Continuing Education
1717 S. Chestnut Ave.
Fresno, CA 93702-4709
(800) 372-5505
https://ce.fresno.edu

MAT-919: Early Number Concepts

Independent Study Online Course Syllabus

Instructor: Sandra Frisby, EdD **Phone**: (559) 593-1038 **Email:** sandra.frisby@fresno.edu	**Number of Graduate Semester Units:** 3 Units **Target Audience:** Preschool-Early Grades **Course Access:** https://connect.fresno.edu

Course Description

MAT 919 Early Number Concepts is a standards-based methods course that offers Pre-School and Primary grade teachers a guide for designing a learning experience for their students which focuses on counting, comparing, and patterns. Students choose from over 100 activities that address students individually, in small learning groups, or with whole class experiences. The assignments may be completed with or without classroom student participation. Concrete, pictorial, and abstract experiences in early number concepts are designed to help students construct an understanding of numbers (number sense). Course assignments ask participants to identify specific Common Core State Standards addressed in their curriculum. The primary resources used in this course for standards are a combination of the Common Core State Standards in Mathematics and the NCTM (National Council of Teachers of Mathematics) Principles and Standards of Mathematics. Built into the course requirements, are several contacts between the course instructor and the student. Focused questions are addressed, and assistance is offered through these contacts between the instructor and student.

Note: Required book must be acquired separately.

Required Texts and Course Materials

Book: Richardson, K. (1999). *Developing Number Concepts Counting, Comparing, and Pattern*. Pearson Education, INC. https://www.amazon.com/Developing-Number-Concepts-Book-Comparing/dp/0769000584/ Save money and order a used book at: www.allbookstores.com

Note: Students are responsible for purchasing their own textbook, analyzing the content, and applying what they learned to the course assignments. You are welcome to purchase used, e-book, or new versions to save money. You can order the book directly from the publisher or from one of several discount aggregators (for example): https://amazon.com

Online Resources: Relevant online resources that support the course content and encourage further investigation will be available throughout the course assignments. Active hyperlinks are utilized throughout the course and will link to the appropriate information when clicked. These include videos, podcasts, worksheets, online activities, journal articles and other resources.

Canvas: This course will be delivered totally online. Canvas is a web-based learning management system (LMS) that provides students access to online resources, documents, videos, assignments, quizzes, forums, etc. Canvas is easy to learn and has a user-friendly interface.

Course Dates

Self-paced; students may enroll at any time and take up to one year, from the date of registration, to complete assignments. Students may complete assignments in no less than three weeks for a 3-unit course (one week per unit).

State Preschool Standards/Foundations

Preschool teachers/students are asked to make connections to state standards in mathematics. The California Preschool Foundations are provided on Canvas for students who are employed in states that do not have state standards in mathematics for preschool. Or go to: http://www.cde.ca.gov/sp/cd/re/documents/preschoollf.pdf to access the CA Preschool Learning Foundations standards in a full version.

CALIFORNIA PRESCHOOL LEARNING FOUNDATIONS addressed in this course include:

NUMBER SENSE	**NUMBER SENSE**
At around 48 months of age	*At around 60 months of age*
1.0 Children begin to understand numbers and quantities in their everyday environment.	**1.0 Children expand their understanding of numbers and quantities in their everyday environment.**
1.1 Recite numbers in order to ten with increasing accuracy.	1.1 Recite numbers in order to twenty with increasing accuracy.
1.2 Begin to recognize and name a few written numerals.	1.2 Recognize and know the name of some written numerals.
1.3 Identify, without counting, the number of objects in a collection of up to three objects.	1.3 Identify, without counting, the number of objects in a collection of up to four objects.
1.4 Count up to five objects, using one-to-one correspondence (one object for each number word) with increasing accuracy.	1.4 Count up to ten objects, using one-to-one correspondence (one object for each number word) with increasing accuracy.
1.5 Use the number name of the last object counted to answer the question, “How many?”	1.5 Understand, when counting, that the number name of the last object counted represents the total number of objects in the group (i.e., cardinality).
2.0 Children begin to understand number relationships and operations in their everyday environment.	**2.0 Children expand their understanding of number relationships and operations in their everyday environment.**
2.1 Compare visually (with or without counting) two groups of objects that are obviously equal or non-equal and communicate, “more” or “same.”*	2.1 Compare, by counting or matching, two groups of up to five objects and communicate, “more,” “same as,” or “fewer” (or “less”).*
2.2 Understand that adding to (or taking away) one or more objects from a group will	2.2 Understand that adding one or taking away one changes the number in a small group of objects by exactly one.

increase (or decrease) the number of objects in the group.	
2.3 Understand that putting two groups of objects together will make a bigger group.	2.3 Understand that putting two groups of objects together will make a bigger group and that a group of objects can be taken apart into smaller groups.
2.4 Solve simple addition and subtraction problems nonverbally (and often verbally) with a very small number of objects (sums up to 4 or 5).	2.4 Solve simple addition and subtraction problems with a small number of objects (sums up to 10), usually by counting.
ALGEBRA AND FUNCTIONS (Classifying and Patterning)	**ALGEBRA AND FUNCTIONS (Classifying and Patterning)**
1.0 Children begin to sort and classify objects in their everyday environment.	**1.0 Children expand their understanding of sorting and classifying objects in their everyday environment.**
1.1 Sort and classify objects by *one* attribute into two or more groups, with increasing accuracy.	1.1 Sort and classify objects by *one or more* attributes, into two or more groups, with increasing accuracy (e.g., may sort first by one attribute and then by another attribute).
2.0 Children begin to recognize simple, repeating patterns.	**2.0 Children expand their understanding of simple, repeating patterns.**
2.1 Begin to identify or recognize a simple repeating pattern.	2.1 Recognize and duplicate simple repeating patterns.
2.2 Attempt to create a simple repeating pattern or participate in making one.	2.2 Begin to extend and create simple repeating patterns.
MATHEMATICAL REASONING	**MATHEMATICAL REASONING**
1.0 Children use mathematical thinking to solve problems that arise in their everyday environment.	**1.0 Children expand the use of mathematical thinking to solve problems that arise in their everyday environment.**
1.1 Begin to apply simple mathematical strategies to solve problems in their environment.	1.1 Identify and apply a variety of mathematical strategies to solve problems in their environment.

National Standards: COMMON CORE STATE STANDARDS IN MATHEMATICS – Kindergarten/First grade

Assignments contained in this course are closely aligned to the Common Core State Standards in Mathematics, and National and State Content Standards in Mathematics, for Kindergarten and First Grade. Go to: https://www.nctm.org/ccssm/ to see if your state has adopted the Common Core State Standards. If your state has not adopted these standards, use the National Council of Teachers of Mathematics (NCTM) found at: http://www.nctm.org \

Kindergarten and First Grade teachers/students will make connections to activities included in this course to the following standards:

Common Core State Standards in Mathematics - Kindergarten

Students will make connections to activities included in this course to the standards in the following Domains:

- *Counting and Cardinality (K.CC)*

- *Operations and Algebraic Thinking (K.OA)*
- *Number and Operations in Base Ten (K.NBT)*
- *Measurement and Data (K,MD)*
- *Mathematical Practices*

Common Core State Standards in Mathematics – First Grade

Students will make connections to activities included in this course to the standards in the following Domains:

- *Operations and Algebraic Thinking (1.OA)*
- *Number and Operations in Base Ten (1.NBT)*
- *Mathematical Practices*

Also applied are the **National Professional Teaching Standards** found at: http://www.nbpts.org. The following five areas are addressed throughout the course materials. Students are asked to apply these standards in their teaching practices.

1. Teachers are committed to students and their learning.
2. Teachers know the subjects they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.
4. Teachers think systematically about their practice and learn from experiences.
5. Teachers are members of learning communities.

Course Student Learning Outcomes (C-SLO)

Student Learning Outcomes for This Course By the end of this course student will be able to:		**Assignments C-SLO are Measured**	**National Standards Addressed***	**CE-SLO Addressed****
C-SLO 1	Students will identify, reflect on, and apply Preschool Standards, or Common Core State Standards in the areas of Number Sense, Algebra and Functions, and Mathematical Reasoning for the grade level they are teaching.	*Assignments 3, 5, 6, 7, 8 and 10*	***CA Preschool Learning Foundations.*** Number Sense 1.0-2.4 Algebra & Functions 1.0-2.2 Mathematical Reasoning 1.0-1.1 ***Common Core State Standards Kindergarten*** • Counting and Cardinality (K.CC) • Operations and Algebraic	CE -SLO 2, 3, and 6

			Thinking (K.OA) • Number and Operations in Base Ten (K.NBT) • Measurement and Data (K,MD) • Mathematical Practices ***First Grade*** Operations and Algebraic Thinking (1.OA) Number and Operations in Base Ten (1.NBT) Mathematical Practices	
C-SLO 2	Students will apply Best Practices and National Professional Teaching standards, through developmentally appropriate teaching strategies in their classroom.	*Assignments 4, 5, 6, 7, 8, 9, and 10*	***National Professional Teaching Standards*** Standards 1-5	CE-SLO-2, 3,4,5 and 6
C-SLO 3	Students will apply critical thinking skills and create opportunities for their classroom students to apply critical thinking skills.	*Assignments 1, 2, 4, 5, 6, 8, 10 and 11*	***CA Preschool Learning Foundations.*** Mathematical Reasoning 1.0-1.1 ***Common Core State Standards Kindergarten*** • Mathematical Practices ***First Grade*** Mathematical Practices	CE-SLO 4
C-SLO 4	Students will reflect on their teaching.	*Assignment 1,2,4,5,6,7,8 9,10, and 11*	***National Professional Teaching Standards*** Standards 1-5	CE -SLO 1,3 and 5

Continuing Education Student Learning Outcomes (CE-SLO)

CE-SLO 1	Demonstrate proficient written communication by articulating a clear focus, synthesizing arguments, and utilizing standard formats in order to inform and persuade others, and present information applicable to targeted use.
CE-SLO 2	Demonstrate comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
CE-SLO 3	Reflect on their personal and professional growth and provide evidence of how such reflection is utilized to manage personal and professional improvement.
CE-SLO 4	Apply critical thinking competencies by generating probing questions, recognizing underlying assumptions, interpreting and evaluating relevant information, and applying their understandings to the professional setting.
CE-SLO 5	Reflect on values that inspire high standards of professional and ethical behavior as they pursue excellence in applying new learning to their chosen field.
CE-SLO 6	Identify information needed in order to fully understand a topic or task, organize that information, identify the best sources of information for a given enquiry, locate and critically evaluate sources, and accurately and effectively share that information.

Topics, Assignments, and Activities

Module Title	Module Assignments and Activities	Points Possible
Welcome Module	• Welcome Video • Course Syllabus • Introduce Yourself Forum	 5 pts
Module 1: Standards, Best Practices and Early Number Concepts	• 1.1 Instructor Contact #1 • 1.2 Read and Reflect-Course Text-Pedagogy • 1.3 Connecting to the Standards-Pedagogy • 1.4 Reviewing Best Practices • 1.5 Sharing Best Practices & Early Number Concepts • 1.6 Forum Reflecting on Learning	25 pts 25 pts 25 pts 25 pts 50 pts 25 pts
Module 2: Classroom Application: Number Sense	• 2.1 Read, Reflect, and Plan • 2.2 Classroom Application • 2.3 Instructor Contact #2	25 pts 50 pts 25 pts
Module 3: Classroom Project Application: Center-Patterning	• 3.1 Read and Reflect Classroom Application: Centers: Patterning • 3.2 Forum-Sharing Center Plans	75 pts 30 pts

Module 4: Assessment	• 4.1 Review, Read, Reflect, and Apply Lessons	50 pts
Module 5: Reflecting on Learning	• 5.1 Professional Application • 5.2 Application to the National Board for Professional Teaching Standards • 5.3 Sharing What You Think • 5.4 Instructor Contact #3	75 pts 50 pts 50 pts 25 pts
Course Wrap-up – Grading and Evaluation	• Final Reflection Forum • Course Evaluation • Course Completion Checklist • Grade Request / Transcript Request	
	TOTAL POINTS	**635 points**

Grading Policies, Rubrics, and Requirements for Assignments

Grading Policies

- Assignments will be graded per criteria presented in the course rubrics.
- A = 90-100% and B = 80-89%, (anything below 80% will not receive credit.)
- The discernment between an A or a B letter grade is at the discretion of the instructor based on the quality of work submitted (see course rubrics).
- Coursework falling below a B grade will be returned with further instructions.
- All assignments must be completed to receive a grade and are expected to reflect the quality that teacher-training institutions require of professional educators. If completed assignments do not meet this standard, students will be notified with further instructions from the instructor.

Grading Rubrics

Grade	Percent	Description	Rubric
A	90-100%	Excellent	Meets all course / assignment requirements with significant evidence of subject mastery and demonstration of excellent graduate level professional development scholarship.
B	80-89%	Very Good	Adequately meets criteria for all course/assignment requirements - demonstrates subject competency with very good graduate level professional development scholarship.
NC	Below 80%	Unacceptable	Does not meet the minimum criteria for all course/assignment requirements and demonstrated little, if any, evidence of acceptable graduate level professional development scholarship.

Writing Requirements

- **Superior:** Writing is clear, succinct, and reflects graduate level expectations. Clearly addresses all parts of the writing task. Maintains a consistent point of view and organizational structure. Includes relevant facts, details, and explanations.
- **Standard:** Writing is acceptable with very few mistakes in grammar and spelling. Addresses most parts of the writing task. Maintains a mostly consistent point of view and organizational structure. Includes mostly relevant facts, details, and explanations.

- **Sub-standard:** Writing contains noticeable mistakes in grammar and spelling. Does not address all parts of the writing task. Lacks a consistent point of view and organizational structure. May include marginally relevant facts, details, and explanations.

Lesson Plan Requirements

- **Superior:** Instructional goals and objectives clearly stated. Instructional strategies appropriate for learning outcome(s). Method for assessing student learning and evaluating instruction is clearly delineated and authentic. All materials necessary for student and teacher to complete lesson clearly listed.
- **Standard:** Instructional goals and objectives are stated but are not easy to understand. Some instructional strategies are appropriate for learning outcome(s). Method for assessing student learning and evaluating instruction is present. Most materials necessary for student and teacher to complete lesson are listed.
- **Sub-standard:** Instructional goals and objectives are not stated. Learners cannot tell what is expected of them. Instructional strategies are missing, or strategies used are inappropriate. Method for assessing student learning and evaluating instruction is missing. Materials necessary for student and teacher to complete lesson are missing.

Instructor/Student Contact Information

Throughout the course participants will be communicating with the instructor and their classmates on a regular basis using asynchronous posting forums. Students are provided with instructor contact information in the event they want to make email or phone contact. In addition, students are encouraged to email or phone the instructor at any time. Students will also receive feedback on the required assignments as they are submitted.

Forums

Participation is an important expectation of this course and all online courses. Online forums promote reflection and analysis while allowing students to appreciate and evaluate positions that others express. Forum postings are open to be viewed by all students in the course, so do not post sensitive or personal information about your students. While students may not be engaging with the same students throughout this course, they will be expected to offer comments, questions, and replies to the forum questions whenever possible. The faculty role in the forums is that of an observer and facilitator.

Coursework Hours

Based on the Carnegie Unit standard, a unit of graduate credit measures academic credit based on the number of hours the student is engaged in learning. This includes all time spent on the course: reading the textbook, watching videos, listening to audio lessons, researching topics, writing papers, creating projects, developing lesson plans, posting to discussion boards, etc. Coursework offered for FPU Continuing Education graduate credit adheres to 45 hours per semester unit for the 900-level courses. Therefore, a student will spend approximately 135 hours on a typical 3-unit course.

Services for Students with Disabilities

Students with disabilities are eligible for reasonable accommodations in their academic work in all classes. In order to receive assistance, the student with a disability must provide the Academic

Support Center with documentation, which describes the specific disability. The documentation must be from a qualified professional in the area of the disability (i.e. psychologist, physician or educational diagnostician). Students with disabilities should contact the Academic Support Center to discuss academic and other needs as soon as they are diagnosed with a disability. Once documentation is on file, arrangements for reasonable accommodations can be made. For more information and for downloadable forms, please go to https://www.fresno.edu/students/academic-support/services-students-disabilities.

Plagiarism and Academic Honesty

All people participating in the educational process at Fresno Pacific University are expected to pursue honesty and integrity in all aspects of their academic work. Academic dishonesty, including plagiarism, will be handled per the procedures set forth in the Fresno Pacific University Catalogue and Handbook - https://handbook.fresno.edu/graduate/academic-policies

Technology Requirements

To successfully complete the course requirements, course participants will need Internet access, can send and receive email, know how to manage simple files in a word processing program, and have a basic understanding of the Internet. Please remember that the instructor is not able to offer technical support. If you need technical support, please contact your Internet Service Provider.

Getting Help with Canvas: If you need help with Canvas, please contact the FPU Help Desk by phone: (559) 453-3410 or email: helpdesk@fresno.edu. Help is available Mon-Fri 8:00 am to 7:00 pm.

Final Course Grade and Transcripts

When all work for the course has been completed, students will need to logon to the Continuing Education website (https://ce.fresno.edu/my-account) and "Request Final Grade". Once the instructor receives the requests and submits the grade online, students may log back in to view their Final Grade Report or order transcripts online. Please allow at least two weeks for the final grade to be posted. For more information, see the Continuing Education Policies and Procedures at https://ce.fresno.edu/ce-policies-and-procedures.

University Policies and Procedures

Students are responsible for becoming familiar with the information presented in the Academic Catalog and for knowing and observing all policies and procedures related to their participation in the university community. A summary of university policies may be found on the university website at https://www.fresno.edu/students/registrars-office/academic-catalogs.

Fresno Pacific University Student Learning Outcomes (FPU-SLO)

FPU-SLO 1	**Student Learning Outcomes Oral Communication:** Students will *exhibit* clear, engaging, and confident oral communication – in both individual and group settings – and will critically *evaluate* content and delivery components.

FPU-SLO 2	**Written Communication:** Students will *demonstrate* proficient written communication by *articulating* a clear focus, *synthesizing* arguments, and utilizing standard formats in order to *inform* and *persuade* others.
FPU-SLO 3	**Content Knowledge:** Students will *demonstrate* comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
FPU-SLO 4	**Reflection**: Students will *reflect* on their personal and professional growth and *provide evidence* of how such reflection is utilized to manage personal and vocational improvement.
FPU-SLO 5	**Critical Thinking:** Students will *apply* critical thinking competencies by *generating* probing questions, *recognizing* underlying assumptions, *interpreting* and *evaluating* relevant information, and *applying* their understandings to new situations.
FPU-SLO 6	**Moral Reasoning:** Students will *identify* and *apply* moral reasoning and ethical decision-making skills, and *articulate* the norms and principles underlying a Christian worldview.
FPU-SLO 7	**Service**: Students will *demonstrate* service and reconciliation as a way of leadership.
FPU-SLO 8	**Cultural and Global Perspective:** Students will *identify* personal, cultural, and global perspectives and will employ these perspectives to *evaluate* complex systems.
FPU-SLO 9	**Quantitative Reasoning**: Students will accurately *compute* calculations and symbolic operations and *explain* their use in a field of study.
FPU-SLO 10	**Information Literacy:** Students will *identify* information needed in order to fully understand a topic or task, *explain* how that information is organized, *identify* the best sources of information for a given enquiry, *locate* and critically *evaluate* sources, and accurately and effectively *share* that information.