

MAT 907: Organize Learning Environments for Math

Independent Study Online Course Syllabus

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Number of Graduate Semester Units: 3 units
Target Audience: Preschool, TK, K-1st grade teachers
Course Access: <https://connect.fresno.edu>

Course Description

Organizing the Learning Environment for Math is designed to offer Preschool, Kindergarten, Transitional Kindergarten, and first grade teachers a guide for designing a learning environment that they can adapt to their own classroom needs. Creating a learning environment that supports the development of understanding math concepts for young learners is critical. If lessons are developed to encourage and promote understanding, children will learn that mathematics makes sense and is applicable to their everyday needs. This course is designed to help teachers establish a classroom that is supportive of an active, meaning-based approach to the teaching and learning of mathematics. The primary resources used in this course for standards are a combination of the Common Core State Standards in Mathematics; the NCTM (National Council of Teachers of Mathematics) Principles and Standards of Mathematics; and the California Preschool Foundations. Focused questions are addressed, and assistance is offered through these contacts between the instructor and student.

Over 100 math focused tasks directly tied to specific content standards are presented for students to experience individually, in small learning groups, or with the whole class are included in the course materials. The assignments may be completed with or without student participation.

Note: Required book must be acquired separately.

Required Texts and Course Materials

Book: *Math Time: The Learning Environment* by Richardson, Antell, & Russell. (1996). Educational Enrichment Inc. ISBN-13:9781888117011. <https://www.amazon.com/Math-TimeEnvironment-Kathy-Richardson>

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

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.

Gingerbread Man Basic Skills Unit (on Canvas course) is a suggested application of techniques introduced in the course text, Math Time. You are asked to closely examine this unit and to expand it into an appropriate unit for your classroom situation.

Learning Games to Practice Basic Skills in Math (on Canvas course) is a collection of learning games designed to engage students in basic skills practice in a playful situation. You are asked to duplicate these games onto cardstock, to color if desired, and laminate for extended use in your classroom.

Guiding Documents (on Canvas course and linked to Internet) Various national and state guiding documents which inform the early learner curriculum.

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).

National Standards Addressed in This Course

California Preschool Learning Foundations

[California Preschool Learning Foundations \(https://www.cde.ca.gov/sp/cd/re/psfoundations.asp\)](https://www.cde.ca.gov/sp/cd/re/psfoundations.asp)

NUMBER SENSE	NUMBER SENSE
<i>At around 48 months of age</i>	<i>At around 60 months of age</i>
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 word number) with increasing accuracy.	1.4 Count up to ten objects, using one-to-one correspondence (one object for each word number) 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	2.1 Compare, by counting or matching, two groups of up to five objects and

obviously equal or non-equal and communicate, “more” or “same.”*	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 increase (or decrease) the number of objects in the group.	2.2 Understand that adding one or taking away one, changes the number in a small group of objects by exactly one.
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 <i>one</i> attribute into two or more groups, with increasing accuracy.	1.1 Sort and classify objects by <i>one or more</i> 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 patters.	2.0 Children expand their understanding of simple, repeated patterns.
2.1 Begin to identify or recognize a simple repeated 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.

Common Core State Standards (CCSS) (www.corestandards.org)

The Common Core State Standards provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy.

Common Core State Standards 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.thecorestandards.org/standards-in-your-state/> to see if your state has adopted the

Common State Standards. If your state has not adopted these standards, use the National Council of Teachers of Mathematics (NCTM) at: <https://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 with 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)*
- *Geometry (K.G)*
- *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)*
- *Geometry (1.G)*
- *Mathematical Practices*

National Board for Professional Teaching Standards (NBPTS)

<http://www.nbpts.org/standards-five-core-propositions/>

First published in 1989 and updated in 2016, [What Teachers Should Know and Be Able to Do](#) articulates the National Board’s Five Core Propositions for teaching. The Five Core Propositions - comparable to medicine’s Hippocratic Oath — set forth the profession’s vision for accomplished teaching. Together, the propositions form the basis of all National Board Standards and the foundation for National Board Certification. Course assignments have been designed so students can demonstrate excellence against these professional teaching standards whenever possible.

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

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.

Course Student Learning Outcomes (C-SLO)

Student Learning Outcomes for This Course By the end of this course student will be able to:		National Standards Addressed*	CE-SLO Addressed**
C-SLO 1	identify, reflect on, and apply Preschool Standards, or Common Core State Standards in the areas of Number Sense, Algebra and Functions, or Mathematical Reasoning for the grade level they are teaching.	NBPTS 1, 2, 3	CE 2, 4, 6
C-SLO 2	apply Best Practices and National Professional Teaching standards, through developmentally appropriate teaching strategies in their classroom.	NBPTS 1, 3, 4	CE 2, 4
C-SLO 3	examine the classroom learning environment and design an appropriate environment (based on recommendations from this course) for their students.	NBPTS 1, 3	CE 1, 2, 3, 5, 6
C-SLO 4	reflect on their teaching	NBPTS 4	CE 3, 4, 5,

* Please refer to the section on **National Standards Addressed in This Course**

** Please refer to the section on **Continuing Education Student Learning Outcomes**

Topics, Assignments, and Activities

Module Title	Module Assignments and Activities	Points Possible
Home Page	<ul style="list-style-type: none"> Welcome Video Course Syllabus 1.1 Introduce Yourself Forum 	10 pts
Module 1: Standards, Best Practices, and Classroom Learning	<ul style="list-style-type: none"> 1.2 Reading, Reflective Writing, Critical Thinking 1.3 Reading and Connecting to the Standards 1.4 Reflection and Writing: Reviewing Best Practices 1.5 Sharing Best Practices and Classroom Organization with Colleagues 	25 pts 25 pts 25 pts 50 pts

Module Title	Module Assignments and Activities	Points Possible
Environment	<ul style="list-style-type: none"> 1.6 Forum: Reflection on Learning 	25 pts
Module 2: Classroom Application	<ul style="list-style-type: none"> 2.1 Reading, Reflective Writing, Critical Thinking 2.2 Research and Planning: Organizing the Curriculum 2.3 Classroom Application-Exploration of Lessons 2.4 Instructor Contact/Journal 	25 pts 50 pts 50 pts 25 pts
Module 3: Lesson Design and Application	<ul style="list-style-type: none"> 3.1 Reading, Reflecting, Writing, Critical Thinking 3.2 Project: Classroom Application (Centers) 3.3 Sharing Classroom Application Assignment Forum 	25 pts 75 pts 30 pts
Module 4: Looking at Assessment	<ul style="list-style-type: none"> 4.1 Reading, Reflective Writing, Critical Thinking 4.2 Video Viewing and Reflection 	25 pts 50 pts
Module 5: Reflecting on Learning	<ul style="list-style-type: none"> 5.1 Reading, Reflective Writing, Critical Thinking 5.2 Application and Reflective Writing: National Board for Professional Teaching Standards 5.3 Final Paper-Making Connections Writing and Research 5.4 Instructor Contact/Journal 	25 pts 50 pts 50 pts 25 pts
Course Wrap-up – Grading and Evaluation	<ul style="list-style-type: none"> Final Reflection Forum Course Evaluation Course Completion Checklist Grade Request / Transcript Request 	
TOTAL POINTS		665 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.
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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 discussion 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 discussions promote reflection and analysis while allowing students to appreciate and evaluate positions that others express. 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 discussion question whenever possible. The faculty role in the discussion forum 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). 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/departments/disability-access-education>.

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/departments/registrars-office/academic-catalogs>.

Fresno Pacific University Student Learning Outcomes (FPU-SLO)

FPU-SLO 1	Oral Communication: Students will <i>exhibit</i> clear, engaging, and confident oral communication – in both individual and group settings – and will critically <i>evaluate</i> content and delivery components.
FPU-SLO 2	Written Communication: Students will <i>demonstrate</i> proficient written communication by <i>articulating</i> a clear focus, <i>synthesizing</i> arguments, and utilizing standard formats in order to <i>inform</i> and <i>persuade</i> others.
FPU-SLO 3	Content Knowledge: Students will <i>demonstrate</i> comprehension of content-specific knowledge and the ability to apply it in theoretical, personal, professional, or societal contexts.
FPU-SLO 4	Reflection: Students will <i>reflect</i> on their personal and professional growth and <i>provide evidence</i> of how such reflection is utilized to manage personal and vocational improvement.
FPU-SLO 5	Critical Thinking: Students will <i>apply</i> critical thinking competencies by <i>generating</i> probing questions, <i>recognizing</i> underlying assumptions, <i>interpreting</i> and <i>evaluating</i> relevant information, and <i>applying</i> their understandings to new situations.
FPU-SLO 6	Moral Reasoning: Students will <i>identify</i> and <i>apply</i> moral reasoning and ethical decision-making skills, and <i>articulate</i> the norms and principles underlying a Christian worldview.
FPU-SLO 7	Service: Students will <i>demonstrate</i> service and reconciliation as a way of leadership.
FPU-SLO 8	Cultural and Global Perspective: Students will <i>identify</i> personal, cultural, and global perspectives and will employ these perspectives to <i>evaluate</i> complex systems.
FPU-SLO 9	Quantitative Reasoning: Students will accurately <i>compute</i> calculations and symbolic operations and <i>explain</i> their use in a field of study.
FPU-SLO 10	Information Literacy: Students will <i>identify</i> information needed in order to fully understand a topic or task, <i>explain</i> how that information is organized, <i>identify</i> the best sources of information for a given enquiry, <i>locate</i> and critically <i>evaluate</i> sources, and accurately and effectively <i>share</i> that information.