
Course: ED635 N Teaching Elementary Science
Credit: 3 hours
Semester: Summer 2026 (Session 1)
Days: May 11th – June 26th
Location: Online Only
Instructor: Dr. Mary Briggs
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I. DESCRIPTION

This course investigates contemporary models for teaching elementary and middle school science. Students are challenged to plan learning experiences; to develop strategies for implementation, instruction, and assessment of appropriate science activities; and to integrate science into the curriculum.

II. DEPARTMENTAL THEME STATEMENT

The Education Department at Calvary promotes the development of teachers within a distinctly Christian environment grounded in a Biblical philosophy of education. The program emphasizes pedagogical skills, differentiated learning, diversity appreciation, instructional technology and a search for truth while setting standards for professionalism and character for each teacher candidate. Students should graduate with a desire to be lifelong learners and servant-leaders.

III. OBJECTIVES

A. General competencies to be achieved. The student will:

1. Recognize the nature, value, and importance of science in elementary education.
 - a. MTS 1.1, 3.1, 4.1 PLO 1, 2 & 6
 - b. Assignments: A.1, A.2, B.1, B.2

2. Demonstrate understanding of the big ideas of science content, the scientific process, inquiry investigation, and the nature of science appropriate for students in grades 1-6.
 - a. MTS 1.1, 2.5, 3.2, 4.2, 6.4, 7.2 PLO 1, 2, 4 & 5
 - b. Assignments: A.1, A.2, B.1, B.2, B.3, B.4, B.5, B.6

3. Describe the social, intellectual, and personal developments of students and recognize the diverse needs, interests, and abilities of students in regard to science in grades 1-6.
 - a. MTS 1.5, 2.6, 3.2, 4.3, 5.3, 6.2, 7.4; PLO 1, 2 & 4)
 - b. Assignments: A.1, A.2, B.1, B.2, B.3, B.4, B.5, B.6
4. Gain an increased awareness of interdisciplinary connections between science, language arts, mathematics, technology, health, physical education and society.
 - a. MTS 1.4, 2.5, 3.3, 4.2, 6.4, 7.2; PLO 1, 2, 4, 5 & 6
 - b. Assignments: A.1, A.2, B.1, B.2, B.3, B.4, B.5, B.6

B. Specific competencies to be achieved. The student will:

1. Evaluate and utilize contemporary science standards and curriculum materials for science education.
 - a. MTS 1.1, 2.2, 3.1, 3.3, 4.1; PLO 2, 5 & 6
 - b. Assignments: A.1, A.2, B.1, B.2, B.4, B.5, B.6
2. Plan and implement a variety of instructional strategies and assessment techniques for teaching science at the elementary level.
 - a. MTS 1.4, 2.4, 3.3, 4.1, 5.2, 6.4, 7.3
 - b. Assignments: B.4, B.5, B.6
3. Create a positive learning environment that encourages science learning by modeling the attitudes and dispositions of scientific inquiry.
 - a. MTS 1.5, 2.6, 4.3, 5.1, 6.2, 7.6
 - b. Assignments: B.3, B.4, B.5, B.6
4. Realize ethical, legal, and safety issues in teaching elementary science.
 - a. MTS 1.1, 2.6, 3.2, 4.3, 5.1, 6.2, 8.3, 9.3
 - b. Assignments: A.1, A.2, B.1, B.2, B.4, B.5, B.6
5. Use accepted science safety standards during all science investigations.
 - a. MTS 1.1, 2.6, 3.2, 4.3, 5.1, 6.2, 8.3, 9.3
 - b. Assignments: B.3, B.4, B.5, B.6
6. Synthesize a comprehensive and consistently Christian philosophy of elementary science education based on the biblical worldview.
 - a. MTS 1.5, 2.6, 3.3, 4.1, 5.1, 6.2, 8.3
 - b. Assignments: A.1, A.2, B.1, B.2, B.3, B.4, B.5, B.6

IV. MATERIALS

A. Required Textbooks:

1. The Bible (see note below in course policies)
2. Erdman, B. (2022). *The New Art and Science of Teaching Science*. Solution Tree Press.
ISBN-13: 978-1945349607 \$45.95
3. Madanes, S. (2016). *Everything You Need to Ace Science in One Big Fat Notebook*.
ISBN-13 : 978-0761160953 \$16.99

V. REQUIREMENTS

A. Reading Assignments

1. **Textbook Reading:** You are expected to read the textbook. Class activities depend upon you being thoroughly familiar with the readings.
2. **Supplemental Reading:** Read all supplemental materials (i.e., handouts, journal articles, websites, etc.) that may be assigned by the instructor during the course.

B. Writing Assignments

1. **Class Video Reports:** Online students will complete eight (8) reports.
2. **Discussion Questions:** A total of three (3) topics and associated questions will be posted in CANVAS. For each question, you should post a 250 – 300 word response. Cite at least one source to support your response. You should then respond to at least one other post made by a classmate.
3. **Science Literature Review:** Choose and review 20 science themed books written for students in elementary and middle school. Consider including biographies of scientists. Do not include science textbooks, experiment books, or random science fact books.

Use the chart provided in CANVAS to record the following information for each book:

- Title, Author, # of pages
- Reading level and font size
- Evaluation of pictures, diagrams, and/or charts
- Evaluation of clarity of scientific explanations

4. Teaching a Science Lesson

You will design one 15 – 20 minute science lesson for your unit plan that includes an experiment. You will record yourself teaching the lesson.

- Use the Lesson Plan Template provided in CANVAS.
- Include any printed materials that you will use to teach the lesson.
- Submit a copy of your lesson plan and all materials before recording yourself.

5. Teaching a STEM Lesson

You will design one 15 – 20 minute STEM activity lesson. You will record yourself teaching the lesson.

- Use the Lesson Plan Template provided in CANVAS.
- Include any printed materials that you will use to teach the lesson.
- Submit a copy of your lesson plan and all materials before recording yourself.

6. Science Unit

You will design a Unit Plan. Begin by choosing a grade level and grade appropriate science topic. You can find grade appropriate topics by referring to state standards. Complete the Unit Plan template located in CANVAS to fulfill the requirements for this assignment.

VI. METHODS

A. Teaching methods

1. Research and reading
2. Writing
3. Discussions
4. Projects
5. Practicing skills
6. Lectures

B. Grading

1. Weight given to assignments:

Class Video Reports	80 (10 pts. x 8 reports)
Reading Assignments	60 (10 pts x 6 assignments)
Discussion Questions	60 (20 points x 3 DQs)
Lesson Plans (Science & STEM)	100 (50 points x 2 lesson plans)
Teaching (Science & STEM)	100 (50 points x 2 sessions)
Science Literature Review	200 (10 points x 20 books)
Science Unit Plan	400
Total	1,000 points

2. Late Assignments

Late assignments may be penalized 10 percent of the grade for that assignment per week.

3. Letter / Numerical Grade Scale

The grading scale listed in the current University Catalog will be used for this course.

VII. COURSE POLICIES

Students in the Teacher Education Department at Calvary University are also to abide by the policies listed in the Educator Preparation Program Handbook.

A. Grade Requirements

Education majors must maintain a high GPA standard to successfully complete their program. Education majors must maintain a 3.0 GPA. ***This course must be passed with a grade of “C” or higher depending on the student’s GPA in Professional and Content Area courses. Receiving a grade lower than a “C” will mean that this course must be repeated.***

B. The Bible as Required Textbook

The Bible is a required textbook in every course at Calvary University. To facilitate academic level study, students are required to use for assignments and research an English translation or version of the Bible based on formal equivalence (*meaning that the translation is generally word-for-word from the original languages*), including any of the following: New American Standard (NASB, English Standard Version (ESV), New King James (NKJV), or King James (KJV). Other translations and versions based on dynamic equivalence (*paraphrases and thought-for-thought translations like NLT and NIV*) may be used as supplemental sources. Please ask the professor if you have questions about a particular translation or version.

C. Academic Honesty

Plagiarism is defined as copying any content without identifying the source. This also includes taking another person's or AI entity's ideas or constructs and presenting them as your own. Plagiarism of any kind will not be tolerated.

Most assignments at Calvary require the student to produce original work. Therefore, unless specifically permitted by the instructor, the use of AI-generated content is prohibited (even if cited) as it does not represent original work created by the student and is an unreliable aggregate of ideas from other sources.

AI, however, may be utilized in cases where the instructor has explicitly permitted its use to accomplish specific tasks. It is only in these cases that AI-generated (or modified) content may be submitted by the student. If there are any questions as to the permissibility of AI use for an assignment, please ask your instructor for clarification.

Additionally, submission of work for this class must express original thought and should be written in the voice of the student. Research should be conducted using academic, peer-reviewed sources (not blogs or other opinion/editorial sites). However, even when citing sources, students must explain the ideas/concepts presented in their own words. Extensive copying of source material is not permitted, even if the source is cited on the reference page.

D. Academic Activity & Participation

Learning takes place best when the student is personally involved in the process. Students will be expected to engage in the material presented weekly and be able to summarize the content to meet learning objectives. Punctuality is expected out of professional courtesy and to minimize the disruption of the classroom dynamics.

E. Accommodations Statement

Students with disabilities have the responsibility of informing the Accommodations Support Coordinator (aso@calvary.edu) of any condition that may require support.

F. Style Guide

All class papers must follow the APA style guide according to *Publication Manual of the American Psychological Association*, 7th edition.

G. The Clark Academic Center

The Clark Academic Center (learning@calvary.edu) is dedicated to providing free academic assistance for Calvary University students. Student tutors aid with all facets of the writing process, tutor in various subject areas, prepare students for exams and facilitate tests. Please take advantage of this service.

VIII. TENTATIVE SCHEDULE

Week	Dates	Class Topics:	Assignments for the Week:
1	May 11 th - May 17 th	Day 1 of Creation Next Generation Standards Learning Goals Assessment	<i>Due by Midnight on May 17th</i> 1. Complete Class Video Report. 2. Complete assigned reading. 3. Complete DQ#1. 4. Work on Literature Review.
2	May 18 th - May 24 th	Day 2 of Creation Planning Units Types of Lessons: Direct Instruction Practicing & Deepening Knowledge Application	<i>Due by Midnight on May 24th</i> 1. Complete Class Video Reports (x2). 2. Complete assigned reading. 3. Prepare a Science Lesson. 4. Work on Literature Review.
3	May 25 th - May 31 st	Day 3 of Creation Instructional Strategies That Appear in All Types of Lessons	<i>Due by Midnight on May 31st</i> 1. Complete Class Video Report. 2. Complete assigned reading 3. Record yourself teaching your Science lesson. 4. Work on Literature Review.
4	June 1 st – June 7 th	Day 4 of Creation Using Engagement Strategies Engineering Design Process	<i>Due by Midnight on June 7th</i> 1. Complete Class Video Report. 2. Complete assigned reading. 3. Complete DQ#2. 4. Prepare a STEM activity lesson. 5. Complete Literature Review.
5	June 8 th – June 14 th	Day 5 of Creation Creating the Learning Environment Part 1: Safety Guided Instruction for the Unit Plan	<i>Due by Midnight on June 14th</i> 1. Complete Class Video Report. 2. Complete assigned reading. 3. Record yourself teaching your STEM activity lesson. 4. Work on the Unit Plan.

6	June 15 th - June 21 st	Day 6 of Creation Creating the Learning Environment Part 2: Classroom Layout Students' Characteristics Guided Instruction for the Unit Plan	<i>Due by Midnight on June 21st</i> 1. Complete Class Video Report. 2. Complete assigned reading. 3. Complete DQ#3. 4. Work on the Unit Plan.
7	June 22 nd June 26 th	Day 7 Science Fair Projects Facilitating a Science Fair	<i>Due by Midnight on June 26th</i> 1. Complete Class Video Report. 2. Complete Unit Plan.

About Changes to this Syllabus: *The instructor reserves the right to make changes to this syllabus at any time during the course, but any change made will only be done after clearly communicating the need for the change and the specific change to be made via in-class announcement and Canvas announcement.*