions, field trips, library workshops, telephone contact, correspondence, voice mail, e-mail, or other activities.” Describe/give examples of the methods of instruction which will be used in the hybrid/online course. Please include how the methods of instruction used in the traditional classroom will be modified and/or replaced in the hybrid/online classroom. How will these methods ensure that you will maintain regular effective contact with the students?

This online class includes a combination of on-campus and face-to-face meetings in which instructors provide personal contact, offer content explanations, and proctor quizzes and tests. The textbook and lab assignments will be delivered through an online Learning Management System (LMS), such as Canvas. Instructors may also deliver

online content to replicate ongoing traditional classroom interaction (i.e. instructor-student, student-student, student-instructor) in multiple formats (e.g. a combination of discussion boards, blogs, wikis; instructor-developed web lectures, converted PowerPoint presentations, digital video clips; graphics, digital animations; online reference resources; chats, e-mail, webinars; publisher-prepared online materials including CD/DVD support materials and textbook supplements; instructor blog/website; online libraries; and OER resources).

This distance education course will include regular effective contact. Instructors will regularly initiate interaction with students to determine that they are accessing and comprehending course material and that they are participating regularly in the activities in the course. This distance education course is considered a “virtual equivalent” of a face-to-face course. Therefore, the frequency of the contact will be at least the same as would be established in a regular, face-to-face course. At the very least, the number of instructor contact hours per week that would be available for face-to-face students will also be available, in asynchronous and/or synchronous mode, with students in the distance education format. Contact shall be distributed in a manner that will ensure that regular contact is maintained, given the nature of asynchronous instructional methodologies, over the course of a week and should occur as often as is appropriate for the course. A response time of 24-48 hours, Monday through Friday, is desirable but may vary based on course requirements and extenuating circumstances (such as holidays and weekends).

Instructors will maintain regular effective contact related to the course through a LMS such as Canvas; holding group and individual meetings; coordinating orientations, review sessions, supplemental seminars, or study lessons; and clearly establishing contact policies via text, e-mail, or other media options (e.g. video conferencing). Instructors may use announcements, discussion boards, wikis, blogs, or similar technology available at the time the course is offered. Instructors trained in the teaching of all High School subjects will design this interaction to be effective by being relevant to recent or upcoming content, to current events, or to information that students can use to relate the course content to other experiences. Using a wide variety of strategies will allow for student differences in contacting the instructor and/or other students. They will insure the lines of communication remain open between the instructor and the students. Instructors will provide regular feedback on assignments, which may be held during a 30-minute virtual meeting with each individual student. Every student will ask questions and have those questions addressed through a class discussion boards.

3. Describe how you will promote and monitor effective student-to-student contact.

Every class meeting will include student group activities in order to foster interaction in the target language and to develop oral communication skills in a small-group setting. Instructors will use discussion boards to facilitate class discussion, along with the possibility of using blogs, wikis, journals, etc., allowing student-to-student posts, which will provide further opportunities for students to interact in a virtual environment. Instructors will view these interactions regularly making constructive comments to assure the effectiveness of student-to-student contact.

4. Describe and give examples of how student learning will be evaluated.

Student learning will be evaluated by a combination of formative and summative assessments (e.g. homework assignments, quizzes, tests, online activities, and evaluations consistent with the Course Outline of Record). Students are expected to conduct two hours of outside study time for every one lecture hour as stated in the course outline of record. Opportunities for student self-assessment will be provided at the end of each learning module, as formative assessments. All final examinations will be given on-campus and proctored by the instructor or a designee. Typically, assignments will be submitted or completed online, but instructors may choose to have students submit them in-person during one of the required on-campus meetings.

5. List any special texts, equipment, or supplies needed for this course or sections of this course being offered through distance education.

Access to an up-to-date computer with Office Applications (MS Word, PowerPoint, Excel, OR Pages, Keynote, Numbers, OR Open Office equivalents) webcam, speakers and microphone, and reliable high-speed internet connection that is capable of supporting streaming video. Internet speed of 4Mbps download and 512kbps upload

or faster is recommended.

Students should have access to at least two Internet browsers (e.g., Mozilla Firefox, Safari, Google Chrome). Instructors might require the use of a particular browser. Students should have a "back-up" computer/plan in the event that their main computer experiences technological difficulties.

6. Describe the college resources that will be required by you and your students (facilities, technology, student support services) for this course.

Facilities: A mediated classroom for the required meetings on campus, including exams.

Technology: Computers, tablets, the Internet, and a LMS (such as Canvas).

Student Support Services: Students are not required to use any college resources, but should have access, as needed, to available online library services, counseling, tutoring, DSPS, and computer lab/learning center.

7. Section 55200 of title 5 states "In addition, instruction provided as distance education is subject to the requirements that may be imposed by the Americans with Disabilities Act (42 U.S.C. §12100 et seq.) and section 508 of the Rehabilitation Act of 1973, as amended, (29 U.S.C. §794d)." What technologies will you be using for instruction (video, flash, images, etc)? How will you ensure that instruction using these technologies is accessible to students with disabilities?

Online classes at Santiago Canyon College are designed to be welcoming, accessible, and usable by everyone, and have a variety of learning styles, have disabilities, or are new to online learning. The instructor of this online class will work with DSPS to ensure that all course materials are ADA Accessible before being offered to the public, such as documents being correctly formatted, images having alternate text descriptions, audio is transcribed, video is closed captioned, and third-party materials, such as publisher materials, websites, or shared student materials, are evaluated for accessibility and inaccessible elements are appropriately accommodated when needed.