**AUBURN UNIVERSITY**

**SYLLABUS**

1. **Course Number:** CTEE 7430/7436

**Course Title:** Curriculum & Teaching in Natural Science (Grades K-6)

**Credit Hours:** 3 semester hours

**Prerequisites**: None

**Co-requisites:** None

1. **Term:** Fall 2013

**Day/Time:** TBA by learning groups

**Instructor:** Dr. Charles Eick

**Office Address**: 5058 Haley Center

**Contact Information:** 334-844-6887, [eickcha@auburn.edu](mailto:eickcha@auburn.edu)

**Office Hours:** By appointment

1. **Texts or Major Resources**:

* Essential Science for Teachers: Physical Science, <http://www.learner.org/courses/essential/physicalsci/>
* Physical science textbook (high school copy preferred)
* Notebook, composition type (or writing-drawing software)[[1]](#footnote-1)
* Headset with microphone (USB connection and noise cancelling) ($25-35)[[2]](#footnote-2)
* Science Materials – See Materials file on Canvas.
  + (See #6 Course Outline Overview for specialty items.)
* IMG Help for Canvas: 334-844-5181 or <http://www.auburn.edu/img/canvas/help/index.html>
* Video guides for help in using the Canvas tools: <http://guides.instructure.com/m/4210>

1. **Course Description:** Teaching practices and re-appraisal of selecting experiences and content for curriculum improvement in (K-6) natural science education. May count either CTEE 7430 or CTEE 7436.
2. **Student Learning Outcomes**:

The learning goal of this course is for participants to learn physical science content for teaching grades K-6 and how children understand it in order to better teach it. Physical science is the least understood area of science by elementary educators, and thus, requires the most professional development.

Course Objectives:

Participants will…

* Demonstrate improvement in physical science content knowledge and understanding
  + *{Outcome measures: Test Questions, Problem Sets, Guided Journal Entry}*
* Reflect on science content learning and children’s understandings
  + *{Outcome measures: Watch the Video, Going Further, Definitions}*
* Apply content knowledge to teaching physical science concepts in practice
  + *{Outcome measures: Guided Channel-Talk Posting on Canvas}*

1. **Course Content Outline**:

OVERVIEW

Participants will be learning more about the Physical Science content needed by K-6 educators, and how to teach it for children’s understanding. The program of study used in this course will be the **Annenberg Learner, Essential Sciences Series for K-6 Educators, Physical Science**. This series consists of 8 video-based sessions where participants will: (1) conduct pre-video activities using prior knowledge, (2) view a 60-minute video on teaching and learning science, and (3) collectively (in a ‘learning community’ group[[3]](#footnote-3)) conduct post-video activities and discussion using the **Canvas Conference** feature. Further learning from the video sessions will take place through additional individual ‘homework’ activities, including additional reading, problem sets, textbook reading & definitions, and written reflections on science learning and actual practice (journal and posting activities). All assignments for each of the 8 video sessions will be on Canvas within 8 sequential *Modules*.

The **Panopto website** (for video access) and **Canvas Modules** (for content and assignments)will be used for delivery of course content.[[4]](#footnote-4) Preparatory materials needed for each video session includes: (1) Panopto video URLs, (2) materials list, and (3) problem set answers – all found under the Canvas Preparatory Module. Most of the needed materials for the activities can be easily obtained at home or from the local store. Any specialty science materials that are required can be obtained from the participant’s local school or borrowed from the instructor[[5]](#footnote-5) – See box below for specialty items needed:

SPECIALTY ITEMS –

**All individuals need:** Magnifying glass, two equal sized metal and wooden blocks

**Group facilitators need**: 250-ml beaker, graduated cylinder, digital gram scale

Auburn University’s **Canvas** online system will be used for communicating and submitting course work in this distance course. Group communication will occur through use of the synchronous *Conferences* and the asynchronous *Discussions* features of Canvas. **{The headset is required for synchronous communication unless a group meets in person – See Texts or Major Resources above.}** Instructor communication will occur through the *Announcements* feature, the “Ask Dr. Eick” *Discussion* posts, as well as written feedback on all submitted work. Weekly assignments found in each Module will be completed online and submitted to Canvas by the deadlines given. Students’ scores will be posted and automatically populate the student *Grades* spreadsheet with ongoing course grade average. Students can contact the instructor email or telephone at any time for additional assistance.

VIDEO SESSIONS

Participants will keep an individual **notebook** (See Footnote #1) of their video session notes that will include responses to: (a) *Getting Ready* activities, (b) *Watch the Video* focus questions, and (c) *Going Further* ‘group’ activities and discussion questions. Session titles, activity headings, and directions and questions for each activity should be in the notebook for organization before responding. Students may paste assignment directions and questions into their notebooks. Everyone in the group will anticipate the science materials needed for the next new session’s activities in order to prepare for it:

* All participants will conduct any *Getting Ready* (pre-video) activities with the materials needed before watching the session’s video[[6]](#footnote-6).
* A **facilitator** in each group will conduct (for live view) any *Going Further* (post-video) activities (including needed materials) for the group to see for post-video discussion using the Canvas Conferencing feature.[[7]](#footnote-7)

**For notebook follow-up** to video learning and group discussion, participants individually will add important definitions for the given science concept terms under *Textbook Reading Suggestions*. Sources for this additional reading and definitions can come from a physical science textbook (high school level preferred) with additional assistance from a reliable Internet source (e.g., Wikipedia). Additional readings may be assigned for each new session to help in understanding the teaching and learning of these science ideas. Participants will also complete the *Problem Set* questions before checking the answer key and making visible corrections and additions BELOW a line-of-learning drawn under original answers. Lastly, participants will complete the *Preparing for the Next Session* activity before the next new session time begins.

FURTHER LEARNING

Participants will spend time in further reflection and application of new learning through additional individual ‘homework’ assignments that will be in electronic format. Participants will reflect on their learning through a private *Guided Journal Entry*. Lastly, participants will apply their learning to the classroom through posting a response to a *Guided Channel-Talk* to a public **Canvas Discussion** on how to teach aspects of it. Everyone can benefit from each other’s classroom ideas and can respond to each other’s postings.

The “Ask Dr. Eick” **Canvas Discussion** exists for participants to post their public queries to Dr. Eick for help on understanding physical science content in each session. Clarification for one participant can benefit everyone in the class.

Sessions will typically follow a bi-weekly pattern for completing the following work:

Week 1 – Preparation and New Learning of Science and Children’s Understandings

* *\*Getting Ready* (60 minutes) – Completed before video *(group option)*
* *\*Watch the Video* (60 minutes) – Completed during video
* *\*Going Further* (60 minutes) – Completed as a group after video **(when scheduled by group via Canvas Conference or in-person or a mix)**
* *Reading Assignment* (30 minutes) – TBA for each session – Completed after video conference
* *\*Problem Set* (30 minutes) – Completed after video conference, with answers checked and corrected against the answer key
* \**Textbook Reading Suggestions (and Definitions)* (30 minutes) – Completed after video conference
* \*Preparing for the Next Session for “Getting Ready” (30 minutes) – Completed last after reading, definitions, and problem set

(\*These written assignments are kept in a notebook and submitted via Canvas for each completed session.)

\*\*Week 2 – Reflection on New Learning and Its Application to the Classroom

* *Guided Journal Entry* (60 minutes)
* *Guided Channel-Talk Posting* (60 minutes) – Canvas Discussion feature with ability to view peer postings after submission
* Materials Needed for Next Time – preparation (60 minutes)

(\*\*These written assignments are submitted via Canvas as a Word document or posted in a Discussion.)

Course Schedule and Assignments – (*Going Further* must be completed as a group).

**G = Completed as a group required**

I = Completed individually

G/I = Group completion preferred if possible

|  |  |  |  |
| --- | --- | --- | --- |
| **#**Date | Session Meeting | Post Session | Assignments |
| Week 0 | Syllabus & Canvas Use Introduction |  | \***Pre Science Test Questions**  \*Statement of Original Work |
| Week 1  Aug 21 | Session 1 New Learning   * Getting Ready (G/I) * Video questions (I) * **Going Further (G)** | Homework   * Reading Assignment (I) * Problem Set (I) * Definitions (I) * Preparing for Next Session (I) | \*Notebook 1 **(scanned pages to pdf file for handwritten notebook)** |
| Week 2  Aug 28 | Session 1 Reflection   * Guided Journal Entry (I) * Guided Channel-Talk Posting (I) | Homework   * Review & respond to peer postings (I) * Materials needed (G/I) | \*Guided Journal  \*Channel-Talk Post |
| Week 3  Sept 4 | Session 2 New Learning  (See above, Week 1) | Homework  (See above, Week 1) | \*Notebook 2 |
| Week 4  Sept 11 | Session 2 Reflection  (See above, Week 2) |  | \*Guided Journal  \*Channel-Talk Post |
| Week 5  Sept 18 | Session 3 New Learning  (See above) | Homework  (See above) | \*Notebook 3 |
| Week 6  Sept 25 | Session 3 Reflection  (See above) |  | \*Guided Journal  \*Channel-Talk Post |
| Week 7  Oct 2 | Session 4 New Learning  (See above) | Homework  (See above) | \*Notebook 4 |
| Week 8  Oct 9 | Session 4 Reflection  (See above) |  | \*Guided Journal  \*Channel-Talk Post |
| Week 9  Oct 16 | Session 5 New Learning  (See above) | Homework  (See above) | \*Notebook 5 |
| Week 10  Oct 23 | Session 5 Reflection  (See above) |  | \*Guided Journal  \*Channel-Talk Post |
| Week 11  Oct 30 | Session 6 New Learning  (See above) | Homework  (See above) | \*Notebook 6 |
| Week 12  Nov 6 | Session 6 Reflection  (See above) |  | \*Guided Journal  \*Channel-Talk Post |
| Week 13  Nov 13 | Session 7 New Learning  (See above) | Homework  (See above) | \*Notebook 7 |
| Week 14  Nov 20 | Session 7 Reflection  (See above) |  | \*Guided Journal  \*Channel-Talk Post |
|  | Thanksgiving Break |  |  |
| Week 15  Dec 4 | Session 8 New Learning & Reflection  (See above) | Homework  (See above) | \*Notebook 8  \*Guided Journal  \*Channel-Talk Post |
| Week 16  Dec 9 |  |  | \***Post Science Test Questions**  \*Statement of Original Work |

**(#Exact calendar due dates for weekly assignments will be found on Canvas)**

1. **Assignments/Projects**:

* **Notebook –** Participants will keep a notebook (See footnote #1) for each video session’s required work including: (1) documentation of *Getting Ready* activities, (2) *Watch the Video* questions and responses, and (3) *Going Further* discussion responses. Also included will be: (4) *Problem Set* answers and corrections, (5) Definitions under *Textbook Reading Suggestions,* and (6) *Preparing for the Next Session* response.
* **Guided Journal Entry** **–** Participants will complete a private response in a Word document to the guided question(s) given from the video session.
* **Guided Channel-Talk Posting –** Participants will post their public lesson response to the application question(s) given for each video session, and be able to view their peers’ postings for response once they have posted to Canvas.
* **“Ask Dr. Eick” Posting** – Participants will post their ongoing questions about the science content for Dr. Eick’s responses and for fellow students to see. NOTE: Students must first check their sources for content information and understanding before posting for assistance ☺ .
* **\*\*\*Science Test Questions –** Participants will complete pre-questions and later post-questions in a Word document to the given short answer science questions. *Students must sign a statement that documents no outside assistance beyond course materials on the questions. See Syllabus Appendix.*

(\*\*\*The Post-questions responses will serve as the course’s portfolio work product to upload on TK-20 for the Elementary Education Program)

See **Class Policy Statements** below on point and grade penalties for late work, unexcused absences, and lack of Standard English usage and conventions.

All assignments must be completed for a participant to receive credit for this course, even if late and at a point loss. Students who do not submit all required work will receive an incomplete (I) for a grade.

1. **Rubrics and Grading Scale**:

|  |  |
| --- | --- |
| Assignments and Point Values | Total Points  Grading Scale |
| * Notebook (8 @ 20 points each) -------------------------- 160 points * Guided Journal Entry (8 @ 10 points each)-------------- 80 points * Guided Channel-Talk Posting (7 @ 20 points each)---140 points * ^Science Test Questions (2 @ 50 points each)---------100 points * “Ask Dr. Eick” Posting (not required)   ^*Post Science Test Questions will serve as the final examination.* | 432-480= A  384-431 = B  336-383 = C  288-335 = D  less 288 = F |

Scoring Rubrics –

Notebook

A range = all assigned activities and exercises are completed; responses directly address the exercise; group exercises show high levels of shared thinking; problem sets show original thinking with additions; definitions are very complete with examples given; exercises are clearly organized, neat, and easy to read

B range = all assigned activities and exercises are completed; responses address the exercise; group exercises show shared thinking; problem sets show original thinking with additions; definitions are complete with some examples given; exercises are organized, somewhat neat, and easy to read

C range = all assigned activities and exercises are completed; responses somewhat address the exercise; group exercises show some shared thinking; problem sets show original thinking with few additions; definitions are complete with few examples given; exercises are organized, somewhat neat, and readable

D range = most or all assigned activities and exercises are completed; responses somewhat address the exercise; group exercises show some shared thinking; problem sets show original thinking with few to no additions; definitions are somewhat complete with few to no examples given; exercises are somewhat organized, not neat, and readable

F range = not all assigned activities and exercises are completed; responses little address the exercise; group exercises show little or no shared thinking; problem sets show little to no original thinking with few to no additions; definitions are somewhat complete with few to no examples given; exercises are somewhat organized, not neat, and difficult to read

Guided Journal Entry

A range = approximately one page (2.0 space); directly responds to each question given; makes explicit reference to prior learning with examples; makes logical and coherent sense; demonstrates strong personal connection to learning

B range = approximately one page (2.0 space); directly responds to each question given; makes explicit reference to prior learning with some examples; mostly makes logical and coherent sense; demonstrates good personal connection to learning

C range = approximately one page (2.0 space); mostly directly responds to each question given; makes some explicit reference to prior learning with few examples; makes some logical and coherent sense; demonstrates fair personal connection to learning

D range = approximately one page (2.0 space); somewhat directly responds to each question given; makes some to little explicit reference to prior learning with few to no examples; makes some to little logical and coherent sense; demonstrates poor personal connection to learning

F range = not meet the above page requirements; poorly directly responds to each question given; makes little to no explicit reference to prior learning with few to no examples; makes little logical and coherent sense; demonstrates poor to no personal connection to learning

Guided Channel-Talk Postings

A range = adequately addresses the given question(s) or issue; demonstrates very strong connections between knowledge and practice; incorporates accurate content knowledge; develops strategies or lessons that *certainly* ‘can work’ based on knowledge of practice

B range = adequately addresses the given question(s) or issue; demonstrates strong connections between knowledge and practice; incorporates mostly accurate content knowledge; develops strategies or lessons that *likely* ‘can work’ based on knowledge of practice

C range = mostly addresses the given question(s) or issue; demonstrates moderate connections between knowledge and practice; incorporates some accurate content knowledge; develops strategies or lessons that *maybe* ‘can work’ based on knowledge of practice

D range = somewhat addresses the given question(s) or issue; demonstrates weak connections between knowledge and practice; incorporates little accurate content knowledge; develops strategies or lessons that *unlikely* ‘can work’ based on knowledge of practice

F range = addresses little of the given question(s) or issue; demonstrates very weak connections between knowledge and practice; incorporates little to no accurate content knowledge; develops strategies or lessons that can ‘not’ work based on knowledge of practice

Pre-Test

A range = thoroughly responds to questions using sentences; responses highly relate to questions asked; gives specific examples in all open-ended questions

B range = adequately responds to questions using sentences; responses relate to questions asked; gives some specific examples in all open-ended questions

C range = somewhat adequately responds to questions using some sentences; responses mostly relate to questions asked; gives few specific examples in all open-ended questions

D range = somewhat adequately responds to questions using few sentences; responses somewhat relate to questions asked; gives few to no specific examples in all open-ended questions

F range = poorly responds to questions with few to no sentences; responses little relate to questions asked; gives few to no specific examples in response to all open-ended questions

Post-Test

See Pre-Test Rubric ‘A range’ for the nature of writing a well-supported response for each question. Questions will be marked for accuracy (correctness):

3 points = completely accurate

2 points = mostly accurate

1 point = somewhat accurate

0 point = not accurate

Additional points will be awarded (TBD) for writing a final paragraph comparing changes in pre to post-test knowledge on questions.

1. **Class Policy Statements**:

Standard English: All written assignments must be typed and should adhere to Standard English usage and conventions or be subject to point loss. Assignments with excessive grammatical errors or typos must be redone. Writing should follow *APA Sixth Edition* conventions.

The ***Miller Writing Center*** provides free support on any writing you are doing while at Auburn, whether for a course or not. Trained consultants are available to work with you as you plan, draft, and revise your writing. For students in distance courses and students temporarily away from Auburn’s campus, the Miller Writing Center offers synchronous online consultations. Please check the Miller Writing Center website ([www.auburn.edu/writingcenter](http://www.auburn.edu/writingcenter) ) for instructions and information about scheduling online appointments. If you have questions about the Miller Writing Center, please email [writctr@auburn.edu](mailto:writctr@auburn.edu) or call 334-844-7475 M-F 7:45am-4:45pm.

Distance Learning Equipment: Participants must have the appropriate and working computer hardware, headset, software, and Internet connection for this course. Personal equipment failure (not Canvas) is NOT an excuse for meeting absences and late assignments.

Attendance: Attendance at scheduled group synchronous meetings is required, as detailed in the syllabus schedule. Students are expected to complete all assigned work and meet all submission deadlines, and will be held responsible for any content covered in event of illness. **Three unexcused absences from scheduled group meetings will mean a failing course grade**.

Excused Absences: Documented excuses (See *Student Policy eHandbook* – [www.auburn.edu/studentpolicies](http://www.auburn.edu/studentpolicies) ) are due to the instructor no more than 7 days after the absence, or it is unexcused. Students are granted university-approved excuses for the following reasons: Illness of the student or serious illness of a member of the student’s immediate family, the death of a member of the student’s immediate family, trips for student organizations sponsored by an academic unit, trips for university classes, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays. Students who wish to have an excuse from class for any other reason must contact the instructor in advance to request permission – such as for professional/job/work reasons. The instructor will weigh the merits of the request and render a decision.

Make-Up Policy: Arrangement to make up missed work due to properly authorized excused absences, except in unusual circumstances such as continued absence or the advent of university holidays, must be initiated within one week (7 days) of the end of the period of the excused absence. Assignments if submitted late without excuse will lose a letter grade (in points) for each day late up to three days. Points earned for each assignment will be posted under the Grades menu on Canvas.

Academic Honesty Policy: The University Academic Honesty Code and the *Student Policy eHandbook (*[*www.auburn.edu/studentpolicies*](http://www.auburn.edu/studentpolicies)*)* Rules and Regulations pertaining to Cheating will apply to this class. **See attached statement required with pre and post questions in this course.**

Disability Accommodations: Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT)."

Course contingency: If normal class and/or lab activities are disrupted due to illness, emergency, or crisis situation, the syllabus and other course plans and assignments

may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.

Professionalism: As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College’s conceptual framework. These professional commitments or dispositions are listed below:

* Engage in responsible and ethical professional practices
* Contribute to collaborative learning communities
* Demonstrate a commitment to diversity
* Model and nurture intellectual vitality

1. **Justification for Graduate Credit:**

Students enrolled in Ed.S. or Ph.D. degree programs will be required to complete an additional research-based assignment.

Appendix

PRE/POST SCIENCE TEST QUESTIONS

**STATEMENT OF ORIGINAL WORK**

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (fill in complete name) have completed these questions to the best of my ability without outside assistance from persons or additional materials or information. The written work on these questions is originally my own thinking and knowledge.

In addition, I understand the Auburn University Student Academic Honesty Code (See [www.auburn.edu/studentpolicies](http://www.auburn.edu/studentpolicies)) and the consequences if I violate these expectations.

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*[Sign and date this form before scanning into a pdf file for uploading to Canvas.]*

1. Participants may use a software program that allows writing/typing and drawing in documents for uploading to Canvas. Hand written notebook pages will need to be scanned into pdf files for uploading to Canvas – access to a scanner is required in this case. [↑](#footnote-ref-1)
2. Learning community groups that choose to meet ‘face-to-face’ for the required group assignments are NOT required to purchase the headset. [↑](#footnote-ref-2)
3. Learning community groups can be from 2-4 people and are chosen by participants. [↑](#footnote-ref-3)
4. If Panopto is not working, videos may also be accessed directly from the Annenberg Learner website (See URL under ‘Texts or Major Resources’). The Panopto note features are for personal notes and will not work for peers (or instructor) to see. [↑](#footnote-ref-4)
5. Contact Dr. Eick if you need to check out any of the specialty items for use this term. [↑](#footnote-ref-5)
6. A group can meet together to complete the pre-video Getting Ready activities (as originally prescribed in this program questions) or they can be completed individually. [↑](#footnote-ref-6)
7. Groups may choose to meet face-to-face for this meeting requirement, not using Canvas Conferencing. [↑](#footnote-ref-7)