San José State University
College of Science, Science Education Program
SCED 220, Theories and Practices in Science Education, Section 01, Fall 2020

Course and Contact Information
Instructor: Dr. Elizabeth Walsh
Office Location: DH 618A
Email: elizabeth.walsh@sjsu.edu
Office Hours: T 10:00 AM to 11:00 AM and by appointment
Class Days/Time: Monday 4:00PM to 7:00PM
Classroom: N/A

Course Format
Technology Intensive
This class will be held entirely online via synchronous Zoom sessions and the Canvas learning management system. You will need access to a computer with Internet to complete assignments and attend Zoom classes. All out-of-class communication with you will be through Canvas. Course materials such as greensheet, handouts, notes, assignment instructions, etc. can be found on the Canvas website: sjsu.instructure.com. If you are an Open University student, see us for access to the site. During class, you are expected to participate in activities and discussions. This includes being prepared for class by completing assignments prior to attending as well as contributing to the classroom discourse. The course is a graduate level course; therefore, the expectation is that you are motivated to learn and apply what you learn to the best of your ability.

Course Description
Analysis of current trends in science curriculum and instruction. Orientation for the philosophy and scope of the program. Emphasis on development of a theory of instruction and curriculum in science with implications for practice. Misc/Lab: Lecture/seminar 3 hours. Notes: Teaching experience preferred. Must be taken during first year in program. This course satisfies graduate-level GWAR in this master's program.

Course Goals
Program Learning Outcomes (PLO)
This course can be taken to fulfill some of the credit hours required for a master’s degree in Science Education. Therefore, this course (in addition to others) will help students make progress towards the following program learning outcomes:

1 – To enhance student’s depth and breadth of understanding of selected topics in science education.

PLO 1.1 Students will be able to synthesize primary literature from science education research and apply how it fits to their project.

PLO 1.2 Students will demonstrate knowledge of at least two areas (e.g. inquiry based instruction, learning theory, assessment) that are related to, or supportive of research for their project.
2. To enhance communication skills, both written and oral, in science education discourse.

**PLO 2.1** Students will present science and science education content in the form of graduate seminars or in the oral defense of their project (also known as the culminating experience).

**PLO 2.2** Students will organize and write the results of their project in a manner consistent with standards in professional science education publications.

**Course Learning Outcomes (CLO)**

This course is meant as a general introduction to research in science education. Upon successful completion of this course, students will be able to:

**CLO 1** Use citation software (Refworks/CiteUlike/Mendeley) to collect and organize 25 sources of literature related to education or science education topics to create an annotated bibliography.

**CLO 2** Communicate ideas about primary literature through writing, presentation, discussion and critique.

**CLO 3** Identify a topic of interest for further investigation for deeper investigation through primary sources of literature.

**CLO 4** Represent big ideas in science education theory and practice both visually, orally and through writing.

**CLO 5** Synthesize a minimum of 15 sources from primary literature in the form of a literature review about a selected topic of interest.

**Required Texts/Readings**

Readings will be assigned to match the in-class discussions. These readings will be posted on the Canvas website under the sidebar menu titles ‘files’ and ‘readings.’ Readings are included in the schedule in this green sheet, but these readings are subject to change with notification.

**Course Requirements and Assignments**

Weekly assignments will usually be comprised of both a writing and a reading component. Students are required to come prepared to discuss the readings assigned each week.

*Canvas Discussion.* Online discussions will be used to build a collaborative learning community, this on-going assignment involves posting and responding to comments, thoughts, insights or reflections online with respect to the weekly readings and your own related educational experiences. Use this virtual space to connect with other classmates to help you think through the concepts we are learning in the course. As everyone’s continuous participation is essential in creating this virtual community, a minimum of 3 posts per week is required—you must create an initial, original post in response to the discussion prompt and two responses to peer posts.

*Writing Assignments.* The writing assignments will help students make progress towards writing a literature review on a topic of interest in science education. Assignments will include annotations of papers, syntheses of ideas and drafts of the final literature review product.

*Literature Review.* The culminating project for this course is a literature review on a topic of interest to the student. Students should choose an area of interest and thoroughly investigate the relevant literature pertaining to their topic. The aim of this is to become thoroughly grounded in the literature in preparation for crafting a Masters project. Per SJSU writing requirements, the literature review should be at least 3000 words (~12 pages) in length and will be completed individually. Sources should be cited appropriately in APA format.

**Final Examination or Evaluation**

The literature review and presentation serves as the culminating experience for this course.
Grading Information
Students will be graded on the quality of their written assignments, the extent of their participation, and the thoughtfulness, effort and coherence of their final project. Points will be allocated as such:

- In class participation 33%
- Weekly assignments 33%
- Final Project (Literature Review and Presentation) 34%

There is no extra credit for this course. This is final and there are no exceptions.

Late work will only be accepted one week after the due date and receive a deduction of two letter grades at the discretion of the instructor except in the case of a documented medical emergency with advance notice. This policy is to promote student success and prevent you from falling behind in assigned work, which is by far the most common reason why students do not pass the class.

Letter grades are assigned using the following scale: A's are given for percentages of 90 and above, B's are given for 80 to 89, C's are given for 70 to 79, and D's are given for 60 to 69. A letter grade of F is given for a grade percentage below 60% for the course. A +/- system will be used.

An Incomplete grade is given for documented medical emergencies only at the discretion of the instructor and cannot be used to extend the due date for the final literature review except in the case of a documented medical emergency. There are no exceptions.

Classroom Protocol
Our class will engage in a variety of small group experiences and large group discussions. A successful class will depend on every member of the group actively collaborating as both learners and teachers. It is my assumption that each of us has valuable perspectives and experiences that will inform our collective, developing knowledge. It is important that you come to class on time. I expect that you will have read the texts carefully and will be prepared to actively participate in our class discussions both during synchronous Zoom sessions and on Canvas. Attendance is essential in order for your success in this course. Often times the success of a classroom activity will depend on the attendance of the entire class. Therefore, it is essential that notify us if you are going to miss class for any reason, as soon as you are able. University excused absences require documentation (i.e., doctor’s note).

University Policies
Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs’ Syllabus Information

The SJSU Writing Center is located in Clark Hall, Suite 126. All Writing Specialists have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to become better writers. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the Writing Center website at http://www.sjsu.edu/writingcenter. For additional resources and updated information, follow the Writing Center on Twitter and become a fan of the SJSU Writing Center on Facebook. (Note: You need to have a QR Reader to scan this code.)
The schedule will serve as a guideline for the order of topics in covered in this class. It is subject to change with reasonable notice. Please see the canvas website for the most up-to-date information.

NOTE THAT ALL DISCUSSION ASSIGNMENTS ARE DUE THE SUNDAY BEFORE CLASS BY 12:00 PM AND RESPONSES TO POSTS ARE DUE BY 4:00 PM ON THE MONDAY OF CLASS. Assignments are due by 4:00PM on the day of class unless otherwise noted on the Canvas site—make sure to check due dates for all assignments!

Course Schedule

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<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
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| 1    | Aug. 24| **Learning & Knowing I: Scope of Course, Introduction**  
Introduction to the Graduate Program  
Course Goals and Introduction to Learning Theory |
| 2    | Aug. 31| **Learning & Knowing II: Everyday learning and cognition**  
Readings:  
Due: Canvas Discussion 1 |
| 3    | Sept. 7| **No Class – Labor Day** |
| 4    | Sept. 14| **Psychological and Social Perspectives I: Behaviorism**  
Readings:  
Due: Paper Annotations 1 |
| 5    | Sept. 21| **Psychological and Social Perspectives II: Cognition**  
Readings  
Piaget, J. (1928) Judgment and Reasoning in the Child (Chapter 5).  
London: Routledge. p. 199-256 |
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| 6    | Sept. 28 | **Psychological and Social Perspectives III: Sociocultural Theory**  
Readings:  
*Due*: Canvas Discussion 2, Meeting with Temporary Advisor |
| 7    | Oct. 5  | **Psychological and Social Perspectives IV: Constructivism**  
Readings:  
*Due*: Paper Annotations 2, Canvas Discussion 4 |
| 8    | Oct. 12 | **Broad View of Learning I: Critical Theory and Cultural Studies**  
Readings:  
Banks et al. Learning in In Out of School in Diverse Environments: Life-long, Life-Wide, Life-Deep. The LIFE Center, Center for Multicultural Education.  
*Due*: Canvas Discussion 5 |
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| 9    | Oct. 19| **Broad View of Learning II: Attitudes & Engagement**  
*Readings:*  
*Due:* Paper Annotations 3, Second Meeting with Advisor |
| 10   | Oct. 26| **Broad View of Learning III: Identity**  
*Readings:*  
*Due:* Canvas Discussion 6, Lit Review Outline |
| 11   | Nov. 2 | **Synthesis: Comparing Theories**  
*Readings:*  
*Due:* Paper Annotations 4, Peer Feedback on Lit Review Outline |
| 12   | Nov. 9 | **Bridging to Practice I: Situated Learning and Communities of Practice**  
*Readings:*  
*Due:* The Literature Review (first draft), Canvas Discussion 7 |
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| 13   | Nov. 16 | **Bridging to Practice II:** Authentic Practice in the Classroom  
Readings:  

Due: Peer review of literature review, Canvas Discussion 8 |
| 14   | Nov. 23 | **Bridging to Practice III:** “Nature of Science” and What is Science?  
Readings:  
Due: Canvas Discussion 9 |
| 15   | Nov. 30 | **Bridging to Practice IV: Learning Communities in the classroom**  
Readings:  
Due: Canvas Discussion 10 |
| 16   | Dec. 7  | **FINAL PRESENTATIONS**  
Attendance on this date is mandatory to receive credit for the final presentation. |
|      | Dec. 14th | **Final Literature Review and Annotated Bibliography Due by 11:59 PM** |