“Preparing Professionals for Changing Educational Contexts”

Department of Special Education
College of Education, University of Nevada, Las Vegas

Methods in ECE II: Math and Science
ECE 454
Fall 2008
3 Credit Hours

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Office Location: CBC C124 Office Hours: By Appointment

COURSE INTRODUCTION
This course is designed to assist educators with developing the child’s understanding and appreciation of mathematics and science. The course will cover effective methods, strategies, and demonstration techniques for teaching and assessing mathematics and science in varied academic settings. Recent trends in mathematics and science education will be discussed.

Much of the learning will take place during class instructional time. Each student is expected to arrive prepared for the class, attend all class sessions, and to actively participate in all class activities and discussions. Projects will utilize individual work as well as small and large group cooperative experiences.

All assignments are required to be typed (double-spaced) and free of grammatical and spelling errors. The cover sheet for each assignment is to include the student’s name, the assignment title, date, course name and title, and the instructor’s name. All assignments are due at the beginning of class, on the date indicated in the course schedule. Late assignments will only be accepted in extenuating circumstances with prior arrangement with the course instructor. One letter grade will be deducted for each day an assignment is late without proper arrangements. A missed assignment cannot be made up and will result in a score of 0 (zero). Any missed class notes are the responsibility of the student.
I. Course Objectives

II. NAEYC Guidelines Addressed

Standard #3: Observing, Documenting, and Assessing to Support Young Children and Families

3a: Understanding to goals, benefits, and uses of assessment
3b: Knowing about and using observation, documentation, and other appropriate assessment tools and approaches
3c: Understanding and practicing responsible assessment
3d: Knowing about assessment partnerships with families and other professionals

Standard #4: Teaching and Learning

4a: Knowing, understanding, and using positive relationships and supportive interactions
4b: Knowing, understanding, and using effective approaches, strategies, and tools for early education
4c: Knowing, and understanding the importance, central concepts, inquiry tools, and structures of content areas or academic disciplines
4d: Using own knowledge and other resources to design, implement, and evaluate meaningful, challenging curriculum to promote positive outcomes

Knowledge (Subject matter or discipline(s), Professional field of study, Pedagogical knowledge, Pedagogical content knowledge, Professional knowledge) NAEYC 3a, 3b, 3c, 3d, 4a, 4b, 4c, 4d

Performance (Skills) (The ability to use content, professional and pedagogical knowledge effectively and readily in diverse teaching settings in a manner that ensures that all students are learning.) NAEYC 3b, 3c, 4a, 4b, 4d

Disposition(s) (Values, commitments, and professional ethics that influence behaviors toward students, families, colleagues, and communities and affect student learning, motivation, and development as well as the educator’s own professional growth—guided by beliefs and attitudes related to values such as caring, fairness, honesty, responsibility and social justice.) NAEYC 3a, 3b, 3c, 3d, 4a, 4b, 4c, 4d

Results (In what ways do candidates demonstrate that their “patterns” of behavior, and what they know and are able to do make a difference in student learning) NAEYC 3b, 3c, 4a, 4b, 4d
REQUIRED TEXTBOOKS

SUPPLEMENTAL TEXTS AND/OR MATERIALS
None

ASSIGNMENTS

1. Classroom Plan
   Develop a classroom plan including: (1) how you will organize the classroom, (2) how you will include science and math lessons and activities, (3) how you will evaluate learning, (4) a portrait of the students (age, grade, culture, income level, etc.), and (5) your philosophy of teaching and learning related to science and math. Type your paper (no more than 3 pages in length) using APA standards. (15 points)

2. Mathematics Journal Abstract
   Select a mathematics journal article and write a reflective paper about the article. Answer the following questions in your paper: (1) Do you agree or disagree with the article? (2) What are the implications for early childhood teachers? (3) How would you implement the ideas presented in the article in your teaching? (4) Do the ideas presented reflect Instructional Best Practices? (5) Do the ideas presented in the article foster inquiry? In addition your paper will include: (1) the important ideas of the article, (2) your response to these ideas (include your comments, questions, and thoughts). Type your reference list and paper (no more than two pages in length) using APA standards. (15 points)

3. Math and Science Box
   Assemble a math and science box consisting of 5 math lesson plans/activities and 5 science lesson plans/activities suitable for early childhood aged children. Use a small box (you will need to transport it) to hold the activities. Activities in the box must each be self-contained including all materials (points will be deducted for missing materials) and the lesson/activity plan (follow the format presented in this syllabus). Worksheets are not acceptable for use in the box. All activities are to be designed for individual and small group use. (40 points)
4. **Science Unit ~ Due Week 12, November 15**

Develop a science unit that includes: (1) table of contents, (2) the goals of the unit and the goal’s correlation to Nevada’s Learning Standards, (3) a concept map, (4) relevant list of 5 children’s literature titles, (5) 6 internet resources (3 student and 3 teacher), (6) 3 complete lesson plans (follow the format presented in this syllabus), and (7) a reflective piece (your thoughts on the use of the unit in your future teaching). (30 points)

5. **Math and Science Lesson and Rubric**

Design one math and one science rubric for a performance-based lesson in each subject area. Present these rubrics to the class. Your submitted paper and the class presentation will include: (1) the rubrics, (2) the lesson plan upon which each rubric is based, (3) a discussion of how these rubrics will be used with children of early childhood age, (4) a discussion of the criteria used to devise the rubrics, and (5) a discussion of how the rubrics can be individualized for ALL students (35 points).

6. **Participation points** – Points reflect presentation, participation in class, response to others presentations (points deducted for inattention and rudeness) 30 points.

**GRADING POLICY**

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<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tr>
<td>A</td>
<td>95 – 100</td>
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<td>A-</td>
<td>90 – 94</td>
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<td>B+</td>
<td>87 – 89</td>
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<td>B</td>
<td>83 – 86</td>
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<td>B-</td>
<td>80 – 82</td>
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<td>C+</td>
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<td>C</td>
<td>73 – 76</td>
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<td>D</td>
<td>63 – 66</td>
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<td>D-</td>
<td>60 – 62</td>
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<td>F</td>
<td>59 or less</td>
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Regular attendance and class participation are expected and count as part of your grade. **Five points will be deducted for each absence after two cumulative absences.**
PERFORMANCE ASSESSMENTS
See Attached Rubric

Disability Resource Center
The Americans with Disabilities Act mandates accessibility in all aspects of the learning environment. “If you have a documented disability that may require assistance, you will need to contact the Disability Resource Center (DRC) for coordination in your academic accommodations. The Disability Resource Center is located in the Reynolds Student Services Complex, room 137. The DRC phone number is 895-0866 or TTY 895-0652.”

Academic Integrity Statement
UNLV and its College of Education demand a high level of scholarly behavior and academic honesty on the part of students. Violations by students exhibiting honesty while carrying out academic assignments and procedural steps for dealing with academic integrity are delineated in the Handbook of Regulations Governing Probation and Suspension Within The College of Education. This publication may be found in the curriculum Materials Library (CML – CEB 101), the Department of Educational Leadership (CEB 320), or the Office of the Dean of the College Education (CEB 301).

Copyright
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Religious Holidays
It is UNLV’s policy to give students who miss class because of observance of religious holidays the opportunity to make up missed work. Students are responsible for notifying the instructor no later than the last day of registration for the semester or summer term of plans to observe the holiday.

Collection of Student Assignments for Accreditation Purposes
Assignments completed for this course may be used as evidence of candidate learning in national, regional, and state accreditation reports of COE programs. Names and other identifying elements of all assignments will be removed before being included in any report. Students who do not wish their work to be used for accreditation purposes must inform the instructor in writing by the end of late registration. Your participation and cooperation in the review of COE programs is appreciated. Thank you.
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction and overview of course requirements</td>
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<td>Week 2</td>
<td>Foundations of Instruction</td>
<td>Charlesworth Units 1, 2 &amp; 3</td>
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<td>Week 3</td>
<td>Science Instruction</td>
<td>Charlesworth Units 4, 5&amp; 6</td>
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<td>Week 4</td>
<td>Science Instruction</td>
<td>Charlesworth Unit 7</td>
<td>Classroom Plan Due</td>
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<td>Week 5</td>
<td>Math Instruction</td>
<td>Charlesworth Units 8, 9, 10 &amp; 11</td>
<td>Mathematics Journal Abstract Due</td>
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<td>Week 6</td>
<td>Math Instruction</td>
<td>Charlesworth Units 15, 17, 18 &amp; 19</td>
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<td>Week 7</td>
<td>Math Instruction</td>
<td>Charlesworth Unit 32</td>
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<td>Week 8</td>
<td>Scientific Investigation</td>
<td>Charlesworth Units 12, 13, 15, 16, 20, 21 &amp; 22</td>
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<td>Week 9</td>
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<td>Peer Review of Math and Science Box</td>
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<td>Week 10</td>
<td>Scientific Fundamental Concepts</td>
<td>Charlesworth Units 33, 34, 35, 36, 37 &amp; 38</td>
<td>Math and Science Box Due</td>
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<td>Week 11</td>
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<td>Peer Review of Science Unit</td>
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<tr>
<td>Week 12</td>
<td>Math Instruction</td>
<td>Charlesworth Units 27, 28, 29, 30, 31, 39, 40 &amp; 41</td>
<td>Science Unit Due</td>
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<tr>
<td>Week 13</td>
<td>Thanksgiving Break</td>
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<td>Week 14</td>
<td>Summary</td>
<td></td>
<td>Peer Review of Math and Science Rubric</td>
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<tr>
<td>Week 15</td>
<td>Student Presentations</td>
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<td>Math and Science Rubric Due</td>
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<td>Dec. 6</td>
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LESSON PLAN FORMAT

Subject: _________________________________

Grade: ______________________________

Date: ______________________________

Lesson Title: __________________________

Goal (s):

Objective (s): relate these to the Nevada Learning Standards

Material (s):

Procedure / Method (s):

Evaluation:
ECE: Early Childhood Methods: Math and Science Lesson and Rubric  
Fall 2007

Each student will develop and present an original math lesson and an original science lesson rubric. The rubrics may be developed around a lesson you created for your math/science box. The presentations will take place during class time. Students should meet the following criteria: provide written hand-outs for each member in class and for the professor, presentations will be a maximum of 10 minutes in length, be prepared to answer questions from the class, actively involve students. (20 points).

<table>
<thead>
<tr>
<th>Proficiency</th>
<th>Format (4 points possible)</th>
<th>Completeness of Information (10 points possible)</th>
<th>Presentation (6 points possible)</th>
</tr>
</thead>
</table>
| Exemplary   | • Clear and logical sequence and order  
• Easy to follow  
• Typed  
• Appropriate grammar and spelling | • Follows lesson plan format and is not missing any components  
• Goals, objectives, and procedures are developmentally/age appropriate  
• Gives appropriate plans to simplify and extend lesson  
• Information is consistent | • Clear and logical sequence/order  
• Understandable to audience (tone of voice, speed or voice, flow of communication)  
• Stays on topic  
• Sticks to 10 minute time limit and covers topic appropriately  
• Provides handouts (about one page) to each class member |
| 18-20 points |                           |                                               |                                |
| Acceptable  | • Somewhat logical sequence and order  
• Typed  
• Minimal grammar and spelling errors | • Somewhat follows lesson plan format and/or missing one of the components  
• Most of the goals, objectives, and procedures are developmentally/age appropriate  
• Plans to simplify and extend lesson are inappropriate  
• Most information is consistent | • Semi-logical sequence/order  
• Difficult to understand speaker (tone of voice is too loud/soft, speed of speech is too fast/slow, flow of communication is too fast/slow)  
• Interjects miscellaneous information into Discussion  
• Sticks to the 10 minute time limit but was not finished |
| 15-17 points |                           |                                               |                                |
| Not Acceptable | • Difficult to follow sequence and order  
• Not typed  
• Poor grammar and spelling are present  
• Illegible | • Does not follow lesson plan format and/or missing more than two of the components  
• Goals, objectives, and procedures are not developmentally/age appropriate  
• Most information is inconsistent | • Illogical sequence/order  
• Difficult to understand speaker (tone of voice is too loud/soft, speed of speech is too fast/slow, flow of communication is too fast/slow)  
• Off topic most of the time  
• Exceeds 10 minute time limit or presents for less than 5 minutes |
| 0-14 points |                           |                                               |                                |