

## Effectively Teaching Science in the Elementary and Middle School

EDU 3260

Credits: 4 Fridays 9:15 - 11:35 Lentz Hall rm 223

**Prerequisites:** Acceptance to the Teacher Education Program

### Course description

This course provides elementary education majors with the background, practice, and methods needed to integrate Science teaching into any curriculum.

### Catalog Description

This course is designed to provide elementary/ middle school preservice teachers with knowledge of the developmental sequence of scientific ideas and concepts and fluency in the pedagogical concepts and skills needed for student success. The focus of this course is on the content, methods of teaching, and curricula as taught at the early childhood, elementary, and middle school levels. A wide range of teaching and learning experiences will be demonstrated and practiced. The course experiences include collaborating with the instructor and cooperating teachers who are involved in our partnerships with local schools in planning, implementing, and evaluating classroom science instruction. Environmental education will be incorporated into this course. Field experience required. Prerequisite: Admission to the Teacher Education Program

### Materials Needed

3 ring binder, lap top, calculator, compass, protractor, ruler, and graph paper.

### Curriculum

The course is divided into 6 units in the areas of Science Methods, STEM, Inquiry Based, Project Based and include Physical, Earth and Life Sciences. Each unit will include student made lessons to add to their portfolio that will demonstrate knowledge, planning, implementing, and evaluating lessons. The portfolio will be shared digitally for guidance and grading.

### Science Textbook

Teaching Science Through Inquiry-Based Instruction, with Enhanced Pearson eText -- Access Card Package (What's New in Curriculum & Instruction) 13th Edition by Terry Contant (Author), Joel Bass (Autho

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### Science Methods

- Course and teacher introduction
- PEDs development
- Class Survey Lab
- Head to Toe Lab
- Find seeds

### Literature Based

- How Big is a Million?
- Bartholomew and the Oobleck

### Inquiry Based

- Lab with Seeds
- HW: Germination Lesson Plan

### STEM

- Water Filtration Lab
- Egg Drop
- Bridges, Towers, and Barges

### Conservation/Environmental Ed

- Rootpikewin.org
- Great Lakes Alliance
- Conservation, Service, Environmental or Education Proj.

### AIMs

- Ramps and Rubberbands
- HW: AIMs Lab Lesson Plan

### Links:

Lesson Plan Template:

<https://docs.google.com/document/d/1Z3s0KzwISBnLW713AulD7RCKLB71BmFFbJDp31G0GSU/edit?usp=sharing>

Free NSTA membership:

<https://my.nsta.org/membership/join/member-plans?p=a&t=>

Next Generation Science Standards NGSS:

<https://www.nsta.org/science-standards>

## [Current Wisconsin State Teacher Standards](#)

### 2020 Standards for Science Teacher Preparation: [Link](#)

<https://drive.google.com/file/d/13wySwdnHxLbBm5vLr7U-nhGQVQsoXkqE/view?usp=sharing>

### Learning Objectives:

By the end of this course all teacher candidates will be able to:

1. ...articulate the importance of Science in society and in elementary and middle schools.
2. ...define and demonstrate understanding of Science content and curriculum.
3. ...demonstrate the effective use of Science methods and standards based lesson plans.
4. ...manage Science supplies, time, and lab procedures effectively and safely.
5. ...prepare, implement, and evaluate lessons according to cross cutting concepts, Science and Engineering Practices, and NGSS Standards.

### Clinical Experiences:

Candidates will design lesson plans for elementary/middle school students. Candidates may implement the lesson plans in a local elementary/middle school classroom. A minimum of 15 clinical hours are required.

### Clinical Checkpoints/Assignments:

Candidates will choose two lesson plans and reflections from their clinical experience. For each lesson plan/reflection the candidate will align it with the appropriate NGSS Standard and write a rationale.

### Lab Report with Lesson Plan Portfolio:

Candidates will create a portfolio of Lesson Plans with Lab Reports completed during the semester. **Portfolio Assignment:** Candidates will write 5 next question ideas for each Lab Report.

### Unit Project:

Candidates will create a 12 lesson unit with NGSS standards, Science and Engineering Practices, and Cross Cutting Concepts.

Grading Areas	Points	Percent of Grade
Attendance/Discussion Posts/Class Participation <a href="#">Rubric</a>	40	8%
Lab Reports/Assignments	80	16%
Lesson Plans	80	16%
Unit Project/Final	160	32%
Chapter Reflection Responses	140	28%

**GRADING SCALE:** 98-100%= A+ 94-97%= A 90-93%= A- 88-89%= B+ 84-87%= B 80-83%= B- 78-79%= C+  
74-77%= C 70-73%= C- 68-69%= D+ 64-67%= D 60-63%= D- Below 59%= F

\*\* Late assignments will have 10% of points deducted. They will be scored as zero after 2 weeks.

\*\*\*Course failure may result after 2 unexcused absences. Missed class time will be made up by appointment with the instructor.

**Covid - 19:**

*Due to the ongoing pandemic, Carthage College has adopted a policy requiring masks to be worn by all individuals in all buildings. Masks must be worn at all times in the classroom, laboratory, studio spaces, hallways, bathrooms, and during in-person meetings. The face covering must conform to CDC guidelines and must cover both the nose and mouth at all times. Note that bandanas, neck gaiters, and masks with exhalation or external valves are not acceptable and are not sufficient for protection of others or yourself. Acceptable masks tie behind the head or loop behind the ears, fit snugly over the nose and chin, and can include cloth masks, medical/surgical masks, and N95s or KN95s. Eating and/or drinking are prohibited while in the classroom (because those activities interfere with consistent mask wearing).*

*ny student who refuses to wear a mask or consistently forgets one will be dismissed from the class and not be given an opportunity to make up missed work. The student will also be referred to the Dean of Students, as outlined by the process on Carthage's Stay Safe website.*

Stay Safe Guidelines: <https://www.carthage.edu/carthage-covid-19/stay-safe-carthage/>

**Providing Accommodations:** *Carthage College strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers due to your disability (including mental health, learning disorders and chronic medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, you also need to register with Diane Schowalter in Learning Accessibility Services ([dschowalter1@carthage.edu](mailto:dschowalter1@carthage.edu)).*