

MATH 011: MATH CONCEPTS FOR ELEMENTARY SCHOOL TEACHERS - NUMBER SYSTEMS

Originator

mflora

Co-Contributor(s)**Name(s)**

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Justification / Rationale

Adding the online modality and updating the course objectives and methods of instruction/assessment; lowering the maximum class size to enable more focused attention on individual and small groups of students, especially for lab work and student presentations.

Effective Term

Fall 2023

Credit Status

Credit - Degree Applicable

Subject

MATH - Mathematics

Course Number

011

Full Course Title

Math Concepts for Elementary School Teachers - Number Systems

Short Title

MATH ELEM TEACHERS

Discipline**Disciplines List**

Mathematics

ModalityFace-to-Face
100% Online
Hybrid**Catalog Description**

This course covers mathematical topics needed for elementary school teaching with a focus on quantitative reasoning, problem solving and communication. Topics include structure of the real number system, sets, numeration systems, computation algorithms, problem solving strategies, and elementary number theory. The course meets requirements for elementary school teacher certification. (C-ID MATH 120)

Note: All students now can enroll in this transfer-level course without completing posted prerequisites. Please refer to AB 705 (under How do I enroll in courses at COD?) or see a Counselor.

Schedule Description

This course focuses on the development of quantitative reasoning skills through in depth, integrated explorations of topics in mathematics, including real numbers systems and subsystems. Emphasis is on comprehension and analysis of mathematical concepts and applications of logical reasoning.

Prerequisite: MATH 45 or MATH 040 or completion of two years of High School Algebra

Advisory: MATH 030 or one year High School Geometry, ENG 061, & RDG 061

Lecture Units

3

Lecture Semester Hours

54

Lab Units

1

Lab Semester Hours

54

In-class Hours

108

Out-of-class Hours

108

Total Course Units

4

Total Semester Hours

216

Prerequisite Course(s)

MATH 45 or completion of two years of High School Algebra

Advisory: MATH 030 or one year High School Geometry, ENG 061, & RDG 061

Required Text and Other Instructional Materials**Resource Type**

Book

Open Educational Resource

No

Author

Musser, G., Burger, W., and Peterson, B.

Title

Mathematics for Elementary Teachers: A Contemporary Approach

Edition

10

City

New York

Publisher

John Wiley and Sons

Year

2013

College Level

Yes

Flesch-Kincaid Level

12

ISBN #

9781118457443

Resource Type

Book

Open Educational Resource

No

Author

Sowder, L., Sowder, J., Nickerson, S.

Title

Reconceptualizing Mathematics for Elementary School Teachers

Edition

3rd

Publisher

Macmillan

Year

2017

College Level

Yes

ISBN #

9781464193330

Resource Type

Web/Other

Open Educational Resource

Yes

Year

Miscellaneous

Description

Common Core Standards:

<https://www.nctm.org/ccssm/>

and

<https://www.cde.ca.gov/be/st/ss/documents/ccssmathstandarداug2013.pdf>

and

<https://www.cde.ca.gov/be/st/ss/vaprekindergarten.asp>

Resource Type

Web/Other

Open Educational Resource

No

Year

n/a

Description

LaunchPad may be used with Reconceptualizing Mathematics for Elementary School Teachers

For Text greater than five years old, list rationale:

Mathematics for Elementary Teachers: A Contemporary Approach is in its 10th edition and has not been updated since 2013. The content has not changed much since then, and would not affect the material in the textbook itself. More recent pedagogical research is covered in journal articles selected and supplied by the professor.

Class Size Maximum

28

Entrance Skills

Recognize that the key characteristic of a linear model is its constant rate of change. Recognize and create linear models in the form of tables, graphs, equations, and functions.

Requisite Course Objectives

MATH 045-Find the equation of a line and apply it to solve financial and social sciences problems involving constant rates of change.

MATH 045-Create a linear model in the form of a table, graph, or equation, including a line of best fit for a set of given points.

MATH 045-Recognize when a table, graph, or equation is linear and recognize when a scatterplot appears to show linear correlation and be able to describe this relationship and discuss how it does not necessarily reflect causation in written form.

MATH 045-Comprehend that the key characteristic of a linear model is its constant rate of change and interpret slope as a rate of change and relate slope to topics from social sciences.

Entrance Skills

Understand and use the language of algebra (such as variable, slope, and coefficient) and arithmetic (such as prime, factor, and multiple).

Requisite Course Objectives

RDG 061-Understand multiple word meanings, uses synonyms

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

MATH 045-Evaluate multivariate formulas useful in statistics and financial mathematics such as Max, Min, Arithmetic Mean, Median, Combinations, Permutations, and simple and compound interest formulas; know the mathematical and statistical symbols used in them; and become familiar with when each formula is applicable.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

Apply the operations on integers, non-integers represented as fractions, and non-integers represented as decimals. Understand and use the commutative, associative, distributive, identity, inverse, and zero properties of real numbers.

Requisite Course Objectives

MATH 045-Evaluate multivariate formulas useful in statistics and financial mathematics such as Max, Min, Arithmetic Mean, Median, Combinations, Permutations, and simple and compound interest formulas; know the mathematical and statistical symbols used in them; and become familiar with when each formula is applicable.

Entrance Skills

Interpret and create graphs in one- and two-dimensions that represent solution sets of equations and inequalities.

Requisite Course Objectives

MATH 045-Recognize when a table, graph, or equation is exponential and when a word problem can be modeled with an exponential function, including equations and graphs of functions similar to continuous probability distributions.

MATH 045-Graph systems of linear inequalities in two dimensions and find the coordinates of points of intersection, including application problems similar to examples from linear programming.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

MATH 045-Recognize when a table, graph, or equation is linear and recognize when a scatterplot appears to show linear correlation and be able to describe this relationship and discuss how it does not necessarily reflect causation in written form.

MATH 045-Create a linear model in the form of a table, graph, or equation, including a line of best fit for a set of given points.

MATH 045-Find the equation of a line and apply it to solve financial and social sciences problems involving constant rates of change.

Entrance Skills

Understand and use basic geometric terminology (e.g. right triangle, square, rectangle, perimeter, area, volume, and angle).

Requisite Course Objectives

RDG 061-Understand multiple word meanings, uses synonyms

MATH 030-Develop the practice of defining terms, thinking accurately, establishing conclusions through deductive reasoning, realizing:i.the importance of precise definitions in every body of knowledge;ii.how axioms and postulates of mathematics are necessary assumptions given without proof;iii.how propositions build on postulates and how basic propositions are used to prove more advanced propositions.

MATH 030-Apply the principles of deductive reasoning in geometry and its applications.

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

MATH 045-Create, manipulate, and analyze tables and charts including an introduction to writing basic formulas in spreadsheets, describing shapes of frequency distributions, reading histograms, and the advantages/disadvantages of a variety of diagrams such as Venn and Euler diagrams, pie/circle graphs, scatterplots, bar graphs, and time series.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

Solve application problems and simple number puzzles using arithmetic and algebraic models.

Requisite Course Objectives

RDG 061-Read a variety of texts fluently.

MATH 030-Develop the practice of defining terms, thinking accurately, establishing conclusions through deductive reasoning, realizing:i.the importance of precise definitions in every body of knowledge;ii.how axioms and postulates of mathematics are necessary assumptions given without proof;iii.how propositions build on postulates and how basic propositions are used to prove more advanced propositions.

MATH 030-Independently analyze and set up application problems, thus applying problem solving techniques to new situations. Also, anticipate and check proposed solutions.

MATH 045-Investigate and practice general problem solving strategies, including Polya's problem solving techniques, pattern analysis, inductive and deductive reasoning examples, and estimation techniques for predicting feasible answers and discovering errors.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

Recognize that a relation is a collection of ordered pairs and that a function is a relation that is a rule of assignment between independent and dependent variable. Recognize and use function notation.

Requisite Course Objectives

RDG 061-Understand multiple word meanings, uses synonyms

MATH 045-Understand the definitions one-to-one and inverse functions, including log functions, and observe them in applications from statistics and financial mathematics.

MATH 045-Apply functions to topics from social sciences and consumer mathematics, including ceiling and floor functions.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

Entrance Skills

Evaluate linear and non-linear functions. Create functions to model linear relationships.

Requisite Course Objectives

MATH 045-Evaluate root functions, including multivariate functions such as the standard deviation.

MATH 045-Evaluate multivariate formulas useful in statistics and financial mathematics such as Max, Min, Arithmetic Mean, Median, Combinations, Permutations, and simple and compound interest formulas; know the mathematical and statistical symbols used in them; and become familiar with when each formula is applicable.

MATH 045-Apply functions to topics from social sciences and consumer mathematics, including ceiling and floor functions.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

MATH 045-Recognize when a table, graph, or equation is linear and recognize when a scatterplot appears to show linear correlation and be able to describe this relationship and discuss how it does not necessarily reflect causation in written form.

MATH 045-Create a linear model in the form of a table, graph, or equation, including a line of best fit for a set of given points.

MATH 045-Find the equation of a line and apply it to solve financial and social sciences problems involving constant rates of change.

Entrance Skills

Use terminology concerning functions accurately. Construct the domain and range of a relation or function.

Requisite Course Objectives

RDG 061-Understand multiple word meanings, uses synonyms

MATH 030-Develop the practice of defining terms, thinking accurately, establishing conclusions through deductive reasoning, realizing:i.the importance of precise definitions in every body of knowledge;ii.how axioms and postulates of mathematics are necessary assumptions given without proof;iii.how propositions build on postulates and how basic propositions are used to prove more advanced propositions.

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

MATH 045-Understand the definitions one-to-one and inverse functions, including log functions, and observe them in applications from statistics and financial mathematics.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

Read and comprehend language about mathematics.

Requisite Course Objectives

RDG 061-Read a variety of texts fluently.

RDG 061-Understand multiple word meanings, uses synonyms

MATH 030-Develop the practice of defining terms, thinking accurately, establishing conclusions through deductive reasoning, realizing:i.the importance of precise definitions in every body of knowledge;ii.how axioms and postulates of mathematics are necessary assumptions given without proof;iii.how propositions build on postulates and how basic propositions are used to prove more advanced propositions.

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

MATH 045-Understand the definitions one-to-one and inverse functions, including log functions, and observe them in applications from statistics and financial mathematics.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

Communicate mathematical concepts from arithmetic and algebra orally and in writing.

Requisite Course Objectives

RDG 061-Write organized summaries reactions that capture main idea and supporting details.

MATH 030-Develop the practice of defining terms, thinking accurately, establishing conclusions through deductive reasoning, realizing:i.the importance of precise definitions in every body of knowledge;ii.how axioms and postulates of mathematics are necessary assumptions given without proof;iii.how propositions build on postulates and how basic propositions are used to prove more advanced propositions.

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

MATH 045-Understand the definitions one-to-one and inverse functions, including log functions, and observe them in applications from statistics and financial mathematics.

MATH 045-Understand the definition of a function including the use of function notation, arrow diagrams, graphs, and terminology such as domain, range, independent variables, and dependent variables.

ENG 061-Use theses to organize paragraphs into coherent analyses.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

ADVISORY SKILLS:

Demonstrate critical thinking skills when reading, composing and participating in class discussions.

Requisite Course Objectives

RDG 061-Write organized summaries reactions that capture main idea and supporting details.

RDG 061-Read a variety of texts fluently.

RDG 061-Understand multiple word meanings, uses synonyms

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

MATH 045-Investigate and practice general problem solving strategies, including Polya's problem solving techniques, pattern analysis, inductive and deductive reasoning examples, and estimation techniques for predicting feasible answers and discovering errors.

ENG 061-Use theses to organize paragraphs into coherent analyses.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

ADVISORY: Develop, organize and express ideas in both expository and research papers.

Requisite Course Objectives

RDG 061-Write organized summaries reactions that capture main idea and supporting details.

MATH 030-Communicate effectively with the instructor and mathematical community using proper terminology and correct notation.

ENG 061-Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.

ENG 061-Use theses to organize paragraphs into coherent analyses.

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

Entrance Skills

ADVISORY: Exhibit appropriate vocabulary and style.

Requisite Course Objectives

RDG 061-Write organized summaries reactions that capture main idea and supporting details.

RDG 061-Understand multiple word meanings, uses synonyms

ENG 061-Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.

ENG 061-Recognize features of style such as purpose, audience and tone integrate these elements into academic and professional writing.

Entrance Skills

Demonstrate independent study skills and learning habits.

Requisite Course Objectives

RDG 061-Read a variety of texts fluently.

MATH 030-Develop intellectual maturity beyond mere recitation and rote learning of the facts of geometry.

MATH 045-Investigate and practice general problem solving strategies, including Polya's problem solving techniques, pattern analysis, inductive and deductive reasoning examples, and estimation techniques for predicting feasible answers and discovering errors.

ENG 061-Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.

Entrance Skills

ADVISORY: Connect information gained from textbook readings and lectures to other disciplines.

Requisite Course Objectives

RDG 061-Write organized summaries reactions that capture main idea and supporting details.

RDG 061-Read a variety of texts fluently.

MATH 030-Develop intellectual maturity beyond mere recitation and rote learning of the facts of geometry.

ENG 061-Demonstrate the ability to use research skills including library resources such as books, periodicals, electronic databases and online resources such as the internet.

Course Content

1. Numeration systems
 - a. History
 - b. Hindu-Arabic numeration system
 - c. Place value systems (including non-base-ten systems) vs non-place value systems
2. Integers
 - a. Structure and basic properties
 - b. Computational algorithms and models
3. Basic number theory
 - a. Divisibility and divisibility tests
 - b. Prime and composite numbers
 - c. Prime factorization
 - d. Fundamental Theorem of Arithmetic
 - e. Least common multiple and greatest common divisor
4. Rational numbers
 - a. Structure and properties
 - b. Ratio and proportion
5. Real numbers

- a. Structure and basic properties
- b. Arithmetic operations
- c. Rational numbers and their fractional and decimal representations
- d. Irrational numbers
- e. Number line representation
6. Number Sense
 - a. Patterns
 - b. Problem solving
 - c. Communication
 - d. Connections
 - e. Modeling and/or the concept of a function or formula
 - f. Mathematical reasoning
 - g. Representation
7. National and state curriculum standards for elementary school math and implementation in the classroom.
8. Optional topics:
 - a. Basic set theory and logic
 - i. Set operations
 - ii. Venn Diagrams
 - iii. DeMorgan's Laws
 - iv. Truth tables and equivalent statements
 - v. Deductive reasoning
 - vi. Contradictions and tautologies
 - b. Algebraic concepts
 - i. Algebraic reasoning in elementary math lessons
 - ii. Generalized arithmetic
 - iii. Functions
 - iv. Graphing fundamentals (scale, axes, etc)
 - c. Geometry
 - i. 2-Dimensional geometric shapes
 - ii. Measurement of length, area, and volume
 - iii. English and Metric systems
 - iv. Coordinate geometry including distance, slope, equations in the coordinate plane, transformations, relations, and functions

Lab Content

1. Write story problems related to mathematics topics covered in lecture and reading at specified grade levels
2. Complete individual and group inquiry and investigations of concepts.
3. Complete contextualized assignments and manipulatives specific to elementary school pedagogy.
4. Participate in discussion of lecture material through discussion boards, presentations, and group projects to improve understanding of and communications skills involving mathematics.
5. Work on either paper or web-based worksheets to practice skills learned in lectures.
6. Solve logic puzzles, play games, and analyze principles individually and in groups.

Course Objectives

	Objectives
Objective 1	Describe the historically significant advancements in numeration systems including place value and bases.
Objective 2	Demonstrate comprehension of common arithmetic algorithms within alternate place value systems by performing and modeling calculations and explaining how the algorithms work and relate to fundamental properties of the operations.
Objective 3	Illustrate a variety of equivalent arithmetic algorithms and understand the advantages and disadvantages of applying equivalent algorithms in different circumstances.
Objective 4	Justify addition, subtraction, multiplication, and division properties on signed and unsigned integers.
Objective 5	Analyze the divisibility of numbers through the application of number theory.
Objective 6	Identify prime and composite natural numbers.
Objective 7	Express positive integers using prime factorizations and apply the Fundamental Theorem of Arithmetic.
Objective 8	Analyze least common multiples and greatest common divisors and their role in standard algorithms.

Objective 9	Analyze the structure and properties of the sets of integers, rational numbers, and real numbers.
Objective 10	Express rational numbers with both fraction and decimal representations.
Objective 11	Explore arithmetic algorithms for use with fractions and decimal representations of fractions and justify their equivalence.
Objective 12	Describe rational and irrational numbers and their differences, including their decimal representations.
Objective 13	Illustrate the use of a number line representation and plot both rational and irrational numbers using open number lines.
Objective 14	Demonstrate conceptual understanding of mathematical topics through the use of patterns, problem solving, communication, connections among multiple concepts, and modeling.
Objective 15	Describe state and national mathematics curriculum standards for pre-kindergarten through grade 6.
Objective 16	Explore how various tools and manipulatives are used in elementary school (pre-kindergarten through grade 6) classes.
Objective 17	Develop activities, problems, and/or lessons that could be used in elementary school (pre-kindergarten through grade 6) classes on a variety of topics including, but not limited to, the meanings of place values, operations on integers (signed and unsigned), divisibility, classification of numbers, number lines and manipulatives, and patterns.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:

Outcome 1	Analyze multiple problem-solving strategies for children learning mathematics up to grade 6.
Outcome 2	Analyze the structure of numbers (integers, rational numbers, and real numbers) and how they may be represented.
Outcome 3	Evaluate the equivalence of numeric algorithms and reasoning strategies, and explain the advantages and disadvantages of equivalent algorithms in different circumstances.
Outcome 4	Design mathematical problems, activities, and lessons for students in elementary school up to grade 6 that implement grade-appropriate curriculum standards.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Lecture	Lecture will be used for introduction and explanation of course topics.
Discussion	Discussion will be used to review, explore, analyze, and evaluate various methods of solution.
Technology-based instruction	Video presentations may be used to supplement lecture and/or provide examples of concepts and activities used in primary and elementary school classrooms.
Activity	Students will use problem-solving strategies individually and in groups to explore concepts covered in lecture and discuss their findings.
Laboratory	Labs will be used for student exploration (individually or in groups) of the topics of the course. They will write up summaries or otherwise exhibit the results of these labs.
Role Playing	Student will explore activities that may be used in primary and elementary school classes. They may do so while playing the role of elementary school teacher or of elementary school student.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Laboratory projects	Write-ups of activities related to mathematical concepts covered in lecture and elementary school pedagogy.	In Class Only
Written homework	Homework assigned from text, online, and/or by means of worksheets requiring at least six hours per week.	Out of Class Only
Mid-term and final evaluations	Students will be evaluated by a comprehensive final exam.	In Class Only

Tests/Quizzes/Examinations	Students will be evaluated by examinations and quizzes involving problems that require the application of studied principles and skills to new situations as well as problems that mimic those done on homework and in lab activities. They may have take-home components.	In and Out of Class
Student participation/contribution	Students will be evaluated by their participation in activities and classroom discussion. They may be required to turn in write-ups of these activities.	In Class Only
Laboratory projects	Student will demonstrate their mastery of the learning objectives and their ability to devise, organize and present complete solutions to problems by completing laboratory assignments.	In Class Only
College level or pre-collegiate essays	Students may be evaluated by writing summaries and analyses of mathematical and pedagogical concepts.	In and Out of Class

Assignments

Other In-class Assignments

1. Students will attend classroom lectures and take notes.
2. Students will participate in graded and non-graded activities and discussion groups to review, analyze, and evaluate various methods of solution used on homework and in for-credit lab activities.
3. Students will complete laboratory assignments using appropriate mathematical and pedagogical tools. These assignments may be individual and/ or group activities.
4. Students will analyze children's problem-solving strategies and write up and/or present their findings.
5. Students will take examinations and quizzes involving problems that apply studied principles to new situations.

Other Out-of-class Assignments

1. Students will read textbooks and journal articles, watch videos, locate material in math standards documents, and complete other supplementary research assignments.
2. Students will complete assigned homework such as problem sets (written or submitted through a course LMS or math courseware), pretests, projects, or take-home tests involving problems that require the application of studied principles and skills to new situations as well as problems that mimic those done on homework and in class.
3. Students will review their notes on course material and apply them to various assignments.
4. Students will review and edit summaries or other write-ups of lab investigations and other assignments started in class.

Grade Methods

Letter Grade Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %

100

On-campus %

0

What will you be doing in the face-to-face sections of your course that necessitates a hybrid delivery vs a fully online delivery?

Although the course can be offered entirely online, it may also be offered hybrid to take advantage of collaboration activities that are more suited to in-person interaction.

Examinations can be given in a controlled location.

Lab Courses

How will the lab component of your course be differentiated from the lecture component of the course?

Lab assignments involve more interaction. For example, they may require students collaborate with a classmate, utilize a tutoring resource, or interview someone who is not part of the course.

From the COR list, what activities are specified as lab, and how will those be monitored by the instructor?

Lab activities are discussions and assignments that involve solving problems or exploring concepts with other students, with people not part of the course, or under the guidance of the professor or instructional support assistant. Discussions and other assignments that are completed in Canvas are monitored and evaluated by the professor. Assignments that do not take place in Canvas are evaluated by the professor based on write-ups (which may include summaries and feedback from the participants). Anonymous and non-anonymous feedback opportunities will be available to students to allow the professor further monitor effectiveness and appropriateness of activities that take place somewhere other than on the course LMS.

How will you assess the online delivery of lab activities?

Reports and other forms of write-ups will be submitted on the course LMS for evaluation and feedback.

Instructional Materials and Resources**If you use any other technologies in addition to the college LMS, what other technologies will you use and how are you ensuring student data security?**

Depending on the textbook used, the professor may choose to use Macmillan Launchpad, WileyPLUS, or MyOpenMath. All of these are considered to be safe for use in education for both faculty and students. All can also be integrated with the college LMS (Canvas), which decreases the amount of times students will need to sign-in-and-out of accounts and open them up to data breaches.

If used, explain how specific materials and resources outside the LMS will be used to enhance student learning.

Professors who choose to use Macmillan Launchpad, WileyPLUS, or MyOpenMath do so in order to assign pre-written or instructor-created problems that are more complicated than those that can be created in Canvas while still receiving instantaneous feedback. Launchpad also includes the ability to assign the downloading of printable manipulatives or watching of videos (for example, demonstrations of how to use certain teaching tools) for credit without the need to require students take quizzes.

Effective Student/Faculty Contact**Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?****Within Course Management System:**

- Discussion forums with substantive instructor participation
- Online quizzes and examinations
- Private messages
- Regular virtual office hours
- Timely feedback and return of student work as specified in the syllabus
- Weekly announcements

External to Course Management System:

- Direct e-mail
- Posted audio/video (including YouTube, 3cm mediasolutions, etc.)
- Synchronous audio/video
- Telephone contact/voicemail

For hybrid courses:

- Scheduled Face-to-Face group or individual meetings

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.

Faculty will regularly contact students individually and as a group through Canvas messages and/or COD email. Students will also receive regular announcements with information about the course, COD as a whole, or other relevant information. In discussions and through other lab assignments, students will communicate with each other and their professor regularly and frequently.

If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.

Students may prefer to contact their professor via email or on the phone, which allows for an improved experience for those who communicate better in those contexts. The professor may direct students to access free supplemental resources as well.

Other Information**Comparable Transfer Course Information**

University System

CSU

Campus

CSU Los Angeles

Course Number

MATH 1100

Course Title

Foundations of the Real Number System for Elementary and Middle School Teachers

Catalog Year

2021-2022

Rationale

The course covers similar content and is articulated with C-ID MATH 120.

University System

CSU

Campus

CSU Dominguez Hills

Course Number

MATH 107

Course Title

Mathematics for Elementary School Teachers: Real Numbers

Catalog Year

2021-2022

Rationale

The course covers similar content and is articulated with C-ID MATH 120.

University System

CSU

Campus

CSU Chico

Course Number

MATH 110

Course Title

Concepts and Structure of Mathematics

Catalog Year

2021-2022

Rationale

The course covers similar content and is articulated with C-ID MATH 120.

University System

CSU

Campus

CSU Fresno

Course Number

MATH 10A/10AL

Course Title

Structure and Concepts in Mathematics I / Structure and Concepts in Mathematics I w/Support

Catalog Year

2021-2022

Rationale

The course covers similar content and is articulated with C-ID MATH 120.

COD GE

C4.B - Language and Rationality - Communication and Analytical Thinking

CSU GE

B4 - Mathematics

MIS Course Data**CIP Code**

27.0101 - Mathematics, General.

TOP Code

170100 - Mathematics, General

SAM Code

E - Non-Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Transferable to both UC and CSU

General Education Status

B = Mathematics/Quantitative Reasoning/Analytical Thinking

Support Course Status

N = Course is not a support course

C-ID

MATH 120

Allow Audit

Yes

Repeatability

No

Materials Fee

No

Additional Fees?

No

Approvals**Curriculum Committee Approval Date**

10/20/2022

Academic Senate Approval Date

10/27/2022

Board of Trustees Approval Date

12/16/2022

Chancellor's Office Approval Date

12/18/2022

Course Control Number

CCC000635056

Programs referencing this courseLiberal Arts: Math and Science AA Degree (<http://catalog.collegeofthedesert.eduundefined/?key=29>)Elementary Teacher Education AA-T Degree (<http://catalog.collegeofthedesert.eduundefined/?key=5>)