

“Preparing Professionals for Changing Educational Contexts”

Department of Educational and Clinical Studies

College of Education, University of Nevada, Las Vegas

Methods in ECE II: Math and Science

- I. Prefix and Number: ECE 454
- II. Title: Methods in ECE II: Math and Science
- III. Credit:
- IV. Semester:
- V. Instructor:
- VI. Office Location:
- VII. Office Hours:
- VIII. Office Phone:
E-Mail:
- IX. Prerequisite Course(s): none

X. Course Description

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 techniques for teaching and assessing mathematics and science in varied academic settings. Recent trends in mathematics and science education will be discussed.

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 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 point will be deducted for each day an assignment is late without prior arrangements. A missed assignment cannot be made up and will result in a score of 0 (zero).

XI. Course Objectives

InTASC Standards Addressed:

- Standard 1.0 Learner Development
- Standard 2.0 Learning Differences
- Standard 3.0 Learning Environments
- Standard 4.0 Content Knowledge
- Standard 5.0 Application of Content
- Standard 6.0 Assessment
- Standard 7.0 Planning for Instruction
- Standard 8.0 Instructional Strategies
- Standard 9.0 Professional Learning and Ethical Practices
- Standard 10.0 Leadership and Collaboration

NAEYC (NAEYC) Standards Addressed:

- Standard 1: Promoting Child Development and Learning
- Standard 2: Building Family and Community Relationships
- Standard 3: Observing, Documenting, and Assessing to Support Young Children
- Standard 4: Using Developmentally Effective Approaches
- Standard 5: Using Content Knowledge to Build Meaningful Curriculum
- Standard 6: Becoming a Professional
- Standard 7: Field Experiences

Knowledge (Subject matter or discipline(s), Professional field of study, Pedagogical knowledge, Pedagogical content knowledge, Professional knowledge)

1. *Assist educators with developing the child's understanding and appreciation of science.* **InTASC1.d, InTASC2.g, InTASC3.p, InTASC4.k, NAEYC3a, NAEYC3b, NAEYC3c, NAEYC3d, NAEYC4a, NAEYC4b, NAEYC4c, NAEYC4d**

Measurement/Evaluation: Math and Science Box and Science Unit

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.)

1. *Use of scientific methods and process.* **InTASC 5.b, InTASC6.e, InTASC7.a, InTASC8.e, NAEYC3b, NAEYC3c, NAEYC4a, NAEYC4b, NAEYC4d**

Measurement/Evaluation: Math and Science Rubric and Parent Brochure

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 and InTASC 9, 10

1. *Assist educators with developing the child's understanding and appreciation of science.* **InTASC 9.i, NAEYC 3a, NAEYC3b, NAEYC3c, NAEYC3d, NAEYC4a, NAEYC4b, NAEYC4c, NAEYC4d**

Measurement/Evaluation: Math and Science Rubric and Parent Brochure

XII. Texts, Readings, and Instructional Resources

Required Text

Charlesworth, R. (2007). *Math and science for young children* (5th ed.). Clifton Park, NY: Thomson/Delmar Learning.

OR

Charlesworth, R. & Lind, K. K. (2010). *Math and science for young children* (6th ed.). Belmont, CA: Wadsworth/Cengage Learning.

XIII. Assignments, Evaluation Procedures, and Grading Policy

Academic Requirements

1. Math and Science Box ~ Due October 6

Assemble a math and science box consisting of 10 math lesson plans/activities and 10 science lesson plans/activities suitable for early childhood aged children. Follow the lesson plan format presented in this syllabus. Activities must each be self-contained including all materials. Worksheets are not acceptable. All activities are to be designed for individual and small group use. (20 points)

2. Science Unit ~ Due October 27

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 five children's literature titles, (5) six internet resources (3 student and 3 teacher), (6) three 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)

3. Math and Science Rubric ~ Primary Assignment ~ November 10

Design one math and one science rubric for a performance-based lesson in each subject area. You will present your lessons and rubrics to your classmates. Your submitted paper 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. (30 points)

4. Parent Brochure ~ Due December 8 (via webcampus)

Students will create a brochure to communicate the importance of early math and science experiences for parents (refer to Unit 41 of text). The brochure should focus on a specific age group (i.e., toddler, 3 year old, Kindergarten age, etc.) and address a variety of elements of early numeracy and science awareness (i.e., questioning, varied experiences/exposures, etc.) to encourage family involvement. At least three different activities appropriate for home should be included for both math and science (a total of 6 home activities). All brochures should be comprehensive in scope, aesthetically pleasing, include language appropriate for the target audience of parents and families. **Submit your brochure to webcampus via the assignment tab for grading.** (20 points)

Administrative Requirements

All assignments will be due on the assigned days unless arrangements have been made with the professor. If the assignment is late and no arrangements have been made, one point will be deducted for each day an assignment is late.

Grading Policy

A	95 – 100	C	73 – 76
A-	90 – 94	C-	70 – 72
B+	87 – 89	D+	67 – 69
B	83 – 86	D	63 – 66
B-	80 – 82	D-	60 – 62
C+	77 – 79	F	59 or less

XIV. Weekly Schedule

Date	Topic	Reading	Assignments
September 1	Introduction and overview of course requirements		
September 8	Foundations of Instruction	Charlesworth Units 1, 2 & 3	
September 15	Science Instruction	Charlesworth Units 4, 5 & 6	
September 22	Science Instruction	Charlesworth Unit 7	
September 29	Math Instruction	Charlesworth Units 8, 9, 10 & 11	
October 6	Math Instruction	Charlesworth Units 15, 17, 18 & 19	Math and Science Box Due
October 13	Math Instruction	Charlesworth Unit 32	
October 20			Peer Review of Science Unit
October 27	Scientific Investigation	Charlesworth Units 12, 13, 15, 16, 20, 21 & 22	Science Unit Due

November 3			Peer Review of Math and Science Rubric
November 10	Scientific Fundamental Concepts	Charlesworth Units 33, 34, 35, 36, 37 & 38	Math and Science Rubric Due
November 17	Math Instruction Math and Science in the Home Classroom Management	Charlesworth Units 27, 28, 29, 30, 31, 39, 40 & 41	
November 24	Thanksgiving Break		
December 1	Summary		Peer Review of Parent Brochure
December 8	Student Presentations		Parent Brochure Due (webcampus submission)

XV: Provost Statements

Academic Misconduct—Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV’s function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the *Student Academic Misconduct Policy* (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

Copyright—The University requires all members of the University Community to familiarize themselves **with** and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)—The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Religious Holidays Policy—Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only.

It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit:
<http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Transparency in Learning and Teaching—The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

<https://www.unlv.edu/provost/teachingandlearning>

<https://www.unlv.edu/provost/transparency>

Incomplete Grades—The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student’s control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Students may consult with a librarian on research needs. For this class, the Subject Librarian is (https://www.library.unlv.edu/contact/librarians_by_subject). UNLV Libraries provides resources to support students’ access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu/>.

Tutoring and Coaching—The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call [702-895-3177](tel:702-895-3177). The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied

Library and College of Engineering TEB second floor.

UNLV Writing Center—One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

Students may consult with a librarian on research needs. For this class, the Subject Librarian is (https://www.library.unlv.edu/contact/librarians_by_subject). UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu/>.

Rebelmail—By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. **Emailing within WebCampus is acceptable.**

Final Examinations—The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

Any other class specific information—(e.g., absences, make-up exams, status reporting, extra credit policies, plagiarism/cheating consequences, policy on electronic devices, specialized department or college tutoring programs, bringing children to class, policy on recording classroom lectures, etc.)

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 454 Early Childhood Methods: Math and Science Math and Science Lessons/Activities and Rubric Fall 2011

Each student will develop an original math lesson/activity and an original science lesson/activity and a corresponding rubric for assessment of student learning for each lesson/activity. Present your lesson/activity and rubric to your classmates. (20 points)

Proficiency	Format (4 points possible)	Completeness of Information (10 points possible)	Presentation (6 points possible)
Exceeds Expectations 18-20 points	<ul style="list-style-type: none">• Clear and logical sequence and order• Easy to follow• Typed• Appropriate grammar and spelling	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Clear and logical sequence/order• Understandable to audience• Posts a typed, logically sequenced one page handout to each class member

		<ul style="list-style-type: none"> • Information is consistent 	
<p>Meets Expectations</p> <p>15-17 points</p>	<ul style="list-style-type: none"> • Somewhat logical sequence and order • Somewhat easy to follow • Typed • Minimal grammar and spelling errors 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Semi-logical sequence/order • Difficult to understand • Posts a illogical, handwritten, or otherwise confusing handout to each class member
<p>Below Expectations</p> <p>0-14 points</p>	<ul style="list-style-type: none"> • Difficult to follow • Illogical and unclear sequence and order • Not typed • Poor grammar and spelling are present • Illegible 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Illogical sequence/order • Does not provide a handout

Academic Misconduct. Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the *Student Academic Misconduct Policy* (approved December 9, 2005) located at: <http://studentconduct.unlv.edu/misconduct/policy.html>

Copyright – The University requires all members of the University Community to familiarize themselves and to follow

copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at:

<http://www.unlv.edu/committees/copyright/>

Disability Resource Center (DRC) – It is important to know that over two-thirds of the students in the DRC reported that this syllabus statement, often read aloud by the faculty during class, directed them to the DRC office. The Disability Resource Center (DRC) coordinates all academic accommodations for students with documented disabilities. The DRC is the official office to review and house disability documentation for students, and to provide them with an official Academic Accommodation Plan to present to the faculty if an accommodation is warranted. Faculty should not provide students accommodations without being in receipt of this plan. UNLV complies with the provisions set forth in Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, offering reasonable accommodations to qualified students with documented disabilities. If you have a documented disability that may require accommodations, you will need to contact the DRC for the coordination of services. The DRC is located in the Student Services Complex (SSC-A), Room 143, and the contact numbers are: Voice (702) 895-0866, fax (702) 895-0651. For additional information, please visit: <http://drc.unlv.edu/>

Religious Holidays Policy -- Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the last day at late registration of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the test or examination at an alternate time would impose an undue hardship on the instructor or the university which could not be avoided. For additional information, please visit: <http://catalog.unlv.acalog.com/content.php?catoid=1&navoid=44&bc=1>

Tutoring -- The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex, #22 on the current UNLV map. Students may learn more about tutoring services by calling (702) 895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>

UNLV Writing Center – *The following statement is recommended for inclusion in course syllabi:* One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>

Rebelmail – By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's Official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu.

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.

Incomplete Grades—The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade

Tutoring and Coaching—The Academic Success Center (ASC) provides tutoring, academic success coaching

and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call [702-895-3177](tel:702-895-3177). The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

Transparency in Learning and Teaching—The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

<https://www.unlv.edu/provost/teachingandlearning>

<https://www.unlv.edu/provost/transparency>

Final Examinations—The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.