Cover Sheet: Request 15240

MAE4310L Elementary Mathematics Lab

Info

Process	Course|New|Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Alyson Adams adamsa@coe.ufl.edu
Created	8/26/2020 9:36:22 AM
Updated	10/23/2020 1:34:04 AM
Description of request	This is a request for a new lab course that will be a co-requisite for MAE4310 taken as part of the redesigned Elementary Education major.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	COE - School of Teaching and Learning 18050000	Ester De Jong		9/2/2020
No document changes					
College	Approved	COE - College of Education	Nancy Waldron	New course for Elementary Education major curriculum modification - Request number 15257	10/23/2020
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			10/23/2020
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Course|New for request 15240

Info

Request: MAE4310L Elementary Mathematics Lab
Description of request: This is a request for a new lab course that will be a co-requisite for MAE4310 taken as part of the redesigned Elementary Education major.
Submitter: Alyson Adams adamsa@coe.ufl.edu
Created: 9/18/2020 3:34:34 PM
Form version: 8

Responses

Recommended Prefix MAE
Course Level 4
Course Number 310
Category of Instruction Advanced
Lab Code L
Course Title Teaching Elementary Mathematics Lab
Transcript Title Elem Math Lab
Degree Type Baccalaureate

Delivery Method(s) On-Campus
Co-Listing No

Effective Term Earliest Available
Effective Year Earliest Available
Rotating Topic? No
Repeatable Credit? No

Amount of Credit 1

S/U Only? No
Contact Type Regularly Scheduled
Weekly Contact Hours 3
Course Description An inquiry-based math lab to accompany MAE4310. Focused on hands-on activities related to foundational concepts in elementary mathematics, with an emphasis on family/community experiences, equity and social justice issues, and relationships to science, technology, engineering, and/or the arts.
Prerequisites Elementary Education major EED_BAE
Co-requisites MAE4310
Rationale and Placement in Curriculum We are requesting a series of new courses for our redesigned BAE Elementary Education major. We have redesigned the program to be completed in four years, eliminating the masters degree year of the old program. This change required reconceptualization of several courses to meet all the requirements for Florida Department of Education certification in a four-year program. This course will be required for all Elementary Education majors and is part of the certification requirements by the State of Florida Department of Education. This new lab course will accompany the elementary mathematics methods course currently in the catalog. A mathematics laboratory is designed to engage students in the practical application of mathematics concepts using manipulatives, puzzles, modeling, technology, and demonstrations to deepen understanding of mathematics concepts.
Course Objectives By the end of this course, preservice teachers will be able to:

1) Conduct hands-on activities related to foundational concepts in elementary mathematics and discuss how each activity can elevate or hamper students' mathematical sense-making and awareness of social issues.
2) Conduct inquiry-based instruction using technology that supports students' use of mathematics to model, understand, analyze, and critique real-world situations.
3) Design and refine a STEAM lesson to support students' understanding of how mathematics

can be used to understand science, technology, engineering, and the arts.
4) Explain and justify inquiry-based mathematics instruction for elementary students.
Course Textbook(s) and/or Other Assigned Reading Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2019). Elementary and Middle School Mathematics: Teaching Developmentally, 10th edition. Upper Saddle River, NJ: Pearson Education.

Edelen, D., Simpson, H., & Bush, S. B. (2020). A STEAM exploration of tiny homes. Mathematics Teacher: Learning and Teaching PK-12, 113(1), 25-32.

Makar, K., & Doerr, H. M. (2020). Developing Statistical Modeling with Paper Helicopters. Mathematics Teacher: Learning and Teaching PK-12, 113(2), 147-151.

Lovin, L. H. (2020). Supporting Probability Understanding through Area Models. Mathematics Teacher: Learning and Teaching PK-12, 113(5), 411-415.

Lo, J. J., & White, N. (2020). Selecting GeoGebra Applets for Learning Goals. Mathematics Teacher: Learning and Teaching PK-12, 113(2), 156-159.

Weekly Schedule of Topics Week 1: Introduction
Week 2: Setting a Vision for Learning High-Quality Mathematics
Week 3: Teaching Math through Problem Solving
Week 4: Exploring Number and Operation Sense
Week 5: Developing Whole-Number Place-Value Concepts
Week 6: Exploring Fraction Concepts
Week 7: Promoting Algebraic Thinking
Week 8: Building Measurement Concepts
Week 9: Developing Geometric Thinking and Concepts
Week 10: Exploring Geometric Modeling
Week 11: A STEAM Exploration
Week 12: STEAM Lesson Plan Design
Week 13: Supporting Probability Understanding through Area Models
Week 14: Representing and Interpreting Data
Week 15: Developing Statistical Modeling
Week 16: A Weekly Mathematics Notebook and Final Presentations
Grading Scheme Class Participation, Attendance, and Professionalism = 10% of the final grade
Problem Solving Assessments (three) = 30% of the final grade
Weekly Mathematics Notebook = 30% of the final grade
STEAM Lesson Plan Design = 30% of the final grade

Class Participation, Attendance, and Professionalism (10% of the final grade): Regular attendance in this class is required. In addition, full participation is required. Preservice teachers can engage in active participation by extending ideas presented in class, supporting and elaborating ideas and perspectives, asking questions, making connections between the readings and their knowledge and beliefs, and completing assignments. At the mid-point of the semester you will receive feedback about your participation using a grading rubric provided in class that explains how attendance and participation connect to professionalism. At the end of the semester you will receive up to 10 points using the same rubric.

Problem Solving Assessments (30% of the final grade): During the labs you will collaboratively engage in hands-on activities related to fundamental principles and mathematics concepts. Physical materials, technology, and models will be used to explore key concepts of number and operations, algebra, geometry, measurement, probability, and statistics. Three times a semester, you will complete an independent assessment that requires problem-solving that mirrors our lab activities completed in class. Assessments are graded and returned for discussion.

Weekly Mathematics Notebook (30 % of the final grade): As you engage in hands-on lab activities, you will be instructed to individually react to these materials in various ways (e.g., summary, analysis, critique, reflection, questioning, connecting to classroom experience). These reactions will be collected in a Lab Notebook, turned in three times a semester for a grade. The notebook will be graded based on a rubric that outlines expectations for connections to the lab activities, knowledge of mathematical concepts, connections to course readings, and personal reflection.

STEAM Lesson Plan Design and Reflection (30% of the final grade): The goal of this project is to deepen understanding of how mathematics can be connected to science, technology, engineering, and/or arts in a real-world problem-solving situation. You will choose a math topic and theme for the lesson that crosses STEAM boundaries. After conducting research on the topic, design a lesson that introduces the topic, provides hands-on practice for elementary students, and assesses their knowledge of the concept. Finally, explain how your lesson plan addresses what you learned from this math lab and how you addressed 21st century skills (e.g., collaboration, communication, critical thinking/problem solving, and creativity/innovation). Lessons will be graded using a rubric based on all project elements, clarity of explanations, alignment of objectives and assessment, and personal reflection and connections.

Final course grades will be assigned using the following scale:

93-100 Points Earned (A)
90-92 Points Earned(A-)
87- 89 Points Earned (B+)
83-86 Points Earned (B)
80—82 Points Earned (B-)
77-79 Points Earned (C+)
73-76 Points Earned (C)
70 – 72 Points Earned (C-)
67-69 Points Earned (D+)
63-66 Points Earned (D)
60 – 62 Points Earned (D-)
0-59 Points Earned (E)
Instructor(s) Dr. Hyunyi Jung
Attendance & Make-up Yes
Accomodations Yes
UF Grading Policies for assigning Grade Points Yes
Course Evaluation Policy Yes