AUBURN UNIVERSITY

SYLLABUS

1. Course Number: CTSE 5100/6100

Course Title: Curriculum and Teaching II: Science

Credit Hours: 4 Semester Hours (LEC 2 LAB 4.5)

Prerequisites: Admission to the College of Education: Secondary

Science Education Program

Corequisites: None

2. Term: Fall 2021

Day/Time: Mondays 6:00pm – 7:50pm with 4 hours of lab each week

Place: Haley 2462

Instructor: Dr. Christine Schnittka

Office Address: 5072 Haley Center

Contact Information: [schnittka@auburn.edu](mailto:schnittka@auburn.edu) or (334) 844-8277

Office Hours: By appointment. Email me and we will set something up. I will generally be in my office Monday and Tuesday afternoons in case you want to stop by. In case we need to have a Zoom meeting, meet me here: <https://auburn.zoom.us/my/schnittka>

**3.** Texts**: No specific text is required but joining the National Science Teaching Association is required so that access to reading materials, listserv, journals, and online PD is available. See** [**www.nsta.org**](http://www.nsta.org)**. The cost is $40. With membership you will have access to all journals and all previous journal issues.** Through NSTA, you’ll find leading resources for excellence in teaching and learning and experience growth through robust professional development. Plus, you’ll meet colleagues across all science disciplines, all grade bands and teaching stages, from the newest teacher to the veteran administrator, who share a passion for science education. You will receive a discount on all purchases from the NSTA Science Store.

This course will require the use of the learning management system, ***Canvas*** which can be accessed from the Auburn University website ([www.auburn.edu](http://www.auburn.edu)). An orientation can be provided if necessary, by the Secondary Education Program.

You need to purchase a small notebook something like this one: <https://fieldnotesbrand.com/products/original-kraft>

It must be 3.5” wide by 5.5” tall.

Target sells a pack of three for under $10- Moleskine Cahiers Collection.

1. **Course Description:**

The prospective science teacher will develop or deepen the skills of planning, teaching, management and evaluation necessary for successfully teaching diverse learners in the secondary science classroom. The course will include a hands-on lab to be undertaken in local area schools. Students will select, plan, and demonstrate various teaching strategies in the field under the guidance of mentor teachers. In addition to planning and teaching, students will apply concepts related to: alternative conceptions about science, learning in science, STEM integration, classroom management, assessment, diversity/equity, lab safety, and inquiry-based science, and argumentation.

1. **Student Learning Objectives:**

AS 1.3

Show an understanding of state and national curriculum standards and their impact on the content knowledge necessary for teaching 6-12 students.

AS 2.3

Design instruction and assessment strategies that confront and address naïve concepts or preconceptions.

AS 5.2

Provide data to show that 6-12 students are able to distinguish science from non-science, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science.

AS 5.3

Engage students in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.

GS1.6.1.7

Historical development and perspectives in biology including contributions of significant figures and underrepresented groups, and the development theories in biology.

P1.3.9

Historical development and cosmological perspectives in physics including contributions of significant figures and underrepresented groups, and development of theories in physics.

Additional standards from the Alabama Quality Teaching Standards are as follows:

|  |
| --- |
| **Standard 1: Content Knowledge** |
| 1.1  Demonstrate deep knowledge of subject-matter content and an ability to organize related facts, concepts, and skills |
| 1.2 Use learners’ prior knowledge, experience, and interests to plan content and to help individual students attain learning goals |
| 1.3 Connect the curriculum to other content areas and real-life settings to promote retention and relevance |
| 1.4  Design instructional activities based on state content standards |
| 1.5 Provide instructional accommodations, modifications, and adaptations to meet the needs of each individual learner |
| **Standard 2: Teaching and Learning** |
| 2.1  Design a classroom organization and management system |
| 2.2  Create a positive climate that promotes respect and responsibility |
| 2.3  Create a safe, orderly, and stimulating learning environment and nurtures responsibility, motivation, and engagement of learners |
| 2.4  Develop challenging, standards-based academic goals for each learner |
| 2.5  Engage learners in developing and monitoring goals |
| 2.6  Design coherent lessons that integrate a variety of instructional strategies |
| 2.7  Create learning activities that optimize each individual’s growth and achievement within a supportive environment |
| 2.8   Use formative assessments to adjust instruction |
| 2.9   Use summative assessments to measure learner attainment of specified learning targets |
| 2.10  Maintain evidence and records of learning performance to communicate progress |
| 2.11  Analyze and use disaggregated standardized assessment results for planning |
| **Standard 3: Literacy** |
| 3.1   Demonstrate standard oral and written communications |
| 3.2   Foster and respond to effective verbal and nonverbal communication during instruction. |
| 3.3  Use age-appropriate instructional strategies to improve learners’ skills in critical literacy components |
| 3.4  Integrate narrative and expository reading strategies across the curriculum |
| 3.5 Develop skills to solve math problems across subject areas using a variety of strategies to verify and interpret results and to draw conclusions |
| 3.6 Communicate mathematical concepts, processes, and symbols |
| 3.7   Identify and integrate available emerging technologies into the teaching of all content areas |
| 3.8  Facilitate learners' individual and collaborative use of technology |
| **Standard 4: Diversity** |
| 4.1 Develop culturally responsive curriculum and instruction in response to individual differences |
| 4.2  Communicate in ways that show sensitivity to diverse populations and respond appropriately to cultural, ethnic, and social differences. |
| 4.3  Demonstrate and apply to own practice an understanding of how biases can affect teaching |
| 4.7  Understand and recognize the characteristics of exceptionality |
| 4.8 Facilitate inclusive learning environments that support and address the needs of learners with learning differences and disabilities |
| 4.10 Design learning experiences that engage all learning **preferences** |
| **Standard 5: Professionalism** |
| 5.1   Work in partnership with cooperating teacher to facilitate student learning and well-being |
| 5.2   Participate in professional growth opportunities to improve teaching practice |
| 5.3   Perform as a leader at the program level and within the school |
| 5.4  Promote professional ethics and integrity |
| 5.5  Comply with local, state, and federal regulations and policies |

1. **Course Content (subject to change!):**

|  |  |  |  |
| --- | --- | --- | --- |
| Class | Date | Module Due | Topic |
| 1 | 8/16 | 0 | Orientation and overview of semester.  Pretests |
| 2 | 8/23 | 1 | Observation and Inferences.  The Demo Model  Predictions and Hypotheses (Scribner-MacLean, 2012; Baxter & Kurtz, 2001;  Maeng & Bell, 2013) |
| 3 | 8/30 | 2 | Lesson planning. Planning lessons. (Wiggins & McTighe)  5E Learning Cycle. (Bowen, n.d.) Writing objectives: (Arreola, 1998)  Context. |
|  | 9/6 |  | Labor Day- No Class |
| 4 | 9/13 | 3 | The Nature of Science. (McComas 1996; Clough 2011; Schwartz 2007)  Mystery Tube. Science-o-Nator. Mystery cookies. |
| 5 | 9/20 | 4 | Constructivism and conceptual change. (Perkins, 1999;  Vosniadou, 2001)nquiry. |
| 6 | 9/27 | 5 | Levels of inquiry. (Bell, Smetana, Binns, 2005) Four Q Strategy  Vernier probes |
| 7 | 10/4 | 6 | Argumentation. (Sampson & Grooms, 2010; Sampson,  Enderle & Grooms; 2013; Rogan-Klyve, Randall, St. Clair, & Gray, 2015;  Llewellyn Chapter 2)  NGSS |
| 8 | 10/11 | 7 | Effective teaching. MUSIC Model of Motivation. |
| 9 | 10/18 | 8 | Classroom Management issues. [www.agapemanagement.org](http://www.agapemanagement.org) (Brown, 2004;  Hensley, 2002)  Assessment |
| 10 | 10/25 | 9 | EdTPA |
| 11 | 11/1 | 10 | Assessment |
| 12 | 11/8 | 11 | Engineering in science education.  Integrated STEM education  (Schnittka, Bell & Richards, 2010)  Save the Penguins (Schnittka, 2009) |
| 13 | 11/15 | 12 | Differentiation (Tomlinson & Javius, 2012; Riener & Willingham, 2010;  Dotger & Causton Theoharis, 2010) |
| 14 | 11/29 | 13 | Current Issues in Science Education  Teaching Evolution and other Difficult Subjects |
|  | 12/9 |  | Final Exam 7:00 – 9:30 pm |

**\*\*\* Always check Canvas for the current topics and assignments.**

1. **Assignments/Projects**

A. **Outreach experience** (4 points)- In keeping with the outreach spirit of our university, you are required to complete a minimum of four hours of service with a school-based or campus-based science program. Some options include: AMSTI, GUTS, DAMES, BEST Robotics, tutoring, or activities going on at the school where you are doing your placement (see COSAM outreach activities on AU website). You will type up your own documentation sheet, indicating the name of the program, the dates and times of attendance, and what you did. The coordinator or leader of the program needs to sign this form. Add these hours to your field experience document. Outreach documentation forms are due at the time of the Final Exam, so you have all semester.

B. **Reflective journal** (10 points)- You will write a reflective journal entry for each day you spend out in your field placement, starting with the first day. Each entry should be a couple of good paragraphs, or about 300-400 words. Rather than recount each thing you did during the placement day, you should pick one or more incidents and *reflect* on their meaning. We will discuss what constitutes “reflection” in class. Reflective journals will be graded on the criteria of 1) effort, 2) depth of reflection, 3) evidence of problem solving and analysis. Reflective journals are due each Friday at 6:00 pm on Canvas and feedback will be provided over the weekend. This is our primary way of discussing your experiences. Reflect on what you *do, think, and feel.*

C**. Lesson Plans** (15 points) Three complete lesson plans will be turned in- two drafts of each. A rubric for grading lesson plans will be provided. They need to be lesson plans for lessons you PLAN to teach. I want to give you feedback on them, so there are no specific due dates for these. A week in advance is preferred for the first draft so there is time for feedback and revision. The grade on a revised lesson plan will be averaged with the grade on the PLANNED lesson plan.

D. **Reflections on Reading Assignments** (25 points) Most weeks, a reflection will be required on the assigned reading. Directions will be provided on Canvas for each of these assignments.

E. **Interview a Kid** (1 point). If you are going to be able to design lessons that kids can relate to, find out what today’s student is motivated by. What are hobbies, interests, events, issues that concern or interest adolescents. Work with your cooperating teacher to pick a student who is willing to be interviewed. Possible questions will be discussed in class.

F. **Final Exam** (20 pts.)- There will be an essay final exam due via Canvas on the designated final exam day for this class.

G. **Professionalism and Participation in Class and Lab** (10 points). Attending class, attending lab sessions, behaving as a professional teacher in these settings is a very important aspect of this course. You are expected to keep your cell phones out of sight during class and contribute constructively to class discussions and activities. Points will be deducted from 10 possible points for every missed class, inappropriate behavior during class, goofing off on your phone or computer during class, inappropriate use of social media,  etc. Points will be deducted as an infraction occurs. All 10 points are deducted if you are dismissed from class or lab due to a serious issue.

**You start the semester with all 10 points. I take one away for each infraction.**

H. **Field experiences** (15 points) Field experiences in this course are linked to certification standards. You must complete a minimum of 50 field experience hours for this course and attend all lab sessions. Upload signed documentation of your field experiences. Your teaching will be evaluated each time you are observed. Upload any observation notes from your Cooperating Teacher. You are graded on your completing 50 hours, and also on doing well in the placement (based on feedback from cooperating teacher and observations).

You must follow all guidelines required for COVID-19 at your school placement. Not following guidelines will result in removal from the placement. All 15 points will be deducted if you are removed from your placement at any time for this or any unprofessional behavior.

**8. Rubric and Grading Scale:**

Any assignment presented or turned in late will be penalized 10% for each day late. Late assignments presented or turned in late after two days will not be accepted without prior approval of the instructor. Why do teachers want assignments turned in on time? Grading each set all at once adds validity and reliability to the grades you receive.

The final grade will be determined by the following grading scale:

A = 90 -100, B = 80-89, C = 70-79, D = 65-69, F = below 65%

Note: Although it is possible to make a grade of “D” in this class, a student receiving any grade below “C” must retake the class to matriculate through the program and gain certification.

**9. Class Policy Statements:**

A. Participation: Students are expected to participate in all class discussions and participate in all exercises.

B. Assignments: It is the student’s responsibility to contact the instructor if assignment deadlines are not met. Students are responsible for initiating arrangements for missed work, if extensions are given for very difficult situations. If work is not turned in on time, points will be deducted. Showing up to your teaching job without your lesson plans ready results in CHAOS! So, you have a week to get your assignments done. Do not wait until the day before they are due. Things always seem to happen the day before something is due. Plan ahead.

C. Excused Absences: Attendance is required at each class meeting. **If you cannot attend class, contact your instructor immediately** and explain the situation. Students are granted excused absences from class 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 or research presentations, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays.  Students who wish to have an excused absence from this class for any other reason must contact the instructor in advance of the absence to request permission. The instructor will weigh the merits of the request and render a decision. Students must arrange to have the class videotaped for later watching if any absence is planned, or if you are ill and cannot attend class in person, or out of town on a trip, you may virtually attend class via Skype, Zoom, FaceTime, etc. if at all possible and if the professor is notified in advance. Unexcused absences will result in points deducted from the participation grade. Appropriate documentation for all excused absences is required. Please see the [Student Policy eHandbook](http://www.auburn.edu/student_info/student_policies/) for more information on excused absences (<http://www.auburn.edu/student_info/student_policies/>). Email documentation to your professor as soon as it is acquired.

D. Make-Up Policy: If an exam or assignment is missed, a second chance will be given only for university-approved excuses as outlined in the Student Policy Handbook [www.auburn.edu/studentpolicies](http://www.auburn.edu/studentpolicies) . Arrangement to take the make-up exam or turn in assignments late must be made in advance or as soon as possible if illness occurs. Students who miss an exam or assignment because of illness need a doctor’s statement for verification of sickness and should clear the absence with the instructor the day they return to class. Late, unexcused assignments should be turned in for feedback, even when points are deducted.

E. Unannounced quizzes: There may be unannounced quizzes on the reading assignments. Quiz scores will be averaged in with Reflections on Reading Assignments. Why do teachers give pop quizzes? Motivation to stay up with the readings. Life is full of pop quizzes. It’s awful to be caught unprepared in life.

F. 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).

G. Honesty Code: All portions of the Auburn University student academic honesty code (Title XII) found in the [*Student Policy eHandbook*](http://www.auburn.edu/student_info/student_policies/) will apply to this class.  All academic honesty violations or alleged violations of the SGA Code of Laws **will** be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee. Assignments WILL be run through the university’s plagiarism detector. If you use someone else’s idea, cite and reference it. If you need to use someone else’s words, cite them, add a reference, and put the words in quotation marks. Plagiarism is a moral and legal minefield (Park, 2010). Plagiarism is a SERIOUS issue, and all incidents will be reported to the Office of the Provost. If you plagiarize, I can’t help you learn. My job is to help you learn. I hope you deal seriously with plagiarism with your own students someday. Don’t cheat. Don’t copy. Be honest. Have integrity. Do your own work. Neither one of us wants to deal with this. (What I put above in parentheses is a citation, and below, is a reference. Get used to doing this. Google Scholar makes it easy to copy and paste the APA reference.)

Park, C. (2003). In other (people's) words: Plagiarism by university students--literature and lessons. *Assessment & evaluation in higher education*, *28*(5), 471-488.

F. 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, and addendum to your syllabus and/or course assignments will replace the original materials. If class is cancelled, a notice will be sent out over Canvas, so make sure your settings route all announcements to your email.

G. 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 and paraphrased below. See the Lab Manual for more details:

* Engage in responsible and ethical professional practices in class, in schools, and in the community. *Behave yourself in the schools, and in the community. Follow the rules. Do not break laws. Be a role model.*
* Contribute to collaborative learning communities in class and in schools. *Get along with the teachers and staff at the schools you are in. Get along with your peers in THIS class, and your professors at THIS school.*
* Demonstrate a commitment to diversity in class, in schools, and in the community. *Respect each other. Celebrate our differences. Listen. Care.*
* Model and nurture intellectual vitality. *Care about learning. Show your students this! Demonstrate your curiosity!*
* Dress appropriately in school settings whether you are there as a teacher, or even just dropping something off, or only to meet with an adult. Kids see you. Be a teacher. *If you are 21, try to act and look 31*. Some of your students will be 18- remember that.
* Act like a teacher. *This is not a chance to re-live your adolescence and be popular or cool.* Maybe after you get tenure you can be “the cool teacher” but not now. You have a lot to prove to parents and the school staff, and to your professor.
* Hide your Facebook, Instagram, Twitter, etc. profiles this semester. At the very least, make them NOT public. Make sure the profile photo is professional. Don’t you dare add middle school or high school students as friends to your social networking pages. Don’t you dare share phone numbers with them. You may end up teaching these kids again. *Be a teacher.*

H.Covid-19: Due to the Coronavirus pandemic, public health measures have been implemented across Auburn’s campus. Students should stay current with these practices and expectations through the campus reentry plan, A Healthier U. The sections below provide expectations and conduct related to COVID-19 issues. The following statements are items that faculty can consider including in your syllabi.

Health and Participation in Class

You are expected to monitor your health daily. Your health and safety, and the health and safety of your peers, are my top priorities. If you are experiencing any symptoms of COVID-19, or if you discover that you have been in close contact with others who have symptoms or who have tested positive, you must notify me. My hope is that if you are feeling ill or if you have been exposed to someone with the virus, you will stay home to protect others and arrange to participate in class virtually. Please do the following in the event of an illness or COVID-related absence:

● Notify me in advance of your absence, if possible

● Provide me with medical documentation, if possible

● Keep up with coursework as much as possible

● Participate in class activities and submit assignments remotely as much as possible

● Notify me if you require a modification to the deadline of an assignment or exam

● Finally, if remaining in a class and fulfilling the necessary requirements becomes impossible due to illness or other COVID-related issues, please let me know as soon as possible so we can discuss your options.

Students with questions about COVID-related illnesses should reach out to the COVID Resource Center at (334) 844-6000 or at [covidresourcecenter@auburn.edu](mailto:covidresourcecenter@auburn.edu).

Health and Well-Being Resources

These are difficult times, and academic and personal stress is a natural result. Everyone is encouraged to take care of themselves and their peers. If you need additional support, there are several resources on campus to assist you:

● COVID Resource Center ([covidresourcecenter@auburn.edu](mailto:covidresourcecenter@auburn.edu))

● Student Counseling and Psychological Services (<http://wp.auburn.edu/scs/>)

● AU Medical Clinic (<https://cws.auburn.edu/aumc/>

● If you or someone you know are experiencing food, housing or financial insecurity, please visit the Auburn Cares Office (<http://aucares.auburn.edu/>)

A Healthier U Campus Community Expectations

We are all responsible for protecting ourselves and our community. Please read about student expectations for fall semester (https://ahealthieru.auburn.edu/). You are expected to monitor your health and pay attention to any symptoms you may have.

Course Expectations Related to COVID-19:

● Face Coverings: As a member of the Auburn University academic community you are required to follow all university guidelines for personal safety with face coverings, physical distancing, and sanitation. Face coverings are required in this class and in all campus buildings. Note that face coverings must meet safety specifications, be worn correctly, and be socially appropriate. You are required to wear your face coverings at all times. If you remove your face covering or are non-compliant with the university’s policy on face coverings, you will be instructed to leave the classroom and will be held to the protocols outlined in the Auburn University Policy on Classroom Behavior. Any student who willfully refuses to wear a face covering and does not have a noted accommodation may be subject to disciplinary action.

● Physical Distancing: Students should observe appropriate physical distancing and follow all classroom signage/avoid congregating around doorways before or after class. If the instructional space has designated entrance and exit doors, you should use them. Students should exit the instructional space immediately after the end of instruction to help ensure social distancing and allow for the persons attending the next scheduled class session to enter.

● Course Attendance: If you are quarantined or otherwise need to miss class because you have been advised that you may have been exposed to COVID-19, you will be expected to develop a plan to keep up with your coursework during any such absences. Participating in class remotely may be an option.

● Course Meeting Schedule: This course is scheduled to meet weekly, but be sure to pay attention to any updates to the course schedule as the information in this syllabus may have changed. Please discuss any questions you have with me.

● Technology Requirements: This course may require particular technologies to complete coursework. If you need access to additional technological support, please contact the AU Bookstore at [aubookstore@auburn.edu](mailto:aubookstore@auburn.edu).

Disruptive or concerning classroom behavior involving the failure to wear a face covering, as directed by Auburn University, represents a potential Code of Student Conduct violation and may be reported as a non-academic violation. Please consult the Classroom Behavior Policy.

Course Delivery Changes Related to COVID-19

Please be aware that the situation regarding COVID-19 is frequently changing, and the delivery mode of this course may adjust accordingly. In the event that the delivery method is altered, please be assured that the learning goals and outcomes of the course will not change; however, some aspects of the course will change in terms of the mode of delivery, participation, and testing methods. Those details will be shared via Canvas as soon as possible. Please be prepared for this contingency by ensuring that you have access to a computer and reliable Internet.