

Check Appropriate Boxes: Undergraduate credit Graduate credit Professional credit

1. School/Division Education 2. Academic Subject Code EDUC
3. Course Number E333 (must be cleared with University Enrollment Services) 4. Instructor Connie Sprague
Susan Cress
5. Course Title Inquiry in Mathematics and Science

Recommended Abbreviation (Optional) _____
(Limited to 32 Characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2004
7. Credit Hours: Fixed at 3 or Variable from _____ to _____
8. Is this course to be graded S-F (only)? Yes _____ No X
9. Is variable title approval being requested? Yes _____ No X
10. Course description (not to exceed 50 words) for Bulletin publication: Focuses on planning and managing appropriate science and math experiences with children of three to eight years of age. Opportunity for exploring, developing, experimenting and evaluating instructional materials. Planning appropriate inquiry-oriented experiences will be stressed. P-TEP

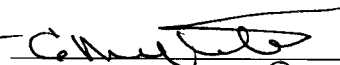
11. Lecture Contact Hours: Fixed at 3 or Variable from _____ to _____
12. Non-Lecture Contact Hours: Fixed at -- or Variable from _____ to _____
13. Estimated enrollment: 30 of which 0 percent are expected to be graduate students.
14. Frequency of scheduling: Fall/Spring Will this course be required for majors? yes
15. Justification for new course: To meet new licensing requirements for Pre K-2.
16. Are the necessary reading materials currently available in the appropriate library? _____
17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.
18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.
19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:

Approved by:


Department Chairman / Division Director

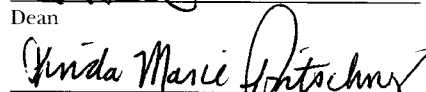
Date 6-27-02


Dean

Date 6-27-02


Dean of Graduate School (when required)

Date 6-27-02


Chancellor / Vice-President
Karin Hise VC

Date 1.13.03

Approved: Mitch L. Olson 11/21/02
Senate Curriculum Comm. Hec

University Enrollment Services

Date _____

Approved: Edue Council 4/15/03
David W. Korman

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

E333 - Inquiry in Math and Science for Young Children (3 cr.) P- TEP

Course Description: Focuses on planning and managing appropriate science and math experiences with children of three to eight years of age. Opportunity for exploring, developing, experimenting, and evaluating instructional materials. Planning appropriate inquiry-oriented experiences will be stressed.

Text:

Charlesworth, R., and Lind, D. (1999). *Science and math for young children*. Cincinnati: Delmar.

Course Objectives: INTASC principles are coded for each objective. Principles, coded "P" will be attached to the syllabus.

Upon completion of the course the student will be able to

Define concept development (P1)

Identify concepts children are developing (P1,2)

Discuss importance of professional standards for math and science (P1,7,9)

Explain the variations in individual and cultural learning styles and integration of content areas (P2,3,5,7,9)

Implement problem solving assessment and instruction (P4,7,8)

List science and math attitudes and process skills appropriate for young children (P1,7)

Select appropriate topics for teaching science and math to young children (P1,7,9)

Develop lessons using a variety of process skills, symbols, and higher-level activities (P1,2,3,4,5,7,8)

Design experiences for young children that enrich their developmental levels (P2-4)

Integrate science and math concepts with other subject areas. (P1,4,7)

Plan, Identify and assess skills (P1-9)

Plan lessons appropriate to the stage of the child (P1-9)

Identify and evaluate materials appropriate for math and science lessons (P1-4)

Describe how children can apply and extend concepts through dramatic play. (P1-6)

Plan a thematic unit which encompasses math and science concepts as well as other content areas (P1-9)

Set up learning centers for math and science (P1-9)

Provide families with strategies and activities that relate math and science to a child's everyday life. (P10)

Course Topics:

1. Concept Development and acquisition

Assessing the child's developmental level

Problem Solving

2. Basics of Science
 - How students use concepts
 - Planning for science
3. Fundamental Concepts and Skills
 - One-to-one correspondence
 - Number sense
 - Logic and classifying
 - Comparing
 - Shapes
 - Parts and wholes
4. Applying concepts, attitudes, and skills
 - Process skills
 - Interpreting data with graphs
 - Applying concepts in preprimary classrooms
5. Symbols and Higher level activities
 - Symbols
 - Sets and symbols
 - Higher-level activities and concepts
 - Science units and activities
6. Mathematical concepts and operations for the primary grades
 - Operations with whole numbers
 - Patterns
 - Fractions
 - Place value
 - Geometry, data collection, algebraic thinking
 - Measurement with standard units
7. Using skills, concepts, and attitudes for scientific investigations in the primary grades
 - Overview
 - Life science
 - Physical science
 - Earth and space
 - Environment
8. Materials and resources
9. Math and Science in the home

Possible Course Requirements and Assessment:

1. There will be two tests, one at midterm and one at the end of the semester.

Assessment: test grade

2. Ten lesson plans will be developed. Each will be structured around different developmental levels. Plans will include concepts, objectives, materials, a clear procedure, and evaluation.

Assessment: rubric which addresses main lesson components.

3. A thematic unit will be developed which integrates math and science concepts with at least two other subject areas. Learning centers and a dramatic play area which center around the theme will be included.

Assessment: Thematic unit rubric which addresses developmental appropriateness of topic and specific unit components.

4. A list of strategies and activities emphasizing math and science in the everyday life of a child will be developed for use by families. Each student will focus their list on either a preprimary, kindergarten, or primary level.

Assessment: evaluation of strategies and activities - rubric

5. Many group activities will be worked on in class. Attendance and participation in activities is required.

Assessment: Attendance, participation as observed by peers and instructor, group products

References

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INTASC (Interstate New Teacher Assessment and Support Consortium) STANDARDS

SUBJECT



Principle #1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

DEVELOPMENT



Principle #2: The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

DIFFERENTIATION



Principle #3: The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

INSTRUCTION



Principle #4: The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

CLASSROOM MANAGEMENT



Principle #5: The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

COMMUNICATION



Principle #6: The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

PLANNING



Principle #7: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

ASSESSMENT



Principle #8: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

REFLECTION



Principle #9: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

COMMUNITY



Principle #10: The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being.