

## ***EDUC 392 – Teaching in the Secondary Science Classroom I***

### **1) Course Information**

*Department and course number:* EDUC 392

*Credits:* 3 undergraduate credits

*Day and meeting times for the course:* Monday 11:00 – 12:20, Thursday 1:30 – 2:50

*Course Location:* Beaverhead Building, room TBD

### **2) Instructor Information** *Name:* Regina Sievert

*e mail address:* [Regina.Sievert@skc.edu](mailto:Regina.Sievert@skc.edu) *Office*

*Location:* Beaverhead Building, Room 120

*Phone numbers:* Office phone, 275-4995      Cell phone, 261-7412

*Office Hours:* Tuesday, Wednesday, and Thursday 9:00 am through 12:00 pm and Monday and Wednesday from 1:00 pm through 4:00 pm. Other hours are likely, just contact me via text, e mail or phone to make an appointment. Because I also work on research projects, and supervise Student Teaching and other BSSE field experiences, please be advised that my schedule is sometimes unpredictable since I may be in the schools working with students.

### **3) Required Materials**

- *Teaching for Conceptual Understanding in Science*, by Richard Konicek-Moran and Page Keeley, published by NSTA Press in 2015.
- NSTA student membership
- *Formative Assessment for Secondary Science Teachers*, by Erin Marie Furtak and published by Corwin Press in 2009.
- Other readings as assigned by the instructor

### **4) Course Description**

This course is the second of three required BSSE methods courses that address the how, what, and why of secondary science teaching. In this course, participants will focus on the in depth study of learning theory and research based pedagogical strategies designed to support diverse students' science learning including the development of students' conceptual understanding of core scientific knowledge, scientific practices, and dispositions. Strategies and methods studied will include inquiry based learning, Learning Cycles, POE, conceptual change models, and formative and summative assessment. Students will gain proficiency in using the Next Generation of Science Standards and other documents important to science education to guide their instructional decisions. Students will also study the methods and practices for developing and maintaining a safe, ethical and productive classroom environment. An imbedded practicum of 10 hours of observations in local secondary science settings will be part of the course.

## 5) Course Objectives

Through the successful completion of this course students will be able to

- A) identify essential science knowledge, practices and dispositions that secondary science students should study,
- B) formulate essential questions that guide secondary science students in the meaningful study of essential science content,
- C) generate original conceptual sequences designed to develop secondary students' deep understanding of essential science concepts,
- D) design learning experiences that support students' growth in applying scientific practices and dispositions,
- E) write learning objectives that clearly describe the focus and level of student learning expectations,
- F) generate original science lessons that effectively utilize research based pedagogy,
- G) accurately employ learning theory to evaluate curriculum and instruction for their value in supporting students' growth in science knowledge, practices and dispositions,
- H) develop formative and summative assessments that align closely with learning objectives and provide substantive information useful to both teachers and students to guide teaching and learning,
- I) describe, critique, and develop strategies for working with students' alternative conceptions about science,
- J) describe the strategies and elements necessary for creating a safe and positive learning environment for a secondary science classroom, and
- K) develop the above stated products and proficiencies to meet the needs of diverse learners.

## 6) Course Requirements and Behavioral Expectations

- A) You are studying to become a teacher. Successful teachers must have a high level of self initiative and self responsibility and should be able to work constructively as part of a team. You will find both of these scenarios in this course and you are expected to be able to exhibit a high level of function in both.
- B) All course assignments, each completed to at least a level of proficiency equivalent to a B, are required in order to pass this course. You are juniors and seniors in your degree and are expected to exhibit a high level of sophistication in your work in this course that reflects and builds on your understanding of learning theory, research based science pedagogy, knowledge of the NGSS, and other information important to science education professionals. In written and oral assignments you are expected to state your positions clearly and provide an argument that supports your positions, as appropriate. This includes your reflections on classroom observations, your unit framework and all its components, your online and in class discussions, and so forth. Evidence for your ideas should be cited and may take the form of research, quotes from your text, classroom observations, personal experience, etc. but should be substantive and relevant.
- C) Your full attention and participation is expected during class activities. No communication technology should be visible, turned on, or in use during class unless

their use is directly related to a course activity – this includes cell phones, tablets, and laptops.

- D) You are responsible for communicating directly with the instructor concerning all aspects of the course including attendance and assignments. Do not expect others to deliver messages to the instructor.
- E) You must use your SKC student e mail account for all communication regarding the course, including communicating with the instructor. You are expected to submit all of your assignments electronically unless otherwise specified.

### Classroom Observations

This course includes 10 hours of classroom observations. Some of those hours we will do as a group, providing us with an opportunity to deconstruct those experiences together. You will be responsible for arranging and attending the rest of the hours on your own. Three full classes have been set aside for classroom observations, two as a group and one on your own. I encourage you to attend observations together if possible since this enables you to discuss your observations with your peers and lessens the burden on teachers in arranging for your visits. If a teacher allows it, please begin to assist in classrooms. It is important at this stage of your educational and professional journey to deepen your relationships with local teachers who will be invaluable as mentors in supporting your professional development. I will supply e mail addresses of local secondary science teachers who have agreed to host SKC BSSE students in their classrooms to assist you in arranging your classroom observations with them. Please try to visit at least five different teachers' classrooms to give you a range of experiences.

You are also responsible for submitting written reflections on your field experiences as part of the course assignments. You must also submit a log of your observation hours, signed by each teacher whose classroom you visit. I will provide access to the log form you should use to document your classroom observation hours. Observations and reflections account for 20% of the course grade, as outlined in the Evaluation section of this syllabus.

### Unit Framework

The major product from this course will be your unit framework and the skeletal lessons, including assessments, which accompany it. This framework will be further used in the next course in this course sequence, EDUC 395, for generating a fully developed science unit. The fully developed unit is a major part of your TEP portfolio and provides a multifaceted concrete artifact that is a reflection of your preparedness as a science teacher. Because of the unit's importance to your preparation as a science educator and to your portfolio, and because you will be working with it over a long period of time (in this course and EDUC 395), you should give due deliberation to choosing the Big Idea of your unit and the framework that you are assembling in this course. I will give you detailed instructions on the expectations for the unit framework and a rubric that will be used to score it. I will also be giving you the rubric for the final product of the fully developed unit, which will be due at the end of EDUC 395, so that you can anticipate what will be expected in the next stage of this assignment.

## 7) Evaluation

Students enrolled in the course will receive a traditional letter grade. Students will be evaluated using multiple methods and all assignments must be completed to at least a level of proficiency equivalent to a “B” in order to receive a passing grade for the course. All course assignments must be completed and submitted by the deadlines stated above. Late work will be docked 20% of the total possible points for that assignment for each day it is late. This means you only have one day after the due date that you can submit the assignment and still have the possibility of attaining the required “B” on it. I urge you to visit with me regarding your assignments well in advance of their due date. I allow one resubmission – in other words, you can turn it in and get feedback, revise it and turn it in a second time, but with a 10% loss of points.

Points will be awarded to students as follows:

In class assignments	40 points maximum
Four benchmark unit development assignments – 6 points each	24 points maximum
Unannounced quizzes based on readings – 8 points each	16 points maximum
School based observations and reflections	<u>20 points maximum</u>
<b>Total points possible</b>	100 points maximum

Grades will be awarded using the following scale:

90 to 100% = A  
80 to 89% = B  
70 to 79% = C  
60 to 69% = D  
Less than 60% = F

**NOTE: It is important to remember that EDUC 392 is a 300+ level course and that the SKC Secondary Science Education degree requires that you attain at least a “B” in all of your 300 and 400 level courses in order to be well prepared and eligible for student teaching.**

## 8) Attendance

Regular and frequent participation in all class activities is essential in order for students to have access to a rich and comprehensive learning experience. Regular participation is also required for the successful completion of the course with a passing grade. Absences will only be excused if the student obtains prior approval from the course instructor. More than two excused absences or any unexcused absences will result in the student failing the course.

## 9) **Students with Disabilities**

Reasonable accommodations are provided for eligible students with identified disabilities. The college complies with the Rehabilitation Act of 1973 and the Americans with Disabilities Act. Students may contact the SKC's Disability Officer, Linda Pete ([Linda.Pete@skc.edu](mailto:Linda.Pete@skc.edu) or 406.275.4968) or consult the SKC web page for Students with Disabilities for more information.

## 10) **Academic Integrity**

*All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by Salish Kootenai College. Violations of the college's policies (including plagiarism or other forms for cheating) may result in the student failing the course.*

## 11) **Credit Hours**

Following the SKC Credit Hour policy, to meet the identified student learning outcomes of this 3 credit course delivered over a 10 week term, each student will spend approximately

- an average of 3 hours per week in onsite work in the college and
- an average of 9 hours per week on work outside class hours, conducting classroom observations and completing other course assignments.

## 12) **PEPP Standards Addressed**

This course addresses the following Montana Professional Educator Preparation Program standards.

10.58.522.7 - The candidate for an endorsement in broadfield science demonstrates the following knowledge and skills:

- b) exploration and inquiry learning as tools in investigating all aspects of the natural environment and knows how to apply and teach these methods when instructing students;
- d) study and experiences emphasizing interrelationships among all the sciences, as well as between the sciences and other areas of study such as mathematics;
- g) designing, developing, and evaluating field, demonstration, and laboratory instructional activities, and in using special skills and techniques with equipment, technologies, facilities, and specimens which support and enhance curricula and instruction in all sciences including laboratory and field studies that promote investigation and inquiry, and the use of experimental methods;
- l) facilitating classroom discourse through questioning, reflecting on, and critically analyzing ideas, leading students toward a deeper understanding of the inquiry process itself, and especially, using questions to define problems and potential solutions.

10.58.522.2 - The science endorsement requires that successful candidates:

- a) demonstrate a thorough understanding of inquiry-based learning across the sciences. This preparation includes:
  - iv) methods to engage in inquiry in a variety of ways;
- b) demonstrate knowledge and skills in the methods of guided and facilitated learning in order to interpret and communicate science research to others;

- c) apply instructional strategies which models learning environments with extended time, appropriate space, and resources with equipment and technology found in the contemporary secondary classroom;
- d) demonstrate understanding and experience of how to develop and maintain the highest levels of safety in classrooms, stockrooms, laboratories, and other areas related to instruction in science;
- e) demonstrate knowledge of formative and summative assessment techniques which model a variety of authentic and equitable assessment strategies that ensure the continuous intellectual, social, and personal development of the learner in all aspects of science;
- f) apply and evaluate models of interdisciplinary approaches to provide experiences in understanding science;
- g) articulate a well-defined rationale for instructional goals, materials, and actions in relation to state and national education standards and student achievement.