El Camino College

DCC Approval Date: 10/17/18
Originator: Benjamin Mitchell

1. COURSE SPECIFICATIONS

1.1   Division: Mathematical Sciences
1.2   Department: Mathematics
1.3   Subject: Mathematics
1.4   Discipline(s): Mathematics
1.5   Course Information
    1.5.1   Title and Number: Mathematics 130S
    1.5.2   Descriptive Title: College Algebra Support
    1.5.3   Catalog Description:
    This course is designed to support students concurrently enrolled in College Algebra (Math 130). As needed, students review core skills and topics necessary to meet the College algebra student learning outcomes and objectives. Students explore strategies and habits used by successful independent learners. Topics reviewed in this support course may include: a review of the computational skills developed in intermediate algebra; operations on polynomial, rational, radical, exponential, and logarithmic expressions; functions and transformations of their graphs; solving equations and inequalities; and setting up and solving application problems.

    1.5.4   Prerequisite, Corequisite, Recommended Preparation, Enrollment Limitation (specify):

    Corequisite: Math 130

    Justification: This corequisite course is necessary to satisfy AB 705. Its intent is to strengthen and supplement the algebraic skills needed for success in Math 130. The implementation of this course will allow Math 130 classes to focus on and explore new topics in College Algebra to a greater extent rather than devote time in class to covering prerequisite topics.

    1.5.5   Grading Method: ☐Letter ☒ Pass/No Pass   ☐Both ☐No Grade
    1.5.6   Degree Status: ☐ Associate Degree Credit   ☒ Non-Degree Credit   ☐ Non-Credit

1.6   Course Units, Hours, and Offerings
    1.6.1   Credit Units: 1
    1.6.2   Hours Lecture: 1   Hours Laboratory: _____   Activity Lab: _____
    1.6.3   Maximum Semesters of Credit: 1   Maximum Credit Units: 1
    1.6.4   Course Length: Full Term: X   or Weeks:_____
    1.6.5   Class Size: 35
    1.6.6   Number of sections: Fall: _____ Spring: _____   Summer: _____   Winter: _____
    1.6.7   Total enrollment per year: _____
    1.6.8   Instructor Load: 6.67% WSCH/FTE Ratio: _____
    1.6.9   Apportionment: ☒ Daily/Weekly Census   ☐Positive Attendance ☐Distance Education
                ☐Independent Study   ☐Non-Credit
1.7   Transfer and General Education
    1.7.1   Proposed Transfer Articulation:
    1.7.2   Proposed GE Patterns
    El Camino College:

    CSU GE:
    IGETC:

2. PURPOSE OF COURSE

2.1   Course is designed for:

☐ Transfer
☐ Interdisciplinary
☐ Occupational (preparatory)
☐ Occupational (upgrade)
☒ Precollegiate Basic Skills
☐ Basic Skills (developmental)
☐ Other (explain): _____

2.2   How widespread and established is this course at post-secondary institutions?
☐ Course is well-established and widely offered at many post-secondary institutions.
☐ Course is not yet found in many (or an) other post-secondary institutions.
☐ Traditional as generally offered in corresponding community colleges and/or four-year institutions.
☒ Not Applicable – Not for Transfer.

2.3   Examples of parallel courses at both California Community Colleges and CSUs or UCs. List the institution, the title and number of the parallel course, and the number of units. For each parallel course, attach copies of the appropriate pages of that college's or university's catalog. If the course is proposed for transfer, lower division status must be evident in the CSU or UC courses.

These courses generally did not exist until mandated by AB 705. Two community colleges that are currently piloting the parallel courses are:

Cuyamaca College: Math 075, Intermediate Algebra for Math 175 (Intermediate Algebra for Math 175), 2 units.

Mount San Antonio College: Math 13, Essential Topics from Intermediate Algebra, 2 units.

Math 130S is a support course for Math 130; therefore, it is not for transfer to CSU or UC.

3. JUSTIFICATION FOR THE COURSE

3.1   Explain how the course relates to the mission and goals of the College:

It is the goal of El Camino Community College to meet the requirements of AB 705; this course has been created to do so.

3.2   Explain how the course strengthens and relates to existing curriculum:

This support course is a review of the core prerequisite skills needed to pass Math 130.

4. COURSE DEVELOPMENT INFORMATION
    4.1   The following have been consulted in the development of the course.
        4.1.1   Faculty: Mathematics Department
        4.1.2   Counselor(s): Ken Key
        4.1.3   Students:
        4.1.4   Advisory Committee(s):
        4.1.5   Other:
    4.2   Is the course similar to an existing course at El Camino College?
        If yes, identify the similar course(s) and explain why this proposed course should be part of the El Camino College curriculum.

        No.

        If the similar course exists in a different department, the proposed course must be submitted to that department for review. Record the comments below.

5. COURSE RESOURCE REQUIREMENTS
    5.1   Library/Media Resources have been reviewed and determined to be adequate. Indicate the Library/Media Resources personnel consulted and provide the date of the consultation:
        Claudia Stripe, November 13, 2018

    5.2   Is the present faculty and staff adequate to support the offering of the course?
        If no, specify proposed additions with anticipated cost and budget allocation.
        Yes.

    5.3   Are facilities for teaching the course available?
        If no, what plans have been made for accommodation?
        Yes.

    5.4   Are special equipment and/or supplies necessary for teaching the course?
        If yes, list, estimate cost, and provide budget allocation.
        No.

    5.5   Are other special resources necessary?
        If yes, list, estimate cost, and provide budget allocation.
        No.

6. METHODS FOR EVALUATING COUSE EFFECTIVENESS

        ☒ Faculty/department review
        ☐ Review of articulation agreement
        ☐ Student success/failure analysis
        ☐ Student surveys
        ☐ Review of advisory committee recommendations
        ☐ Review of industry needs and standards
        ☐ Review of entry-level job requirements
        ☐ Other (specify):

7. ACCOMODATIONS FOR STUDENTS WITH DISABILITIES AND INSTRUCTIONAL DELIVERY

In compliance with ECC Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973 - Sections 504 and 508, and the Americans with Disabilities Act, instructional delivery shall provide access, full inclusion, and effective communication for students with disabilities. Instructional delivery methods may include, but are not limited to, Braille/audiotape for print material, on-site interpreter/real-time transcription/live captioning for audio material, captioning for video material, alternative text for images, and captioning of audio information for electronic media materials (such as web and online).

EL CAMINO COLLEGE
COURSE OUTLINE OF RECORD

I. **GENERAL COURSE INFORMATION**

Course Title and Number: Mathematics 130S

Descriptive Title: College Algebra Support

Discipline: Mathematics

Division: Mathematical Sciences

Course Length: ☒Full Term ☐Other (specify):

Hours Lecture: 1 Hours Laboratory: 0 Course Units: 1

Grading Method: ☐ Letter ☒ Credit/No Credit ☐ Both ☐ No Grade

Course Type: ☐ Credit, Degree Applicable ☒ Credit, Not Degree Applicable ☐ Non-Credit

Transfer CSU: ☐ Yes Effective Date _____ ☐ Pending ☒ No

Transfer UC: ☐ Yes Approval Date _____ ☐ Pending ☒ No

Conditions of Enrollment: Corequisite Math 130

Catalog Description: This course is designed to support students concurrently enrolled in College Algebra (Math 130). As needed, students review core skills and topics necessary to meet the College algebra student learning outcomes and objectives. Students explore strategies and habits used by successful independent learners. Topics reviewed in this support course may include: a review of the computational skills developed in intermediate algebra; operations on polynomial, rational, radical, exponential, and logarithmic expressions; functions and transformations of their graphs; solving equations and inequalities; and setting up and solving application problems.

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES *List 3 student learning outcomes. Provide a short title for each. We have 4 learning outcomes for all our CM2 courses.*

1. Solve Nonlinear Inequalities*: Solve nonlinear inequalities and a variety of equations such as: polynomial, rational, radical, exponential, and logarithmic.

2. Solve Problems using Graphical Methods: Solve problems using graphical methods involving a variety of functions, such as: polynomial, rational, radical, exponential, and logarithmic.

3. Solve Problems Using Sequences and series: Solve problems using sequences and series.

4. Solve Application Problems: Solve college algebra level application problems and use technology.

B. COURSE OBJECTIVES List the major learning objectives for course. These must be stated in behaviorally measurable terms and demonstrate critical thinking skills.

Provide a representative assessment method for each from this list. If you select "other" give an explanation.

Essay Exam	Performance Exams	Objective Exams	Oral Exam	Quizzes
Reading Reports	Written Homework	Laboratory Reports	Fieldwork	Class Performance
Term or Other Papers	Multiple Choice	Completion	Other _____	

1.   Carry out numerical operations and manipulate algebraic expressions, including polynomial, rational, radical, exponential, and logarithmic expressions. (Objective Exams)

2.   Recognize functional relations in the form of graphs, data, or symbolic equations. (Written Homework)

3.   Solve equations using algebraic and graphical methods, including polynomial, radical, rational, exponential, and logarithmic equations. (Quizzes)

4.   Graph functions using transformations. (Objective Exams)

5. Solve linear, quadratic, and nonlinear inequalities (Quizzes)

6.   Use numerical, symbolic, and graphical methods to model and solve application problems. (Written Homework)

III. OUTLINE OF SUBJECT MATTER Topics should be detailed enough to enable a qualified instructor to

determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.

List hours as lecture or lab	Approx Time in Hours	Number each with a Roman numeral. I, II, III, etc.	Major Topics *Use outline format.* *A. List the Topic – Capitalize First Letter of All Words* *1. List Subtopics with Numerals*
Lecture	6	I	OPERATIONS AND MANIPULATIONS Concepts and skills as needed through just-in-time work to support: A. Operations on expressions including polynomial, rational, radical, exponential and logarithmic. B. Factoring polynomial expressions C. Operations on complex numbers D. Rational exponents
Lecture	6	II	FUNCTIONS AND GRAPHING Concepts and skills as needed through just-in-time work to support: A. Definition of function, domain, and range B. Functions represented as rules, sets of ordered pairs, algebraic equations, and graphs C. Composite, one-to-one, and inverse functions D. Determining a function based on a graph or sufficient data E. Graphing functions using transformations including translations and reflections
Lecture	6	III	EQUATIONS AND INEQUALITIES Concepts and skills as needed through just-in-time work to support: A. Algebraic and graphical methods for solving equations B. Solving quadratic, rational, radical, exponential, and logarithmic equations C. Finding domains by setting up and solving appropriate equations and inequalities D. Using interval notation E. Solving linear, quadratic, and nonlinear inequalities F. Systems of linear equations (2x2 and 3x3 systems) G. Applications of equations and inequalities
Total Lecture Hours	18		
Total Laboratory Hours			

Total Hours	18	

IV. PRIMARY METHODS OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION
Check the PRIMARY method of evaluation for this course.
- ☐ Substantial writing assignments
- ☒ Problem solving demonstrations (computational or non-computational)
- ☐ Skills demonstrations

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION

Find the domain of the function $f(x) = \frac{\sqrt{x-2}}{2x-8}$

C. COLLEGE LEVEL CRITICAL THINKING ASSIGNMENTS

1. Consider the function: $f(x) = 4 - \sqrt{x-2}$
   (a) What transformations of $y = \sqrt{x}$ lead to the graph of f(x)?
   (b) What are the y-intercepts, if any?
   (c) What are the x-intercepts, if any?
   (d) What are the domain and range?
   (e) Sketch the graph

2. Suppose that a person puts $1000 into a bank account that pays 5% interest per year compounded continuously.
   (a) Write down a model, A(t), that gives the amount of money in this account t years after the $1000 has been deposited.
   (b) Determine to two decimal places how much money will be in the account after 3 years.
   (c) Determine to two decimal places how long in years the person must wait for the account to reach $2000.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS: Select from this list. Use all that apply.

A. Check all planned instructional activities that apply:

☐ Class Performance	☒ Objective Exam
☐ Clinical Evaluation	☐ Oral Exams
☐ Completion	☒ Other Exams
☐ Embedded Questions	☐ Performance Exams
☐ Essay Exams	☐ Presentation
☐ Fieldwork	☒ Quizzes
☒ Homework Problems	☐ Reading Reports
☐ Journal kept throughout course	☐ Term or Other Papers
☐ Laboratory Reports	☐ True/False
☐ Matching Items	☒ Written Homework

☐ Multiple Choice ☐ Other (specify)

V. INSTRUCTIONAL METHODS: Select from this list. Use all that apply.

B. Check all planned instructional activities that apply:

☒ Lecture   ☒ Group Activities
☐ Lab   ☐ Role play/simulation
☒ Discussion   ☐ Guest Speakers
☐ Multimedia presentations ☐ Field trips
☒ Demonstration   ☐ Other (specify)

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instructional delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS: Select from this list. Use all that apply.
Two hours work outside of class are required for each hour of lecture or equivalent. Each student in this course will be required to participate in the following work outside of class time. Check all that apply.

☒ Study
☒ Answer questions
☒ Skill practice
☒ Required reading
☒ Problem solving activity
☒ Written work (such as essay/composition/report/analysis/research)
☐ Journal (done on a continuing basis throughout the semester)
☐ Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting)
☐ Course is lab only - minimum required hours satisfied by scheduled lab time
☐ Other (specify)

Estimated Study Hours Per Week: 2.0   This should be 2 hours for each hour of lecture.

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Intermediate Algebra, Tussy/Gustafson, 5th edition, Cengage Learning, 2013.
Intermediate Algebra: functions & authentic applications, Jay Lehmann, 5th edition, Pearson, 2015.

A. REQUIRED TEXTS (title, author, publisher, year)

B. REQUIRED SUPPLEMENTARY READINGS

C. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification
Math 130	Corequisite This corequisite course is necessary to satisfy AB 705. Its intent is to strengthen and supplement the algebraic skills needed for success in Math 130. The implementation of this course will allow Math 130 classes to focus on and explore new topics in College Algebra to a greater extent rather than devote time in class to covering prerequisite topics.

B. Requisite Skills

Requisite Skills
Math 130 Solve polynomial, rational, radical, exponential, and logarithmic equations, and solve formulas for a variable. Math 80 Solve problems involving a variety of function types, including linear, quadratic, polynomial, rational, radical, exponential, and logarithmic functions.

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation   **Category and Justification**

D. Recommended Skills

Recommended Skills

E. Enrollment Limitations

Enrollment Limitations and Category   **Enrollment Limitations Impact**

Course created by **Benjamin Mitchell**

BOARD APPROVAL DATE: (Leave Blank)

LAST BOARD APPROVAL DATE: Leave Blank)

Last Reviewed and/or Revised by: Benjamin Mitchell
Date: 10/17/2018