MATH-130: MATHEMATICAL CONCEPTS FOR ELEMENTARY SCHOOL TEACHERS-NUMBER SYSTEMS

Effective Term
Fall 2025

SECTION A - Course Data Elements

CB04 Credit Status
Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Mathematics (Master's Degree)	

Subject Code
MATH - Mathematics
Course Number
130

Department
Mathematics (MATH)

Division
Mathematics (MATH)

Full Course Title
Mathematical Concepts for Elementary School Teachers-Number Systems

Short Title
Concepts for Element. Teachers

CB03 TOP Code
1702.00 - Mathematics Skills

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
E - Non-Occupational

Rationale
This is a required course for the AA-T in Elementary Teacher Education.

SECTION B - Course Description

Catalog Course Description
This course emphasizes problem solving techniques and mathematical structure associated with numeration, set theory, elementary number theory, the real number system, ratio, proportion and patterns. Designed for prospective elementary teachers, this course includes activity-based explorations implementing the common core state curriculum standards.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit
No

Repeatability
Not Repeatable

Grading Options

Letter Grade or Pass/No Pass

Allow Audit

Yes

Requisites

Prerequisite(s)

Completion of Intermediate Algebra level content or equivalent or appropriate placement.

Requisite Justification

Requisite Description

Non-course Requisite

Level of Scrutiny

Required by 4-Year Institution

Explanation

As required on C-ID.

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00000

Lecture Hours

54.00

Outside of Class Hours

108

Total Contact Hours

54

Total Student Hours

162

Distance Education Approval

Is this course offered through Distance Education?

Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Analyze the structure and properties of rational and real number systems including their decimal representation and illustrate the use of a representation of these numbers including the number line model.

2.	Analyze multiple approaches to solving problems from elementary to advanced levels of mathematics, using concepts and tools from sets, logic, functions, number theory and patterns.
3.	Plan math activities for elementary aged children in line with course content and the Common Core standards.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Perform calculations with place value systems;
2.	Evaluate the equivalence of numeric algorithms and explain the advantages and disadvantages of equivalent algorithms in different circumstances;
3.	Apply algorithms from number theory to determine divisibility in a variety of settings;
4.	Analyze least common multiples and greatest common divisors and their role in standard algorithms;
5.	Explain the concept of rational numbers, using both ratio and decimal representations; analyze the arithmetic algorithms for these two representations; and justify their equivalence;
6.	Analyze the structure and properties of whole, rational, and real number systems; define the concept of rational and irrational numbers, including their decimal representation; and illustrate the use of a number line representation;
7.	Develop and reinforce conceptual understanding of mathematical topics through the use of patterns, problem solving, communication, connections, modeling, reasoning, and representation; and
8.	Develop activities and appropriate lesson plans implementing curriculum standards.

Course Content

1. Numeration systems: history, Hindu-Arabic numeration system, and place value systems;
2. Integers: structure and basic properties, computational algorithms;
3. Basic number theory: divisibility, prime and composite numbers, prime factorization, fundamental theorem of arithmetic, least common multiple and greatest common divisor;
4. Rational numbers: structure and properties, ratio and proportion;
5. Real numbers: structure and basic properties, arithmetic operations, rational and irrational numbers, decimal representation, number line representation;
6. Patterns, problem solving, communication, connections, modeling, reasoning, and representation; and
7. National and state curriculum standards for elementary school math including Common Core State Standards.

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Activity	Group activities in class
Discussion	In class discussion of Common Core standards and pedagogical methods
Lecture	In class lecture
Group Work	Collaboration on course topics

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
Discussion Boards
E-mail Communication
Video or Teleconferencing

Student-Initiated Online Contact Types

Discussions
Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Test that require mathematical problem solving and application of content, in addition to tests on mathematical teaching practices.
Projects	Develop curriculum activities for school aged children and work in small groups on projects and presentations.
Class Participation	Participation in class activities and projects.
Other	Additional assessment information: The Mathematics Department maintains a commitment to diverse teaching methods in courses emphasizing vital quantitative skills and qualitative reasoning ability. To that end, it is expected that sufficient formative assessments will be given to students that in frequency, length and rigor adequately assess both quantitative skills and qualitative reasoning.

Assignments

Reading Assignments

Example 1) Read the chapter on problem solving and complete the corresponding activities in the problem bank.

Example 2) Read the chapter on patterns and prepare to discuss together in class.

Writing Assignments

Write a lesson plan for first grade math students using a California Common Core standard.

Other Assignments

Other assignments as needed.

SECTION F - Textbooks and Instructional Materials

Material Type

Textbook

Author

Manes, Michelle

Title

Mathematics for Elementary Teachers

Publisher

Pressbooks

Year

2020

ISBN #

978-1-948027-04-5

Proposed General Education/Transfer Agreement

Do you wish to propose this course for a Local General Education Area?
No

Do you wish to propose this course for a CSU General Education Area?
No

Do you wish to propose this course for a UC Transferable Course Agreement (UC-TCA)?
No

Course Codes (Admin Only)

ASSIST Update
Yes

Local GE Approval Dates

Local GE Area	Approval Date
Local GE Area D2: Mathematics	Fall 2015

CSU GE Approval Dates

CSU GE Area	Approval Date
CSU GE Area B4: Mathematics/Quantitative Reasoning	Fall 2015

IGETC Approval Dates

IGETC Area	Approval Date
	N/A

C-ID Approval Dates

C-ID Descriptor	Approval Date
C-ID MATH 120	12/30/2015

CB00 State ID
CCC000567470

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

CB11 Course Classification Status
Y - Credit Course

CB13 Special Class Status
N - The Course is Not an Approved Special Class

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

CB24 Program Course Status
Program Applicable

Allow Pass/No Pass
Yes

Only Pass/No Pass
No

Reviewer Comments
Stacey Howard (showard) (Wed, 11 Oct 2023 03:23:00 GMT): Articulation Officer - Updated codes to reflect C-ID and GE approval dates and terms. IGETC N/A.