



**SCHOOL OF EDUCATION
VIRTUAL CAMPUS**

Mission: Wayland Baptist University exists to educate students in an academically challenging, learning focused and distinctively Christian environment for professional success, lifelong learning and service to God and humankind.

COURSE NUMBER AND TITLE: ECHD 4301 Math and Science for Young Children

TERM AND DATES: VC 01: Online May 23 – August 6, 2016

<https://wbu.blackboard.com/>

Holidays: May 30 and July 4, 2016

INSTRUCTOR'S NAME: Suzanne Kimball

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CATALOG COURSE DESCRIPTION: This course focuses on the integration of math and science with the other important elements of child development for young children. Both math and science are presented from a common conceptual framework, and problem solving is emphasized as the major means of constructing the basic concepts.

REQUIRED RESOURCE MATERIALS:

- Student Textbook(s) - Charlesworth, R., & Lind, K. *Math & science for young children* (8th ed.). Florence, KY: Cengage Learning.
ISBN-10: 1305088956
ISBN-13: 9781305088955
- Access to WBU Learning Resources www.wbu.edu/lrc

COURSE OUTLINE:

Part I: CONCEPT DEVELOPMENT IN MATHEMATICS AND SCIENCE.

- Development, Acquisition, Problem Solving, and Assessment.
- Basics of Science, Engineering, and Technology.

Part II: FUNDAMENTAL CONCEPTS AND SKILLS.

- Prekindergarten and Kindergarten Concepts and Skills.
- More Prekindergarten and Kindergarten Concepts and Skills
- Early Geometry, Parts and Wholes, and Applications of Fundamental Concepts to Science and Engineering.

Part III: APPLYING FUNDAMENTAL CONCEPTS.

- Pre-K/K Ordering, Measurement, and Data Collection and Analysis.
- Integrating the Curriculum.

Part IV: SYMBOLS AND HIGHER LEVEL CONCEPTS AND ACTIVITIES.

- Transitioning from Preschool to Kindergarten to Primary.

Part V: MATHEMATICS CONCEPTS AND OPERATIONS FOR THE PRIMARY GRADES.

- Whole Number Operations, Patterns and Fractions.
- Place Value, Geometry and Data Analysis, and Measurement.

Part VI: INVESTIGATIONS IN PRIMARY SCIENCE.

- Overview of Primary Science, Life Science, and Physical Science.
- Earth and Space Sciences, Environmental Awareness, Engineering, Technology and Science Applications.

Part VII: THE MATH AND SCIENCE ENVIRONMENT.

- Materials and Resources and Math and Science in the Classroom and in the Home.

COURSE REQUIREMENTS:

- The student will: attend class, read all assigned materials, participate in discussion boards, prepare written assignments, and complete exams.
- Students will respond in a professional manner.

COMPETENCIES FOR THIS COURSE:

Students will understand and apply the following six principles, or “themes” of mathematics instruction as outlined by NCTM.

- Equity: high expectations and support for all children
- Curriculum: more than a collection of activities: coherent, focused on important mathematics and well integrated across developmental levels.
- Teaching: understanding what children already know and used to learn, and challenging and supporting them to learn it well
- Learning: children must learn with understanding, building new mathematical knowledge from experience and prior knowledge
- Assessment: should support the learning important mathematics and give useful information to teachers and children
- Technology: is essential in teaching and learning mathematics; a tool to enhance learning

Students are able to articulate priorities for high-quality; meaningful science experiences in early childhood, across a developmental continuum. Depending on children’s ages and other characteristics, those experiences should help children to, for example:

- Raise questions about objects and events around them
- Explore materials, objects, and events by acting upon them and noticing what happens
- Make careful observations of objects, organisms and events using all their senses
- Describe, compare, sort, classify and order in terms of observable characteristics and properties
- Use a variety of simple tools to extend their observations (e.g., hand lens, measuring tools, eye dropper)
- Engage in simple investigations including making predictions, gathering and interpreting data, recognizing simple patterns, and drawing conclusions
- Record observations, explanations, and ideas through multiple forms of representation
- Work collaboratively with others, share and discuss ideas, and listen to new perspectives

STUDENT LEARNING OUTCOMES:

Upon successful completion of this course, the student will be able to:

- Identify and discuss the discovery approach to teaching/ learning science and math.
- Discuss and explain major concepts in math and science to for appropriate inclusion in the early childhood program
- Develop, plan and implement exploration activities in science and math.
- Describe and develop an operation plan for the coordination of field trips and special events to community resources
- Describe how the science, math, and social studies skills acquired in early childhood are the foundation for the skills taught in the elementary grades.
- Demonstrate how children naturally learn science and math through an integrated approach b question, probing, investigating, problem solving and exploration.
- Report on various approaches or methods of teaching math and science in other countries.

MEANS FOR ASSESSING STUDENT ACHIEVEMENT OF THE OUTCOME COMPETENCIES:

- Completion of chapter review questions. Due on Mondays, midnight CST.
- Completion of tests that will be administered on Blackboard. Tests will be open book and timed and not proctored.
- Design lesson plans using the required lesson plan template.
- Develop guidelines for field trips to community resources.
- Participation in Discussion Board topics posted in the discussion board. Students are expected to post significant, substantive responses that indicate research, reflective thinking and practical experiences on textbook content and related topics. Original response is due on Fridays, midnight; Responses to others due on Mondays, midnight, CST.

ATTENDANCE POLICY:

Online Students - Students are expected to participate in all required instructional activities in their courses. Online courses are no different in this regard; however, participation must be defined in a different manner.

1. Student "attendance" in an online course is defined as active participation in the course as described in the course syllabus. Instructors in online courses are responsible for providing students with clear instructions for how they are required to participate in the course. Additionally, instructors are responsible for incorporating specific instructional activities within their course and will, at a minimum, have weekly mechanisms for documenting student participation. These mechanisms may include, but are not limited to, participating in a weekly discussion board, submitting/completing assignments in Blackboard, or communicating with the instructor.
2. Students aware of necessary absences must inform the professor with as much advance notice as possible in order to make appropriate arrangements.
3. Any student absent 25 percent or more of the online course, i.e., non-participatory during 3 or more weeks of an 11 week term, may receive an F for that course. Instructors may also file a Report of Unsatisfactory Progress for students with excessive non-participation.
4. Any student who has not actively participated in an online class prior to the census date for any given term is considered a "no-show" and will be administratively withdrawn from the class without record. To be counted as actively participating, it is not sufficient to log in and view the course. The student must be submitting work as described in the course syllabus.
5. Additional attendance and participation policies for each course, as defined by the instructor in the course syllabus, are considered a part of the university's attendance policy.

Instructor's Additional Policies: All assigned work must be submitted when due. Late work may not be accepted unless previous arrangements/notification has been made. If accepted late, point value may be reduced. **Discussion Boards are not accepted late.**

Instructor's note: The advantage on online learning is the asynchronous environment. In other words, class time is at the student's convenience. Along with this convenience comes a tremendous responsibility. The student must be organized and self-motivated to stay current in all assignments. The management software on Blackboard allows tracking the times that the students log in and participate. All assignments have deadlines for submission.

EVALUATION: University Grading System:

<p>EVALUATION: University Grading System (see Catalog)</p> <p>A 90-100 Cr for Credit B 80-89 NCR No Credit C 70-70 I Incomplete* D 60-69 W for withdrawal F below 60 WP Withdrawal Passing WF Withdrawal Failing IP In Progress X No grade given</p>	<p>A grade of "CR" indicates that credit in semester hours was granted but no grade or grade points were recorded. *A grade of incomplete is changed if the work required is completed prior to the date indicated in the official University calendar of the next long term, unless the instructor designates an earlier date for completion. If the work is not completed by the appropriate date, the I is converted to the grade of F. An incomplete notation cannot remain on the student's permanent record and must be replaced by the qualitative grade (A-F) by the date specified in the official University calendar of the next regular term.</p>
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COURSE GRADING CRITERIA:

Scoring Rubrics: Scoring rubrics for all assignments will be available.

Evaluation:

Course grade will be determined by using the following point system:

6 Discussion Board (DB)	120 points (20 points each)
Field Trip Project	60 points
Chapter Review Questions (RQ)(12)	120 points (10 points per chapter)
Test # 1	50 points
Test #2	50 points
Test #3	50 points
Test #4	50 points
Science Lesson Plan	50 points
Math Lesson Plan	50 points

- A = 550 -600 points
- B = 500 -549 points
- C = 450 -499 points
- D= 400 - 449 points
- F = 399 and below

ACADEMIC HONESTY: University students are expected to conduct themselves according to the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, forgery, or plagiarism. Disciplinary action for academic misconduct is the responsibility of the faculty members assigned to the course. The faculty member is charged with assessing the gravity of any case of academic dishonesty and with giving sanctions to any student involved. Penalties may be applied to individual cases of academic dishonesty; see catalog for more information about academic dishonesty.

Plagiarism - The attempt to represent the work of another, as it may relate to written or oral works, computer-based work, mode of creative expression (i.e. music, media or the visual arts), as the product of one's own thought, whether the other's work is published or unpublished, or simply the work of a fellow student.

When a student submits oral or written work for credit that includes the words, ideas, or data of others, *the source of that information must be acknowledged through complete, accurate, and specific references*, and, if verbatim statements are included, through use of quotation marks as well. By placing one's name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgements. *A student will avoid being charged with plagiarism if there is an acknowledgement of indebtedness.*" - Source:

<http://www.spjc.cc.fl.us/webcentral/admit/honesty.htm#plag>

DISABLED PERSONS: It is University policy that no otherwise qualified person with disabilities be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational program or activity in the University. It is the responsibility of the student to disclose and to provide documentation pertaining to the disability so that appropriate modifications may be made.

Course Calendar

Week	Date	Assignments to do this Week Discussion Board(DB) Chapter Review Questions (RQ)	Textbook Reading for the Week	Assignments due this Week Mondays, midnight CST Original post on Discussion Board are due on Fridays, midnight CST Responses to others due on Mondays midnight CST (except 5-30-16 and 7-4-16)
1	5-23-16	Read the Syllabus, DB #1, RQ #1, RQ#2	Chapter 1,2	
	5-30-16	Holiday		
2	5-31-16	DB #2, RQ #3	Chapter 3	DB#1 , RQ#1, RQ#2
3	6-6-16	DB #3, RQ#4	Chapter 4	DB #2, RQ#3
4	6-13-16	Test #1, RQ#5 Begin Math Lesson Plan	Chapter 5	DB #3, RQ#4
5	6-20-16	DB #4, RQ#6	Chapter 6	Test #1, RQ#5
6	6-27-16	Test #2, RQ#7	Chapter 7	DB#4, RQ#6
	7-4-16	Holiday		
7	7-5-16	DB#5, RQ#8, RQ#9 Begin Science Lesson Plan	Chapter 8, 9	Math Lesson Plan, RQ #7 Test #2
8	7-11-16	Test #3 , RQ#10, RQ#11 Begin Field Trip Project	Chapter 10,11	DB #5, RQ#8, RQ#9
9	7-18-16	DB #6, RQ#12	Chapter 12	Test # 3, Science Lesson Plan , RQ#10, RQ #11
10	7-25-16	Test #4		DB #6, Field Trip Project , RQ#12
11	8-1-16	Smile		Test #4