

OAKLAND UNIVERSITY
SCHOOL OF EDUCATION AND HUMAN SERVICES
TEACHER DEVELOPMENT AND EDUCATIONAL STUDIES
Winter 2018, Monday Afternoons

COURSE SYLLABUS

- 1. COURSE:** SCS 2060; Science for the Elementary Teacher; 4 credit hours; Elementary Education Program, Department of Teacher Development and Educational Studies (Monday, 1:00 – 4:20 PM, Section 11359, Room 150 Pawley Hall)

- 2. CATALOGUE DESCRIPTION:**

Develops science concepts and processes based on recent elementary school curricula in the fields of earth, physical and chemical science. For elementary education majors only; includes laboratory experiences. Prerequisite: Grade of 2.0 in one of (BIO 104 or BIO 1002), (BIO 110 or BIO 1004), (BIO 111 or BIO 1200), (BIO 113 or BIO 1300), (BIO 300 or BIO 3000), (CHM 104 or CHM 1040), CHM 157 (no longer offered), CHM 167 (no longer offered), (CHM 300 or CHM 3000), (ENV 308 or ENV 3080), (GEO 106 or GEO 1060), (PHY 101 or PHY 1010), (PHY 104 or PHY 1040), (PHY 105 or PHY 1050), (PHY 106 or PHY 1060), (PHY 115 or PHY 1150), (PHY 120 or PHY 1200), (PHY 151 or PHY 1510), or (SCI 100 or SCI 1000). [NOTE: It is the student’s responsibility to ensure that prerequisites are met prior to registering for this course.]

- 3. DROP DATE INFORMATION:**

The last day to drop this class with 100% tuition refund, as well as other important academic dates, can be found on the Office of the Registrar web page that lists important dates: <http://oakland.edu/registrar/important-dates/> For this term, the final drop date is January 17, 2018 (by 4 PM).

- 4. COURSE/INSTRUCTOR EVALUATIONS:**

Course evaluations are available approximately 2 weeks prior to the final day of classes at <http://www.oakland.edu/evals>. You can access all your course evaluations by entering your Grizzly ID number and password. You will be asked to rate the course and the instructor on 20 items. Written comments are also encouraged. The last day of class is the last day to complete the evaluation. A summary of the results is not available to the professor until after final grades have been submitted. Your feedback is taken seriously, and you are encouraged to be honest in your evaluations. Your participation is greatly appreciated.

- 5. AUTHORIZED INSTRUCTOR:**

Betty Crowder
OFFICE: 460 A Pawley Hall
OFFICE HOURS: **By appointment**
PHONE: (248) 760-6399 (cell)
e-mail: crowder@oakland.edu, note that the Moodle Quick Mail feature also sends directly to this email address

- 6. REQUIRED TEXTBOOKS OR READINGS:**

ScienceSaurus: A student handbook. (New Ed.). (2014). United States: Houghton Mifflin Harcourt. [Note that this is the Grades 6-8 version and has a green

cover. There is a similar book for elementary grades with a blue cover.]

[**Recommended**] Rillero, P. & Eddis, S. (2017). Mastering science content for middle school teaching and the NES general science exam. Retrieved from https://www.amazon.com/Mastering-Science-Content-Teaching-General-ebook/dp/B06XXPQLWG/ref=sr_1_1?ie=UTF8&qid=1499981452&sr=8-1&keywords=mastering+science+content+for+middle for purchase (1.99) and accessible through kindle reading application on smart phones, tablets, or computer operating systems.

Michigan Department of Education. (November, 2015). Michigan K-12 standards: Science. Retrieved from http://www.michigan.gov/documents/mde/K-12_Science_Performance_Expectations_v5_496901_7.pdf, August 11, 2017.

Achieve, Inc. (2013). *Next generation science standards*. Retrieved from <http://www.nextgenscience.org/overview-dci>

Michigan Department of Education. (January, 2008). Certification standards for elementary teachers. Retrieved from http://www.michigan.gov/documents/mde/Elementary_Program_Standards_557145_7.pdf August 11, 2017.

Council of Chief State School Officers (CCSSO). (April, 2013). InTASC model core teaching standards and learning progressions for teachers. Retrieved from http://www.ccsso.org/resources/publications/InTasc_model_core_teaching_standards_and_learning_progressions_for_teachers_10.html, August 11, 2017.

University of Michigan (2016). TeachingWorks: High-leverage practices. Retrieved from <http://www.teachingworks.org/work-of-teaching/high-leverage-practices> August 11, 2017.

Reading and video assignments as posted on Moodle.

7. LEARNING GOALS FOR CANDIDATE PERFORMANCE:

1. Candidates know, understand, and use fundamental concepts in the subject matter of science – including physical, life, and earth/space sciences – as well as concepts in science and technology, science in personal and social perspectives, the history and nature of science, the unifying concepts of science, and the inquiry processes scientists use in discovery of new knowledge to build a base for scientific and technological literacy. (MI Elementary Science Certification, 1.1)
2. Candidates use scientific knowledge in Earth and Space science in terms of systems and subsystems (such as atmospheric systems, crustal systems, solar systems, or galaxies), which are useful in explaining phenomena, including volcanic eruptions, earthquakes, thunderstorms, and eclipses. (MI Elementary Science Certification, 1.2.4)
3. Candidates use scientific knowledge in Physical science that focuses on phenomena such as motion, electromagnetic interactions, or physical, chemical, and nuclear changes in matter.(MI Elementary Science Certification, 1.2.5)
4. The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content. (InTASC 4)

5. The teacher how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic and global issues. (InTASC 5)

8. **COURSE TOPICS:** See attached course outline.

9. **FIELD EXPERIENCE AND CLINICAL PRACTICE:**

Students may be provided with an opportunity to attend a science field trip, professional science teaching conference or professional development workshop as an integral component of the course when such events are scheduled within the semester.

10. **METHODS OF INSTRUCTION:** This course requires the active participation of students in class sessions and online. Methods of instruction include: lecture / demonstration; laboratory / field experiences; media presentations; review and analysis of teaching strategies / materials; library research; collaborative / cooperative learning.

11. **PERFORMANCE ASSESSMENT:**

The topics for this course target physical, earth and space sciences. The topics are organized around the Next Generation Science Standards (NGSS) which align Michigan K-12 Science Standards. The only major difference is that Michigan has a selected number of Michigan-specific standards in addition to the national standards. The course is designed to foster inquiry and exploration through activities and experiments conducted during class sessions (Face-to-Face/FTF) and online simulations and experiences to reinforce scientific concepts, vocabulary, and processes. **Students are expected to check Moodle postings at least once a week and between sessions.** Students will also be required to read selections in the required text book as noted on the syllabus and in class.

PLEASE CHECK MOODLE FOR MORE INFORMATION ON EACH ASSIGNMENT

Online Sessions (46 points)

This course is comprised of 4.5 online sessions, four of which engage students in learning and/or reinforcing new science content involving the physical or earth sciences. The online sessions involve quizzes to demonstrate participation and development of understanding. The due dates for the online assignments are firm and cannot be made up at a later date. The fifth session involves face-to-face review of all content in the course in preparation for the final exam with follow-up online review materials.

At the conclusion of these sessions students complete an accompanying online assignment related to the content of the session. Each content session assignment is assigned a value of 10 points. At the conclusion of the review session, there are verification assessments and a short survey that provide for an additional 6 points (total).

Explaining and Modeling High-leverage Teaching Practices (2 Components, 15 points each)

Explaining and Modeling #1 Audio File and Report Components (15 points)

Review the components of effective “Explaining and Modeling” on the feedback form and through the materials and interactions that were shared during our course sessions. Select one of the concepts provided in class. The focus of this assignment will be on preparation, correctness/accuracy of your scientific explanation, and demonstrating you understand the components of Explaining and Modeling even if you have difficulty implementing each component. When you do this again (Explaining and

Modeling #2), more emphasis will be placed on the extent to which you can effectively explain and model a scientific concept (e.g., teaching of a concept). You are required to video record and submit your Explaining and Modeling example in each case. For the second Explaining and Modeling example, you will also do this for the class during our last two sessions.

You will need to submit:

- (1) Explaining and Modeling Written Report; include scanned copies, or active hyperlinks, of images or written materials you would use to explain or model
- (2) Good quality (audible or viewable) Video Recording – if the file is too large to upload to Moodle then share via email to crowder@oakland.edu or via Google Drive. Prepare for this in advance by doing a trial video and working with Julie Chapie in the ERL if you need additional support.
- (3) Self-Assessment Feedback Form

Prepare for the explaining and modeling example. Be sure that you have the prop(s) prepared ahead of time. A video recording must accompany your assignment submission or it will not be graded.

Written Report, 9 pts. possible, evaluated on these components:

Preparation questions and materials (4 points possible) post- explanation (3 pts. possible), and reflection questions (2 pts. possible) are thoroughly and completely answered.

Evidence that you thoroughly prepared and used scientific resources to ensure the accuracy of your explanations and vocabulary. It is clear that you secured materials for modeling and demonstrating beforehand.

Answers to questions demonstrate insightful reflection on personal areas of strength and development.

Evidence from the recorded example in the form of time-stamps and verbatim quotes are included in your responses when reasonable to support your answers.

Answers to reflection questions demonstrate understanding of key components of explaining and modeling.

Report was proof-read and care was taken to use correct grammar and spelling.

Self-assessment, 3 pts. possible: Feedback form thoroughly and completely documented your explaining and modeling example.

Video Recording, 3 pts. possible: Video recording was clearly audible and visible. It was uploaded in a format that is accessible and uploaded on time.

Explaining and Modeling #2 Audio File and Report Components (15 points)

Review your feedback on the first “Explaining and Modeling” assignment. Also review the components of effective “Explaining and Modeling” on the feedback form and through the materials and interactions that were shared during our course sessions. Select one of the concepts provided in class – it must be different than the concept selected for the first explaining and modeling assignment. Although preparation, correctness/accuracy of your scientific explanation, and demonstrating you understand the components of Explaining and Modeling remain important for success on this assignment, more emphasis will be placed on the extent to which you can effectively explain and model a scientific concept (e.g., teaching of a concept). You are required to video record your Explaining and Modeling example.

You will need to submit:

- (1) Explaining and Modeling Written Report; include scanned copies, or active hyperlinks, of images or written materials you would use to explain or model
- (2) Good quality (audible or viewable) Video Recording – if the file is too large to upload to Moodle then share via email to crowder@oakland.edu or via Google Drive. Prepare for this in advance by doing a trial video and working with Julie Chapie in the ERL if you need additional support.
- (3) Self-Assessment Feedback Form
- (4) You will also conduct the explanation and modeling for the class during one of the last two class sessions on your assigned date.

Prepare for the explaining and modeling example. Be sure that you have the prop(s) prepared ahead of time. A video recording must accompany your assignment submission or it will not be graded.

Written Report, 7 pts. possible, evaluated on these components:

Preparation questions and materials (3 points possible) post- explanation (2 pts. possible), and reflection questions (2 pts. possible) are thoroughly and completely answered.

Evidence that you thoroughly prepared and used scientific resources to ensure the accuracy of your explanations and vocabulary. It is clear that you secured materials for modeling and demonstrating beforehand.

Answers to questions demonstrate insightful reflection on personal areas of strength and development.

Evidence from the recorded example in the form of time-stamps and verbatim quotes are included in your responses when reasonable to support your answers.

Answers to reflection questions demonstrate understanding of key components of explaining and modeling.

Report was proof-read and care was taken to use correct grammar and spelling.

Self-assessment, 3 pts. possible: Feedback form thoroughly and completely documented your explaining and modeling example.

Video Recording, 5 pts. possible: Video recording was clearly audible and visible. It was uploaded in a format that is accessible and uploaded on time. Instructor will assess your effectiveness with this practice via the video.

NGSS Research Questions (24 points)*

This assignment is comprised of answering 3 NGSS research questions* that target specific standards. This assignment has multiple purposes: (1) it will help you develop understanding of various science topics, (2) it will help you practice formulating clear and thorough explanations for others (such as a student who asked you a question), (3) it will help you become more familiar with the nature of standards that require students to understand specific information.

To develop a more complete understanding of the questions you will need to utilize other science content resources. The specific questions have multiple sub-questions and these are posted on Moodle. **To answer each question, it typically will take a number of different resources. At a minimum you must use, cite and reference two peer-reviewed or professionally respected**

resources. One of these two resources may be the ScienceSaurus course textbook for each answer.

Each question will be evaluated using this 8-point rubric:

Question interpreted correctly. Answer reflects a correct understanding of what was being asked. If the question involved multiple parts, all parts are answered. **(2 pts)**

Answers are correct and demonstrate student understanding of the science content, beyond copying relevant information. The response should thoroughly, yet concisely, address the important aspects of the questions posed. Explanations that include too many details that are not relevant to the question posed will be viewed as lacking an understanding of the key concept(s) involved in the question. **(3 pts)**

Overall: Well-written and scholarly; answers are referenced appropriately (two references at a minimum as described above) using correct APA format. **(3 pts)**

***All students must complete the first NGSS research question. However, in place of the remaining two research questions there are two optional replacement assignments: choose either the STARBASE Field Trip and Report OR MSTA Conference Attendance and Report. The explanations and criteria for these assignments can be found on Moodle. By the due date of the second research question, students must demonstrate that they have signed up for (or attended) STARBASE or the MSTA Conference in order to participate in the optional assignments.**

In-class Quizzes and Final Test (80 points)

Six face-to-face sessions will be followed by a 2 point online quiz that targets information within the session. Two comprehensive quizzes (14 pts. each) will be administered at mid-semester and towards the end of the semester. The final exam (40 points) will take place as noted in the syllabus and designated by the university final exam schedule. The quizzes and final exam will target questions related to understanding concepts, important science terminology and applying what is learned through hands-on activities to new situations. These quizzes are administered on the dates found within the tentative timeline for the course. In order to prepare for these quizzes and tests, students must be actively involved in class experiences, integrate understandings from assigned readings, and ask questions when concepts are not adequately understood. Students will be required to complete assigned readings posted on Moodle, handouts provided in class, and readings in *Science Saurus: A Student Handbook*. Students will also be responsible for content and vocabulary taught as part of the peer presentations. Planned online sessions will involve students in learning about physical and earth sciences through interactive activities. Information from these sessions will be assessed on each quiz and the final exam.

Attendance and Participation (20 points*)

Maximum benefit for students involves, not only engaging in the hands-on activities provided, but also sharing with others your personal ideas, plans, and experiences. Regular attendance and class participation is extremely important in this course. Participating in class activities and experiments is an integral component to success in this class. Each student is expected to prepare for, and take an active part in, class discussions, activities, and collaborative group work. This requires students to complete assigned reading and homework prior to their due dates.

Credit is earned for full, positive, participation at each Face-to-Face (FTF) class period. Additionally, each student is responsible for maintaining a clean classroom environment during the

semester as part of positive participation. Tardiness and partial attendance is often disruptive to class and full participation points will not be earned when this occurs. There are 8 FTF sessions as noted on the syllabus and a maximum of three points may be earned for each session. Note that the total (3 pts. x 8 possible) exceeds the 20 pt. allocation for attendance. Thus, it is possible to earn extra points in this category. Because of the nature of class activities, it will be impossible to make up missed class time. However, check with your classmates and/or instructor to ensure that you did not miss critical information. Points will not be earned for missed sessions, irrespective of the nature of the absence, and students need not provide a reason.

To encourage full participation, students may earn attendance points as follows:

- 3 points: Full, positive participation (i.e., not texting, e-mailing, surfing) and arrive/depart as scheduled.
- 2 points: Positive participation but late arrival or early departure.
- 1 point: Participation limited and/or significant late arrival early departure.
- 0 point: Session not attended

FOR ALL ASSIGNMENTS:

1. All formal assignments should be formatted in MS Word or a program that can easily be opened in Moodle and by most computers. Any required attachments may be scanned/photographed and submitted electronically. Complete web addresses should be included in APA formatted citations and references.
2. All assignments should relate to the teaching of *science* as opposed to general teaching methods.
3. Students are **encouraged to arrange to meet with the instructor for help and feedback on assignments**. As future teachers, it is essential that you demonstrate care with respect to the submission of written assignments. For each assignment, spelling, grammar, organization, and clarity of written work are evaluated. Errors such as these often result in lower assignment grades.
4. Assignments are to be uploaded to Moodle by the due date and time. Assignments turned in late, except assignments or quizzes associated with the online sessions, will be accepted for reduced credit (a reduction of 20% for first week the assignment is late and greater reductions as submission time increases).
5. All assignments are expected to be the individual student's original work and writing. Any quoted material should appear in quotations and be properly referenced with page numbers (APA style). This means that work from other students should also be referenced (e.g., lessons from Conceptual Change Units found in the ERL). Paraphrased material should be referenced using APA style. Students are strongly encouraged to complete the online [Plagiarism Tutorial](#) found on the [KresgeLibrary](#) website. All allegations of academic misconduct will be reported to the Dean of Students and, thereafter, to the Academic Conduct Committee for adjudication. Anyone found guilty of cheating in this course may receive a course grade of 0.0, in addition to any penalty assigned by the Academic Conduct Committee. Please refer to the 2017-2018 Oakland University Undergraduate Catalog to read the full *Academic Conduct Policy* listed under *Other Academic Policies* online at http://catalog.oakland.edu/content.php?catoid=29&navoid=2996#Other_Academic_Policies

12. COURSE REQUIREMENTS AND GRADING:

Participation and Attendance (for 8 FTF sessions x 3 pts. max) 20 pts.*

Assignments (100 points total)

Explaining and Modeling Assignment #1 15 pts.

Explaining and Modeling Assignment #2 15 pts.

NGSS Research Questions (3@8 pts. Each)** 24 pts.

Online Sessions (4 x 10 pts. each and 6 pts. for review session) 46 pts.

Quizzes and Tests (80 points total)

Short online quizzes on information from sessions 1, 2, 3, 5, 6, 8 12 pts.

Quiz 1 - all standards and on-line information first half of semester 14 pts.

Quiz 2 - all standards and on-line information second half of semester 14 pts.

Final Exam - Inclusive and on-line information 40 pts.

TOTAL 200*

***Note that 4 extra points are possible through maximum attendance and participation.**

**** An optional replacement assignment for the Research Questions is available on Moodle and will be explained in class (STARBASE OR MSTA Conference Attendance and Report)**

GRADING SCALE

Considered "A"s

4.0: 100% - 98.60 197-200 points
 3.9: 98.59 - 96.60 193-196 points
 3.8: 96.59 - 94.60 189-192 points
 3.7: 94.59 - 92.60 185-188 points
 3.6: 92.59 - 90.60 181-184 points

Considered "B"s

3.5: 90.59 - 88.60 177-180 points
 3.4: 88.59 - 86.60 173-176 points
 3.3: 86.59 - 84.60 169-172 points
 3.2: 84.59 - 82.60 165-168 points
 3.1: 82.59 - 80.60 161-164 points
 3.0: 80.59 - 79.60 159-160 points

Considered "C"s

2.9: 79.59 - 78.60 157-158 points
 2.8: 78.59 - 77.60 155-156 points
 2.7: 77.59 - 76.60 153-154 points
 2.6: 76.59 - 75.60 151-152 points
 2.5: 75.59 - 74.60 149-150 points
 2.4: 74.59 - 73.60 147-148 points
 2.3: 73.59 - 72.60 145-146 points
 2.2: 72.59 - 71.60 143-144 points
 2.1: 71.59 - 70.60 141-142 points
 2.0: 70.59 - 69.60 139-140 points

Considered "D"s

1.9: 69.59 - 68.60 137-138 points
 1.8: 68.59 - 67.60 135-136 points
 1.7: 67.59 - 66.60 133-134 points
 1.6: 66.59 - 65.60 131-132 points
 1.5: 65.59 - 64.60 129-130 points
 1.4: 64.59 - 63.60 127-128 points
 1.3: 63.59 - 62.60 125-126 points
 1.2: 62.59 - 61.60 123-124 points
 1.1: 61.59 - 60.60 121-122 points
 1.0: 60.59 - 59.60 119-120 points
 0.5: 30.00 - 59.59 60-118 points
 0.0: <30 <60 points

13. BIBLIOGRAPHY:

See complete list on Moodle.

**SCS 2060 TENTATIVE TIMELINE
(Winter 2018, Monday Afternoons)**

SES 1: Jan 8 (FTF) Introduction to SCS 105: Course Overview
Introduction to the Next Generation Science Standards (NGSS)
Matter and Its Interactions

Activities: Melting Ice Cube, Just the Ticket, Oobleck

Homework:

Read ScienceSaurus: 001-016, 250-267, 271-273

Review Organization of the Next Generation Science Standards

Read "NGSS Research Questions" on Moodle and begin researching your responses to the first question or commit to alternative choice by signing up for STARBASE (sign up information on Moodle) or registering for the MSTA conference. **Email the instructor to inform of plans for alternative choice.**

Session #1 Online Quiz

Jan 15: No Class – Martin Luther King Jr. Day

SES 2: Jan 22 (FTF) Matter and Its Interactions (Continued)

Activities: Cereal Models, Creating Atoms and Ions, Chemical Change

Homework:

Session #2 Online Quiz

Due: Session #1 Online Quiz (2 pts.)

SES 3: Jan 29 (FTF) Complete Matter and Interactions; Introduction to Earth's Place in the Universe (Planet Earth and Landforms)

High-leverage Teaching Practices: Explaining and Modeling

Activities: Conservation of Mass, Colour Clues, Acids and Bases, Draw a Globe, Globe Toss, The Rock Cycle Force, Michigan Landforms

Homework:

Read ScienceSaurus: 167-169, 172-200

Session #3 Online Quiz

Work on Explaining and Modeling #1

Due: Session #2 Online Quiz (2 pts.)

SES 4: Feb 5 (ONLINE) First Online Session

See Moodle for Activities and Directions, Complete Online Assessment (10 pts.)

Phase Changes (Explore Learning)

Density Lab (Explore Learning)

The Rock Cycle Tutorial

Homework:

Study for Quiz 1 (Sessions 1-4 and reading assignments)

Work on Research Question #1

Due: Session #3 Online Quiz (2 pts.)

SES 5: Feb 12 (FTF) Complete Geology Activities, Introduction to Force and Interactions, Quick Review for Quiz 1

Activities: Play Dough Land Formations Cross-Section Analysis, Newton's Cradle, Force and Motion Bowling, Ball Drop, Balloon Rockets, Chromatography

Homework:

Read ScienceSaurus: 274-298

Session #5 Online Quiz (2 pts.)

Due: Research Question #1, Completion of Online Session #1

Winter Break: February 17 – 26, 2018 (No class on February 19)

SES 6: Feb 26 (FTF) **QUIZ 1 (Sessions 1-5 and reading assignments);** Continue Force and Interactions, non-contact forces; Earth Systems: A focus on Earth's Water; Explaining and Modeling #1 Practice

Activities: Making Magnets; Making a Compass; I have, who has? Where's the water? Great Lakes Watershed

Homework:

Read ScienceSaurus: 201-206, 212-230

Work on Explaining and Modeling #1

Session #6 Online Quiz

Due: Session #5 Online Quiz (2 pts.)

SES 7: Mar 5 (ONLINE) Second Online Session

See Moodle for Activities and Directions, Complete Online Assessment (10 pts.)

Roller Coasters and Energy

Earth's Structure Tutorial

Rock Classification (Explore Learning)

Sled Wars (Explore Learning)

Felt Pen Secrets (Chromatography)

Homework:

Work on Research Question #2 (or ensure that you have emailed your alternative option to the instructor and signed up for attendance for the option)

Due: Session #6 Online Quiz (2 pts.), Explaining and Modeling #1

SES 8: Mar 12 (FTF) Continue Hydrosphere; Introduction to Energy

Activities: Water Cycle Bracelets, Roller Coasters, Introduction to Electricity, Batteries and Bulbs

Homework:

Read ScienceSaurus: 299-321

Session #8 Online Quiz (2 pts.)

Due: Research Question #2, Completion of Online Session #2

SES 9: Mar 19 (FTF) Weather and Waves

Activities: Bottle Currents, Weather Maps (time permitting), Slinky Fun, Sound Stations, Light Explorations

Due: Session # 8 Online Quiz

SES 10: Mar 26 (ONLINE) Third Online Session

See Moodle for Activities and Directions, Complete Online Assessment (10 pts.)

Solid Earth Fluid Earth

Circuit Builder (Explore Learning)

Waves (Explore Learning)

Seasons (Explore Learning)

Homework:

Prepare for Quiz 2

Due: No assignments (no session #9 online quiz)

SES11: Mar 26 (FTF) **Quiz 2 (Sessions 6-9 and reading assignments)**, Earth in Space and Time: A Focus on Astronomy

Activities: Day and Night, Mount Nose, Comparing Earth, Moon, and Sun, Reason for the Seasons, Phases of the Moon

Homework:

Work on Optional STARBASE or MSTA Conference Report - Replaces Research Questions 2 & 3 **OR** Research Question #3

(No online quiz for session # 11)

Due: Completion of Online Session #3

SES S12: Apr 2 (ONLINE) Fourth Online Session

See Moodle for Activities and Directions, Complete Online Assessment (10 pts.)

5 Question Basic Astronomy Survey
Sounds Amazing Tutorial
Weather Maps (Explore Learning)
Seasons and Ecliptic Simulator

Homework:

Explaining and Modeling #2

Due: Optional STARBASE or MSTA Report **OR** Research Question #3; (No online quiz for session #11)

SES 13: Apr 16 (FTF/ON) **ONLINE/FTF Course Summary and Review for Final Exam**

Homework:

Online Review Session – worth 6 points by 4/23/18 (8 am)

Due: Explaining and Modeling #2; Completion of Online Session #4

SES 14: Apr 25 **Final Exam 3:30 – 6:30 pm Room 150**

Due: Online Review Session (6 pts.)

LIST OF MEETING TYPES AND DUE DATES

Not that all assignments are due by the start of class time on the specified date.

| <u>SESSION</u> | <u>DATE</u> | <u>MEETING TYPE</u> | <u>ASSIGNMENTS DUE</u> |
|--|-------------|---------------------|---|
| #1 | 1/8/18 | FTF | |
| January 15, 2018 No Class: Martin Luther King Jr. Day | | | |
| #2 | 1/22/18 | FTF | Session #1 Online Quiz (2 points) |
| #3 | 1/29/18 | FTF | Session #2 Online Quiz (2 points) |
| #4 | 2/5/18 | ONLINE | Session #3 Online Quiz (2 points) |
| #5 | 2/12/18 | FTF | Research Question #1 |
| March 19, 2018 No Class: Mid-Winter Break, Oakland University, 2/17-2/26/18 | | | |
| #6 | 2/26/18 | FTF | QUIZ 1 Session #5 Online Quiz (2 points) |
| #7 | 3/5/18 | ONLINE | Explaining and Modeling #1 Session #6 Online Quiz (2 points) |
| #8 | 3/12/18 | FTF | Research Question #2 |
| #9 | 3/19/18 | FTF | Session #8 Online Quiz (2 points) |
| #10 | 3/26/18 | ONLINE | Note: No Session #9 online quiz |
| #11 | 4/2/18 | FTF | QUIZ 2 |
| #12 | 4/9/18 | ONLINE | Optional Assignment Due (Conference or STARBASE Reports) Research Question #3 Note: No Session #11 online quiz |
| #13 | 4/16/18 | ONLINE/FTF | Explaining and Modeling #2 |
| #14 | 4/25/18 | FTF | FINAL EXAM 3:30 – 6:30 PM, Room 150 Online Review (6 points) |