



15800 Calvary Rd
Kansas City, MO 64147

Syllabus

Course: ED335 T & NT Scientific Inquiry for Elementary Teachers
Credit: 3 hours
Semester: Fall 2022 (Cycles 2 & 3)
Day and Time: Wednesdays, 1:00 – 4:00 p.m.
Location: East Education Building
Instructor: Dr. Mary F. Briggs
Contact Info: Office phone: 816-425-6181
Email: mary.briggs@calvary.edu

I. DESCRIPTION

This course provides elementary pre-service teachers with an opportunity to explore basic astronomy, biology, chemistry, earth science, meteorology, and physics concepts that are consistent with K – 6th grade ISTE, state, and local curriculum standards. The scientific process, the engineering design process, and scientific notation will also be emphasized throughout the course. (Prerequisite: ED190 or permission of the Education Department program director; must be officially admitted to Teacher Education program)

This course is offered in two formats: in-person and online. Students registered for in-person attend the classes in person, online students attend the classes via the online classroom. For both in-person and online students, assignments and interaction outside of the class period are done in the learning management system.

II. DEPARTMENTAL THEME STATEMENT

The Educator Preparation program 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

The student will:

1. Demonstrate knowledge of basic astronomy concepts consistent with K – 6th grade ISTE, state, and local curriculum standards.
 - a. MTS 1.1; PLO-1, 2, and 6
 - b. Assignments: A.1, A.2, C.1, C.3, C.4, C.5

Our Mission: "...to prepare Christians to live and serve in the church and in the world according to the Biblical worldview."

2. Demonstrate knowledge of basic biology concepts consistent with K – 6th grade ISTE, state, and local curriculum standards.
 - a. MTS 1.1; PLO-1, 2, and 6
 - b. Assignments: A.1, A.2, C.1, C.3, C.4, C.5
3. Demonstrate knowledge of basic chemistry concepts consistent with K – 6th grade ISTE, state, and local curriculum standards.
 - a. MTS 1.1; PLO-1, 2, and 6
 - b. Assignments: A.1, A.2, C.1, C.3, C.4, C.5
4. Demonstrate knowledge of earth science concepts consistent with K – 6th grade ISTE, state, and local curriculum standards.
 - a. MTS 1.1; PLO-1, 2, and 6
 - b. Assignments: A.1, A.2, C.1, C.3, C.4, C.5
5. Demonstrate knowledge of basic physics concepts consistent with K – 6th grade ISTE, state, and local curriculum standards.
 - a. MTS 1.1; PLO-1, 2, and 6
 - b. Assignments: A.1, A.2, C.1, C.3, C.4, C.5
6. Demonstrate knowledge of basic meteorology concepts consistent with K – 6th grade ISTE, state, and local curriculum standards.
 - a. MTS 1.1; PLO-1, 2, and 6
 - b. Assignments: A.1, A.2, C.1, C.3, C.4, C.5
7. Demonstrate knowledge of the scientific method, scientific notation, and the engineering design process.
 - a. MTS 1.1, 1.2, 1.3, 4.1, & 4.2; PLO-1, 2, 3, and 6
 - b. Assignments: B, C.2

IV. MATERIALS

Required Textbooks:

A. Bible (Please refer to Course Policies.)

B. Wile, J. (2013). *Science in the beginning*. Bereans Builders Publishing.
ISBN-13 : 978-0989042406 (\$39.00)

C. Madanes, S. (2016). *Everything you need to ace science in one big fat notebook*.
ISBN-13 : 978-0761160953 (\$10.34)

Additional Materials: You will be provided with a list of everyday materials. You will need to purchase these materials for in-class experiments.

V. REQUIREMENTS

A. Reading Assignments:

1. **Textbook Reading:** Read the assigned textbooks.
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. Activity Assignment:

Scientific Method: 1) In conjunction with ED344, choose a line of inquiry. 2) Complete the Scientific Method Form located in Files in CANVAS. 3) Make a recording of yourself talking through the Scientific Method in relation to your chosen line of inquiry. 4) Upload your recording to the DB.

C. Written Assignments:

1. **Class Video Reports:** Online students will complete a Class Video Report Form for each class session. In-class students are expected to complete a Class Video Report Form for any class session missed due to absence from class. The Class Video Report Template is available in Files in CANVAS.
2. **Discussion Board:** Watch a classmate’s Scientific Method recording. Use the Compare/Contrast Feedback Form in Files in CANVAS to guide your 250 – 300 word response. (Optional/encouraged: Watch additional classmates’ recordings.)
3. **Science Observation Sheets:** Complete a Science Observation Sheet for each of the science experiments conducted during class time. The template is available in Files in CANVAS.
4. **Quizzes:** Complete fifteen (15) online quizzes based on the assigned reading.
5. **Final Exam**

VI. METHODS

A. Teaching and Learning

1. Reading
2. Inquiry
3. Experiments
4. Writing
5. Mini-Lectures
6. Answers in Genesis Videos
7. Quizzes and Final Exam

B. Grading

1. Weight given to assignments:

Assignments:	Points:
Class Participation (In-Class Students)	140
Report on Videos (Online Students)	
Discussion Board	60
Science Observation Sheets	300 (20 x 15 experiments)
Scientific Method	100
Quizzes	300 (20 x 15 quizzes)

Final Exam (Proctor U)	100
Total:	1000 points

2. Late Assignments

Late assignments may be penalized 10 percent of the grade on 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 standard for GPAs to successfully complete their program. Education majors must maintain a 3.0 GPA in Professional Education and Content Area coursework. *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 part of a book or paper without identifying the author. This also includes taking another person’s ideas and presenting them as your own. All papers must be submitted in APA format and submitted to Turnitin prior to uploading onto Canvas.

D. Academic Activity & Participation

Students learn best when they take an active part in the learning 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. Technology

Using technology to enhance the learning experience is an integral part of this course. However, technology can also cause distraction and inattentiveness. Cell phones should be set to silent and placed on the table or in a backpack/purse. ***Working on other assignments during class or using electronic devices for anything other than class activities or taking notes for the course will not be permitted.***

F. Accommodations Statement

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

G. Style Guide

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

H. The Clark Academic Center

The Clark Academic Center (learning@calvary.edu), located in the library building, is dedicated to providing free academic assistance for all Calvary University students. CAC assists with all facets of the writing process, tutors in various subject areas, prepares students for exams, facilitates with time management options and proctors tests. Please take advantage of this service.

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.*

VIII. COURSE OUTLINE AND CLASS SCHEDULE: The following course outline indicates the general direction for the content of this class:

Week	Dates	Class Topics:	Assignments for the Week:
1	Aug. 24 th	Introduction The Scientific Method Health & Safety Practices	<i>Due by Midnight on Aug. 30th</i> 1. Complete Observation Sheet #1. 2. Complete assigned reading. 3. Complete Voc. Quiz #1.
2	Aug. 31 st	Day 1 of Creation	<i>Due by Midnight on Sept. 6th</i> 1. Complete Observation Sheet #2. 2. Complete assigned reading. 3. Complete Voc. Quiz #2.
3	Sept. 7 th	Day 1 of Creation	<i>Due by Midnight on Sept. 13th</i> 1. Complete Observation Sheet #3. 2. Complete assigned reading. 3. Complete Voc. Quiz #3.
4	Sept. 14 th	Day 1 of Creation	<i>Due by Midnight on Sept. 20th</i> 1. Complete Observation Sheet #4. 2. Complete assigned reading. 3. Complete Voc. Quiz #4.
5	Sept. 21 st	Day 2 of Creation	<i>Due by Midnight on Sept. 27th</i> 1. Complete Observation Sheet #5. 2. Complete assigned reading. 3. Complete Voc. Quiz #5.
6	Sept. 28 th	Day 2 of Creation	<i>Due by Midnight on Oct. 4th</i> 1. Complete Observation Sheet #6. 2. Complete assigned reading. 3. Complete Voc. Quiz #6.
7	Oct. 5 th	Day 3 of Creation	<i>Due by Midnight on Oct. 11th</i> 1. Complete Observation Sheet #7. 2. Complete assigned reading. 3. Complete Voc. Quiz #7.
8	Oct. 12 th	Day 3 of Creation	<i>Due by Midnight on Oct. 25th</i> 1. Complete Observation Sheet #8. 2. Complete assigned reading. 3. Complete Voc. Quiz #8.

		Fall Break	
9	Oct. 26 th	Day 4 of Creation	<i>Due by Midnight on Nov. 1st</i> 1. Complete Observation Sheet #9. 2. Complete assigned reading. 3. Complete Voc. Quiz #9.
10	Nov. 2 nd	Day 5 of Creation	<i>Due by Midnight on Nov. 8th</i> 1. Complete Observation Sheet #10. 2. Complete assigned reading. 3. Complete Voc. Quiz #10.
11	Nov. 9 th	Day 6 of Creation	<i>Due by Midnight on Nov. 15th</i> 1. Complete Observation Sheet #11. 2. Complete assigned reading. 3. Complete Voc. Quiz #11. 4. Scientific Method
12	Nov. 16 th	Day 6 of Creation	<i>Due by Midnight on Nov. 22nd</i> 1. Complete Observation Sheet #12. 2. Complete assigned reading. 3. Complete Voc. Quiz #12. 4. Discussion Board
13	Nov. 23 rd	Thanksgiving Break	<i>Due by Midnight on Nov. 29th</i> 1. Complete Observation Sheet #13. 2. Complete assigned reading. 3. Complete Voc. Quiz #13.
14	Nov. 30 th	Engineering Design Process	<i>Due by Midnight on Dec. 6th</i> 1. Complete Observation Sheet #14. 2. Complete assigned reading. 3. Complete Voc. Quiz #14.
15	Dec. 7 th	Engineering Design Process Review	<i>Due by Midnight on Dec. 14th</i> 1. Complete Observation Sheet #15. 2. Complete Voc. Quiz #15. 3. Prepare for Final Exam.
16	Dec. 14 th	Final Exam	

Course Schedule of Topics:

Topics listed below are taken from the Missouri Content Assessment for Elementary Teachers.

<p>Introduction:</p> <ol style="list-style-type: none">1. The Scientific Method.2. Health and safety practices related to scientific investigations, including the safe use, storage, and disposal of tools, materials, organisms, and technology
<p>Day 1 of Creation: Thermodynamics</p> <ol style="list-style-type: none">1. Basic structure, physical properties, and interactions of matter (e.g., states of matter, mass, atoms, heating and cooling)2. Physical and chemical properties of substances and of chemical reactions, including showing conservation of mass in a chemical reaction and determining if substances that are combined can be separated or if they result in new substances3. Force (e.g., applied, gravitational, friction) and motion, including the application of simple machines4. Conservation of energy and matter, the relationship between speed and energy, and kinetic and potential energy5. Forms of energy, energy transfer, and real-world devices that convert energy from one form to another6. Electromagnetism, electricity, magnetism, and waves
<p>Day 2 of Creation: Atmosphere</p> <ol style="list-style-type: none">1. The distribution of water on Earth and the hydrological cycle2. The formation of weather, relationships between observed data and weather phenomena, and major climates and the global conditions that form them
<p>Day 3 of Creation: Dry Ground and Plants</p> <ol style="list-style-type: none">1. Natural processes that shape Earth's surface (e.g., weathering, erosion) and of the ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact2. The rock cycle; the formation of major geologic features; and the process of, and evidence for, plate tectonics3. The geologic timescale, the fossil record, and the supporting evidence for changes in a landscape over time4. How plants survive, grow, and meet their needs, including through photosynthesis and cellular respiration and through the use of major internal and external structures5. The life cycle of different plants and how characteristic plant structures affect the probability of successful reproduction
<p>Day 4 of Creation: Sun, Moon, and Stars</p> <ol style="list-style-type: none">1. The scale properties of objects in the solar system; the movement of, and role of gravity upon, celestial objects; and the Earth-sun-moon system and its interactions2. Scientific notation

Day 5 of Creation: Birds and Sea Animals

1. The characteristics of life, the cell, and how multicellular organisms are organized by varying levels of complexity

Day 6 of Creation: Land Animals and Humans

1. How animals survive, grow, and meet their needs, including the use of their body systems
2. The life cycle of animals, how animals sense and respond to different types of information, and how characteristic animal behaviors affect the probability of successful reproduction
3. The cycling of matter and flow of energy between living and nonliving parts of an ecosystem, including the interactions among organisms (e.g., competition, predation, symbiosis)
4. The effects of resource availability, changes to physical or biological components of an ecosystem, and the process of succession on individual organisms and on populations
5. Inheritance, variation of traits, and natural selection
6. The Engineering Design Process (ask, imagine, plan, make, make better, share)

ProctorU Addendum

Calvary University uses ProctorU test proctoring service. ProctorU is a live online proctoring service that allows you to take your exam from the comfort of your home. ProctorU is available 24/7, however, **you will need to schedule your proctoring session at least 72 hours in advance to avoid any on-demand scheduling fees.** Creating a ProctorU account is simple. You can do so by going to <https://go.proctoru.com/students/users/new?institution=2045>.

Students must read all information and comply with all directions below to be successful for their proctored exam experience. Calvary University hopes that students will have a smooth experience, and to decrease student anxiety and increase success, please use this guide to help you plan for your test. Please note that, per ProctorU, there will be penalties for students who miss their testing window. Technical trouble will not be an excuse for missing the window. Therefore, pay attention to all details within this guide, and all links included.

System Requirements: Please see the information below supplied by ProctorU for system requirements. If your computer does not have these capabilities, please consider borrowing a computer as you will still be required to complete the exam using the live proctor system with ProctorU. Please note that you will not be able to take your exam(s) in the Calvary University Library due to the activity that will be picked up in a public place.

In order to use ProctorU, you will need a high-speed internet connection, a webcam (internal or external), a Windows or Apple Operating System, and a government issued photo ID. ProctorU recommends that you visit <https://test-it-out.proctoru.com/> prior to your proctoring session to test your equipment. They recommend you click on the button that says "connect to a live person" to fully test out your equipment. If using Firefox, please make sure that you are using the current version of your Firefox browser and have downloaded the ProctorU extension available at <https://www.proctoru.com/firefox>.

ProctorU Addendum continued on the next page.

Type	Minimum	Recommended	Calvary University Minimum
Web Camera	640×480 resolution	1280×720 resolution	1280×720 resolution
PC Users	Windows Vista	Windows 10 (10 S is not supported)	same
Mac Users	OS X 10.5 or higher	OS X 10.13 High Sierra	same
Internet Speed Download	.768 Mbps	1.5 Mbps	3 Mbps
Internet Speed Upload	.384 Mbps	1 Mbps	2 Mbps
RAM	1024 MB	2 GB	same
Ports	1935, 843, 80, 443, 61613, UDP/TCP	1935, 843, 80, 443, 61613, UDP/TCP	same

- Desktop computer or laptop (not a tablet, Chromebook or cell phone).
- Webcam and microphone (built-in or external) – test your webcam at <https://test.webrtc.org/>
- Connection to network with sufficient internet speed: at least 3 Mbps download speed and 2 Mbps upload – test internet speed at www.speedtest.net
- Operating systems: Windows Vista or newer, Mac OS X 10.5 – or newer
- Browser with pop-up blocker disabled: Google Chrome v39 or later, Mozilla Firefox v34 or later.

Additionally, please visit and review the test-taker resource center by going to <https://www.proctoru.com/proctoru-live-resource-center>. You should expect the startup process with the proctor to take about 10-15 minutes. However, this time will not affect your exam time. Please feel free to direct any questions to the student support team via the live chat within your account.

******If you have any questions or concerns, contact Proctor U’s technical support team 24/7 via their live chat support at <https://www.proctoru.com/contact-us>**

Costs for ProctorU exams are listed below and are payable to ProctorU at the time of the test. These costs assume that a student will schedule their exam at least 72 hours in advance of the exam start time:

- 60 minutes or less - \$8
- 61 – 120 minutes - \$10
- 121 – 180 minutes - \$12

For those not scheduling an exam at least 72 hours in advance, late scheduling charges are added in addition to the above fee structure. There are two options for late scheduling:

- "Take It Soon" allows a test to be scheduled less than 72 hours but more than 24 hours before the desired start time. This option includes an additional fee of \$8.00. (Total cost for a 60 minute exam scheduled as "Take It Soon" would be \$16.)
- "Take It Now" allows a test to be taken on-demand with no appointment needed. This option includes an additional fee of \$12.00. (Total cost for a 60 minute exam scheduled as "Take It Now" would be \$20.)

These options are for the convenience of the examinee. Any charges applicable to the examinee must be paid with a credit or debit card. The test taker will be required to enter payment information on a secure page connected to a third-party card processor. The page is encrypted and secure and ProctorU does not see or store any credit card data.

Examinees will be required to re-enter payment information each time new charges are incurred.