California State University, San Marcos

FORM X (WHITE)

* Authorization To Offer Non-Degree Extension Credit Course Through Extended Studies*

1. Desired Term: Spring 2008

2a. Course abbreviation and Number:
EDST E1018

2b. Abbreviated Title:
(No more than 25 characters, including spaces)
Science and Young Children

4. Number of Units: 3

5. Billing Units: 0 ($80)

6. Allowed Student Levels: UG X CR X EE X (Default is to check all three levels)

7. Grading Method:
   ______ N Normal (N) (Default is Letter Grade I, Students may request Credit/No Credit)
   ______ Normal Plus Report-in-Progress (NP) (As for Normal, also allows Report-in-Progress)
   ______ Credit/No Credit Only (C)
   ______ Credit/No Credit or Report-in-Progress Only (CP)

8. Mode of Instruction:
(See pages 17-23 at http://www.csun.edu/cim/data-elem-dic/APDB-Transaction-DED-SectionV.pdf for definitions of the Course Classification Numbers)

<table>
<thead>
<tr>
<th>Type of Instruction</th>
<th>Number of Credit Units</th>
<th>Instructional Mode (Course Classification Number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>3</td>
<td>C-02</td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Attributes: Course Requires Consent for Enrollment? ______ Yes X ______ No
   ______ Faculty ______ Credential Analyst ______ Dean
   Program/Department - Director/Chair

Prerequisites: ______________ Co-requisites: ______________

10. Does this course impact other discipline(s)? (If there is any uncertainty as to whether a particular discipline is affected, check "yes" and obtain signature.) ______ Yes X ______ No
   If yes, obtain signature(s). Any objections should be stated in writing and attached to this form.

Chem/Phys (see email) 2/13/08 ______ Support ______ Oppose
   Discipline ______ Signature ______ Date

Biol (see email) 2/14/08 ______ Support ______ Oppose
   Discipline ______ Signature ______ Date

Important: Please Complete

1. Instructor: Kathy Norman

2. Extension Course Proposal Form (attached)

SIGNATURES: (COLLEGE LEVEL)

Kathy Norman 2/14/08

1. Program Director/Chair

Whitley 2/14/08

2. College Dean (or Designee)

(UNIVERSITY LEVEL)

3. Dean of Extended Studies (or Designee) 02/14/08

4. Vice President for Academic Affairs (or Designee) 02/14/08

2/15/08

By 2/15/08
Faculty Information:

Faculty Name: Karen Reynolds

Phone: 707.937.0067

Email Address: KEReynolds@aol.com

Course Title: Science and Young Children

Course Description: Over the course of five weeks, students of Science and Young Children will probe the exploratory nature of science experiences for pre K–3 children; presents a variety of activities in Earth, life, and physical sciences; and reviews selected pedagogical strategies that promote success in teaching and learning in science in the early grades. Students in the course engage in focused online discussions that expand and deepen weekly content, collaborate in building an individual and class bank of annotated resources, plan standards-based instruction. These activities will comprise approximately 45 hours of "seat time" of student time. Students taking the course for 3 graduate credits will also complete a ten to fifteen page Action Research Paper.

Course Delivery: Critical to the professional-development experience of teachers today is learning to function effectively in an online learning environment, one that is destined to expand in the future. Teaching Project-based Science is an online course completed in five weeks, with an additional one-week grace period for submitting assignments. Although students may work on assignments offline, all course content, links to supplementary information, interaction among students in the class, class discussions, assessments, submission of assignments, and interaction with the instructor are carried out online, through email and the course site. This online format is designed for educators who need access to professional development on a flexible schedule and who are in different locations worldwide. Not all participants in this course will earn college credit; some are earning CEUs or auditing. Students earning college credit are required to participate in advanced discussions and complete all assignments.

Course Objectives/Outcomes

Performance Objectives
In this course, students will:

1. Describe strategies for inquiry and exploration in science for young children, including the use of materials, planning time, asking questions, posing challenges, and encouraging thinking, and linking to other subject areas and to language and literacy development.
2. Describe, including specific examples, how experiences for young children provide a foundation for developing an understanding of the nature of science and the ability to understand and act on science-and-society issues in their futures. Explain the role of the National Science Education Standards in supporting and promoting science education for young children.

3. Observe young children carrying out science activities. Report on their behaviors, making a distinction among cognitive, social, and affective domains as well as verbal and nonverbal evidence of thinking and concept processing.

Lesson Plans

Topic One: Physical Science

Topic One reviews the following pedagogical ideas, with additional illustrative science activities: why we teach physical science to young children, discrepant events, reading number lines, observing children at a fix-it center, promoting divergent thinking, acquiring and storing materials, and verbal and nonverbal evidence of learning.

Major Ideas:

A. What Are Physical Sciences? Introduces major concepts of matter and energy and other physical science content. Identifies activities for children that provide an important experiential background.
B. About Gravity: Falling or Not. Why things fall and how to support things so they don’t.
C. What Water Can Do. Characteristics of water that make it flow, evaporate, freeze, form droplets, mix with other things, and make things wet.
D. Making Things Move. About rolling, sliding, leveraging, and changing direction.
E. Energy We See. How light travels, is blocked to make shadows, and is sensed by living things.
F. Energy We Hear. How sounds are produced, how sound travels, how we hear, and what we can learn by listening.
G. The Science Carnival. Participatory, kid-centered physical science events in a carnival or country-fair format that can engage the broader community in fun and science.

Topic One Assignments:

a) Review Topic One content.
b) Contribute to discussions on related issues.
c) Students establish an individual homepage that can be accessed by others taking the course
d) Take a quiz comparing different teaching approaches.
e) Declare the nature of the credit sought – Graduate, CEU, or Audit.
f) Choose, with a rationale and connections to standards, a theme or focus around which to design a plan for teaching science safely
g) Address issues of student motivation and collaborative management strategies.
Topic Two: Earth Science
Topic Two examines pedagogical features include the following topics, with additional illustrative science activities: helping parents help children, asking questions that expand thinking, using models, why weather isn’t easy, portfolios, the prepared mind, and working with volunteers.

Major Ideas:

A. The Sand Box. Manipulating a model environment to make landforms and observe erosion and other geologic processes. Explaining associated physical forces.
B. Mountains, Rocks, and Dirt. Reviewing the rock cycle. Exploring composition and properties of sand, clay, and loam.
C. Weather Watchers. Learning causes of selected weather phenomena. Making and using instruments to aid observations.
D. Sunlight and Shadows. Exploring properties of light. Observing changes in shadows due to relation of Sun to object on Earth’s surface.
E. Underground. What goes on beneath the surface, both naturally and through human activities. Safety and conservation issues.
G. Resources and Recycling. Selected examples of how materials are found and extracted from the Earth. Benefits of recycling.

Topic Two Assignments:

a) Review Topic Two content.
b) Contribute to discussions on related issues.
c) Take a quiz comparing different teaching approaches.
d) Evaluate Earth science web sites in terms of cognitive demand and focus particularly on visuals that help explain concepts that are challenging because of scale, indirect evidence, and understanding of time. Contribute to a set of ideas for R and D projects for students.
e) Advanced discussions and optional activities are based on Weeks One and Two content. Address selected research studies in science education.

Topic Three: Life Sciences
Topic Three considers the following pedagogical topics, with additional illustrative science activities: wait time, drawing to see, motivators, using a video camera to reflect on teaching, rubrics, role models, and distinguishing between fantasy and reality.

Major Ideas:

B. Growth and Change. Evidence for plants and animals. Drawing records and journals.
D. Moving Around. Motion and mobility among animals. Tracking migrations. Dispersion among plants.
E. Sensing Things. Investigations of advantages and limitations of our main senses. Special senses among nonhuman living things.
G. Our Bodies. Emphasis on observable parts and their names, functions, compensations, and special abilities.

Topic Three Assignments:

a) Review Topic Three content.

b) Contribute to discussions on related issues.
   i. Alternatively, students may carry out an optional probe activity and post results on the discussion board.

c) Take a quiz comparing different teaching approaches.

d) Students contribute annotated websites that support life sciences for the class resource bank, and continue to make progress on their individual projects. Identify assessment strategies appropriate for the student's developing plan which may form the foundation for the Action Research Paper.

e) Results of an offline assignment are posted with analysis; it should involve drawing or photographing an example of a change in nature over time. An advanced task requires the analysis of children's drawings for evidence of knowledge of science content or processes.

Topic Four: Integrating the Sciences

Topic Four reviews the following pedagogical ideas, with additional illustrative science activities: integrated themes, using checklists for assessment, why scientists repeat experiments, inquiry stations, constructive fantasizing, promoting student self-sufficiency, and peer help.

Major Ideas:
A. Multi-science Experiences’.
B. Really Listening. The importance of gathering and interpreting data through listening carefully to sounds around you.
C. Changing Contexts. Connecting specific science concepts to examples from different contexts. Helping children make connections to aid transfer of knowledge to new situations and daily life.
E. Improvising, Innovating, Inventing. Fostering environments that encourage improvising and invention. Examples for young children.

F. Projects. Examples and guidelines for individual, small group, and whole class projects in science.

G. Big Events. Adapting science fairs, science open houses, science quests, competitions, and project presentations for young children. Pros and cons of big events.

**Topic Four Assignments:**

a) Review Topic Four content.

b) Contribute to discussions on related issues.
   i. Students also interact in "public debates," which relate to the course content and educational applications and are posted on the discussion board.

c) Take a quiz comparing different teaching approaches.

d) Submit and post draft of the in-progress plan and request specific feedback.

e) Provide specific feedback for at least two students in the course.

f) Address analysis of instructional resources and professional opportunities.

g) Advanced discussions and optional activities are based on Week Four content.
   i. An optional probe activity is available this week.

**Topic Five: Science and Other Subjects**

Topic Five’s pedagogical topics include the following, with additional illustrative science activities: self-reporting by children, the importance of clear communication, representing data, managing time, technology around the world, home connections, and planning professional development.

**Major Ideas:**

A. **Language and Literacy.** Acquiring vocabulary and developing skills in “technical” writing through science activities. Science as motivation for language development. Building a capacity for asking critical questions as well as communicating logical thinking.

B. **Reasons to Read.** Reading in the content area is especially motivating when it involves science books for children. Preparing children to become critical consumers of information.

C. **Add the Math.** Science activities can be enhanced by including the use of math skills. Certain math concepts become clear during science time. We consider examples as well as when to add math and when to leave it out.

D. **Science and the Arts.** Being aware of science-related experiences during art activities without interfering with the art.

E. **History Lessons.** The importance of science and technology during selected times and events in history. Includes some “what-if’s.”
F. Science, Technology, Society. STS issues that affect young children. Building a foundation for addressing urban, environmental, local, and global problems.

G. Daily Decisions. Examples of daily decisions made by young children and adults that are made with the help of scientific thinking and/or science knowledge. The importance of considering multiple perspectives.

Topic Five Assignments:

a) Review Topic Five content.
b) Contribute to discussions on related issues.
c) Take a quiz comparing different teaching approaches.
d) Submit the final Action Research Paper to the Instructor. Revise your plan and post the final version.
e) React critically to the final versions of Action Research Papers/plans submitted by at least two students in the course.
f) Consider strategies for sharing insights related to Teaching Science Safely at school sites and district levels.
g) Complete the JASON Course Survey.

Action Research Paper Overview:

Consider a question or concern related to (a) your unit plan and (b) instruction, students, or the classroom environment that you would like to address and for which you would like to find a practical answer. Devise a plan and carry it out. Report your results as follows:

1. Action: Identify an interesting question to ask related to your own teaching or student learning, or identify an area for focused reflection.
2. Rationale: Describe the purpose or desired outcome of this effort (action research and focused reflections have purposeful agendas).
3. Background: Consider course readings or outside literature you have reviewed and make connections to your action research.
4. Methods: Describe the methods, procedures, or strategies you used, and what kinds of observations you made (data collected).
5. Analysis: How did you analyze the results or make sense of your observations.
6. Implications: Explain how this effort informs, or makes a difference in, future teaching or learning in your setting. What might you do next?
7. Submit completed paper as an attachment in APA format.

Texts (required readings): Course Content found in Blackboard

Students read for depth, breadth, clarification, and special interest through the online course documents as well as links to external web sites. The content information, tutorials, and scholarly reports provided represent government agencies, professional organizations, academic institutions, and other expert groups.
Bibliography (required and optional readings): Suggested Course Content found outside Blackboard


c) Course readings include extensive links to academic and professional level web sites associated with each topic addressed in the course content documents.

Student Evaluation Process:

Successful completion of the course is determined by points earned proportionally as follows: weekly discussion assignments (35%), quizzes and final exam (20%), unit plan (20%), action research report (25%)
Accumulating points out of 100 will earn grades as defined below:

Student participation and demonstrated knowledge are evaluated weekly. Postings on the discussion boards should be guided by the following rubric:

- Level 4: High-quality professional discourse that invites inquiry. The message creates an inviting framework by sharing a personal reflection; presenting an interesting and well-articulated dilemma, challenge, or issue; or raising a thought-provoking question. The author creates a context where teachers with different levels of concern, knowledge, and experience feel welcome to join the conversation and to carefully consider their own ideas about the subject matter.

- Level 3: Thoughtful professional discourse. The message shares information, an issue, or a question in a thoughtful way, which might focus on specific details, explore the "why's" as well as the "what's," or explore others' beliefs and practices. Others feel welcome and encouraged to think about their existing teaching beliefs or practices.

- Level 2: Collegial discussion and/or "shop talk." Message could be a response to a previous message; a request; a description of classroom practice; or an issue, dilemma, or challenge that reflects the beliefs or practice of the author but lacks self-reflection and/or an invitation to others to respond. The conversation focuses on disseminating the author's ideas, questions, or practices rather than encouraging others to examine their beliefs and/or practices.

- Level 1: Factual statements or informational. Message is usually a question, a brief statement of fact or opinion, or an announcement that does not tend to stimulate ongoing professional discussion, thoughtful reflection, or examination of beliefs and/or practice.
**Action Research Paper Guide:**

Students must develop a project which involves at least 15 hours of work. The project should consist of:

- Review of literature on the course materials to select a topic around which to develop a classroom activity or research.
- Correlation of the topic and activity to state and national science content standards.
- Implementation of the project with students or other teachers.
- Evaluation of implementation through student assessment and feedback.
- Analysis of project implementation and assessment results, with recommendations for use of activity and implementation of improvements based upon feedback.

* Students not taking the course for graduate credit do not have to complete the Action Research Paper and must obtain at least 70 points to pass the course.

* Students taking the course for graduate credit will be graded according to the Plus/Minus Grading Scale:

A+ 97-100
A  94 - 96.99
A- 90 - 93.99
B+ 87 - 89.99
B  84 - 86.99
B- 80 - 83.99
C+ 77 -79.99
C  74 - 76.99
C- 70 -73.99
D  50 - 69.99
F  50 >
Karen E. Reynolds, PhD
Professor Emerita, College of Education, San Jose State University
CONSULTANT and INSTRUCTOR: K-12 Science Education, Integration of Art and Science. Integration of Technology in Education.

CONTACT
Address: 10425 Nichols Ln, Mendocino CA 95460
Phone: (707) 937-0067
e-mail: kereynolds@aol.com

EDUCATION
Ph. D. in Education University of California, Berkeley. 1984. concentrations in teacher education, curriculum development in science, and computer education. Dissertation title: A Study of In-Service Teachers’ Behavior While Using Inductive and Deductive Instructional Materials in an Introductory Course in BASIC
Recent degrees:
BFA Illustration, SJSU, May 2003.
Additional coursework 1967-present emphasizing ecology, earth sciences, fine arts, art education
Teaching Credentials: State of California:
Standard Secondary (Life): Biology, Anthropology, General Science
Elementary Multiple Subject

PROFESSIONAL EXPERIENCE
Dr. Reynolds career as an educator spans more than 40 years, beginning as a Peace Corps Volunteer (Nigeria 1964-66). Her experience includes 17 years of classroom teaching junior high level general science, 24 years as a teacher supervisor and pre-service K-12 methods instructor, 30 years instructing K-12 teacher in-service and faculty professional development. In addition, she has advised candidates for the M.A. Degree in Education and in Art History. She has worked with students and teachers from diverse cultural backgrounds and has taught in the areas of science, teacher education, computer and technology education, outdoor education and other subjects including some mathematics, physical education, and art. Currently Dr. Reynolds consults in education, teaches online courses for JASON Academy, and is developing proficiency in fine arts (painting).
2000 to present
JasonAcademy faculty and course author. Instructor and author of three courses: Aquatic Ecology, Teaching Project-Based Science, and Science and Young Children
2003 to present Instructor, Cambridge College summer session, MA in Education and science programs teaching the course Attaining Science Literacy.
1995-1997 Director, Elementary Education Program, Teacher Education Division, San Jose State University
1975 to present. Instructor. K-12 in-service teacher workshops and courses in science teaching and technology:
1980-present. Independent consultant: K-12 science methods; use of computers and new technologies for instruction and assessment; middle level curriculum.
1972-1976. SCUBA instructor, Aqua Tutus Diving Club, San Lorenzo, CA.

RECENT ADDITIONAL EXPERIENCE RELATED TO TECHNOLOGY IN EDUCATION
2001 Development of online content modules for teachers sponsored by the Jason Project. The five-week modules include Aquatic Ecosystems and Project-Based Learning; instructor in the Introductory Course for the series.
2001 Director for Intel Grant to train 20 faculty in the use of Intel curriculum and facilitate the integration of technology curriculum for at least 800 students in the College of Education over two years.
2000-2001 Co-director and PI, CSU Technology for Learning Grant serving 150 in-service teachers organized in a year long cohorts for professional development (120 hours) integrating technology in instruction K-12.
1999-2001 Participant and site coordinator for BayTech, the SJSU PT3 Grant supporting faculty professional development to integrate technology in teacher preparation.
2000 Developed online course: Learning in a High tech Environment for graduate students and in-service teachers.
1999-2000 Aquist Faculty in Residence providing assistance to faculty in developing effective learner-centered design for multimedia and online instruction.
Chair, College of Education Technology Committee 1998-99.
Participation and research in interactive multimedia transmissions with Warner Bros. in providing distance education in animation to multiple sites.
Developer, multimedia instructional units for teacher preparation in science. SJSU 1994-95.
Acting Director, SJSU Teacher Education Division Discovery Lab

K.E.Reynolds
SJSU School of Education facilitator for Computer Education Requirements for Multiple Subjects and Single Subject Clear Credentials
ASTUTE alternate SJSU Representative, planner and instructor for CSU methods faculty workshops, 1987-present.
Instructor, SJSU education faculty training in the integration of computers and videodisc technology in methods courses. Designer graduate level course, TE214 Learning in a High Tech Environment.
Consultant and coordinator, National Geographic Association workshop for trainers in the implementation of KIDNET and other computer-based projects for elementary and middle schools.

PUBLICATIONS and PRESENTED PAPERS
2003: Science and Young Children, a five-week online JASON Academy course focusing on pre-K-3 science and pedagogy.
2001 Teaching Project-based Science, a five-week online course for JASON Academy for Professional Development of Teachers in Science.
2001 Aquatic Ecology, a five-week online course for JASON Academy for Professional Development of Teachers in Science
1992, Integrating Technology in Science Instruction: Model Units. with Judy Wright Update for Technology in the Curriculum, California Dept. of Education.
1001. Middle School Curriculum in Action. with Rosemary Messick. Longman, Inc. 260 pp

ORGANIZATIONS
National Science Teachers Association (NSTA) Life Member; California Science Teachers Association (CSTA); Elementary School Science Association (ESSA); National Association for Research in Science Teaching (NARST); Computer Using Educators (CUE); Association for Research in Education (AERA); Association for Teacher Education (ATE); International Interactive Communications Society (IICS); National Marine Science Education Association (NMSEA)
Others for purposes of receiving journals.

MAJOR AREAS OF PROFESSIONAL INTEREST

Instruction (preservice and inservice): Science Methods K-8; General methods for middle/junior high teaching; Uses of technology in instruction and assessment, particularly interactive videodisc, multimedia. Distance Education. Undergraduate Blended Programs.

Curriculum Development

Multi-media and Distance Education in a constructivist environment in technology education and science education; Middle Level teacher preparation. Integration of science and art.

Research

Drawong to learn in science; Art experiences as a basis for science understandings; Alternative pictorial-based assessment strategies in science using new technologies; Instruction and assessment in a constructivist environment; Alternative conceptions in science among teachers.

AWARDS

I had look too, and it seems OK to me.

Chuck

On 2/13/08 2:01 PM, "Jacqueline Trischman" <trischma@csusm.edu> wrote:

Though I always seem to open it up and see typos right off on these things.... it looks fine to me. It is clearly a continuing ed course.

jackie

From: Virginia Mann
Sent: Wednesday, February 13, 2008 11:35 AM
To: Virginia Mann; Denise Garcia; Jacqueline Trischman; Charles De Leone
Cc: Catherine BoyleAsker
Subject: RE: Science and Young Children - Extended Studies Course

So sorry everybody – forgot the attachment!

From: Virginia Mann
Sent: Wednesday, February 13, 2008 9:29 AM
To: Denise Garcia; Jacqueline Trischman; Charles De Leone
Cc: Catherine BoyleAsker
Subject: Science and Young Children - Extended Studies Course

Good morning,

Extended Learning has sent us the attached course form: Science and Young Children. This course would offer non-degree extension credit through Extended Learning. We would appreciate if you would review this course and let us know if you have any comments or concerns.

Thanks so much.
Virginia

Virginia Peters Mann
Curriculum Specialist
Academic Programs
CSU San Marcos
Tel: (760) 750-8807
Virginia Mann

From: Denise Garcia
Sent: Thursday, February 14, 2008 10:59 AM
To: Virginia Mann; Jacqueline Trischman; Charles De Leone
Cc: Catherine BoyleAsker
Subject: RE: Science and Young Children - Extended Studies Course

Looks good to Biology.

From: Virginia Mann
Sent: Wednesday, February 13, 2008 9:29 AM
To: Denise Garcia; Jacqueline Trischman; Charles De Leone
Cc: Catherine BoyleAsker
Subject: Science and Young Children - Extended Studies Course

Good morning,

Extended Learning has sent us the attached course form: Science and Young Children. This course would offer non-degree extension credit through Extended Learning. We would appreciate if you would review this course and let us know if you have any comments or concerns.

Thanks so much.
Virginia

Virginia Peters Mann
Curriculum Specialist
Academic Programs
CSU San Marcos
Tel: (760) 750-8887