

Methods of Research Section 01 SCED 205

Spring 2023 3 Unit(s) 01/25/2023 to 05/15/2023 Modified 01/24/2023

Contact Information

Instructor: Dr. Jennifer Avena (preferred name: Dr. Avena; pronouns: she/her)

Office Location: Duncan Hall (DH) 554

Email: jennifer.avena@sjsu (preferred mode of contact)

Office Hours: Mondays 1:15-2:15 PM in-person in my office and Fridays 9:00-10:00 AM via Zoom at <https://sjsu.zoom.us/j/95003770530> (<https://sjsu.zoom.us/j/95003770530>) (must be logged in to Zoom with your SJSU credentials, and you will first enter a waiting room), or email me to set up an appointment at another time in-person or virtual.

Class: Mondays, 4-6:45 PM

Class Location: Duncan Hall (DH) 246

Course Description and Requisites

Introduction to techniques and procedures of scientific research. Each student is required to prepare and defend a working outline of a master's thesis or project in his or her area of concentration.

Note(s): Introductory course in statistics or equivalent recommended.

Letter Graded

Classroom Protocols

Course Format

Please have access to a computer with Internet to complete synchronous in-person in-class activities during class as well as asynchronous assignments outside of class through the Canvas learning management system. All out-of-class communication with you will be through Canvas. Course materials can be found on the Canvas website: sjsu.instructure.com. If you are an Open University student, see the instructor 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.

Access to technology: [Student Computing Services](#) has information on how to request a laptop available for loan. If you have any issues accessing online course materials, please contact the IT Service Desk at (408) 924-1530 or itservicedesk@sjsu.edu. Additional information also available at [Learn Everywhere](#).

Course materials can be found on the [Canvas Learning Management System](#) at <http://sjsu.instructure.com>. You are responsible for regularly checking your SJSU email/mysjsu messaging and Canvas Announcements page to learn of any updates. I suggest that you check your [Canvas Notification Settings](#) to ensure Canvas Announcements will be sent to your SJSU email account. For help with using Canvas see [Canvas Student Resources page](http://www.sjsu.edu/ecampus/teaching-tools/canvas/student_resources) (http://www.sjsu.edu/ecampus/teaching-tools/canvas/student_resources)

Program Information

Science Education Program Learning Outcomes (PLOs)

PLO 1 – To enhance students' depth and breadth of understanding of selected topics in science education.

1.1 Students will be able to synthesize primary literature from science education research and apply it to their project in the form of a literature

review.

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.

PLO 2 – To enhance communication skills, both written and oral, in science education discourse.

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).

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

Diversity Statement - At SJSU, it is important to create a safe and comfortable learning environment where we can explore, make mistakes, learn, and grow together. In our teaching practice, we strive to build an inclusive culture of learners that values, encourages, and supports students from all backgrounds and experiences.

Course Goals

Course Overview

This course is guided by two questions:

1. *What is inquiry in education?*
2. *How can we study and develop materials that address interesting problems of teaching and learning?*

These questions are more complex than they first appear. Answering a simple question can quickly lead to considerations about what counts as knowledge, what knowledge is, knowing as an activity and how we define ourselves as learners. It requires examination of approaches to answering these questions and interrogation of what approaches lead to which kinds of answers and why. There are also practical issues—how does one gain proficiency in the practices of educational design and research and what are the ethical implications of educational inquiry?

Researchers have debated all of these questions throughout the history of educational inquiry and this course does not seek to provide a resolution. Rather, through consideration, examination of and practice with inquiry techniques we will define a problem that your masters project will address and develop a proposal for how you will address that issue.

Respect for Diversity

My goal is that this course will respect and value the diversity of students from all backgrounds and experiences. This diversity is a resource for all aspects of our class, including as we engage in discussions as a whole class as well as in groups. This course is fully online, so we want to keep in mind appropriate netiquette (see details in Canvas) to maintain a professional, respectful, and cooperative online environment. In accordance with San José State University's Policies, the Student Code of Conduct, and applicable state and federal laws, discrimination based on gender, gender identity, gender expression, race, nationality, ethnicity, religion, sexual orientation, or disability is prohibited in any form. Your feedback and suggestions to improve the course are greatly appreciated, so feel free to reach out to me.

Course Learning Outcomes (CLOs)

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 Evaluate and communicate the utility of various research questions as they apply to their personal research topic
- CLO 2 Construct measurable research questions motivated by science education literature
- CLO 3 Create a plan for project implementation (ex: data collection, curriculum design, program implementation, etc.) and analysis/reflection as applicable with their master's project
- CLO 4 Create and identify instruments (surveys, interview protocols)
- CLO 5 Write your SJSU Institutional Review Board (IRB) protocol and submit for approval
- CLO 6 Synthesize knowledge from SCED 205, SCED 220 and other educational courses into a coherent written proposal

Course Materials

Textbook

There is no required text to purchase. Assigned readings will be provided in the corresponding topic's module in Canvas.

Library Liaison

Anne Marie Engelsen (Annemarie.engelsen@sjsu.edu) for Sciences and/or DeeAnn Herrera Tran (deeann.tran@sjsu.edu) for Education

☰ Course Requirements and Assignments

In-class participation. During the synchronous class, I expect that you will be prepared to actively participate in our class discussions and activities. See Canvas Rubrics for grading details of participation. You may also be asked to submit some in-class assignments as well. You may miss one class period without your participation grade being affected. In circumstances arise in which you must miss additional classes, please let me know as soon as possible to discuss a make-up assignment.

Weekly assignments.

Canvas readings discussion board. Online discussions will be used to post comments, thoughts, insights and/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. All discussion board assignments are due the day of class (Monday) by 12:00 PM. You will also want to review others' posts, as you will be asked to be prepared to pose responding questions and comments during class. Additional prompt details will be provided in the Discussion Board.

Homework. Assignments are due by 12:00 PM on the day of class unless otherwise noted on the Canvas site—*make sure to check due dates for all assignments!* The content will depend on the needs of the class, but may contain opportunities to reflect, plan, analyze data, etc.

IRB (Human Subjects) Application. It is essential that all research be conducted ethically, therefore, in addition to studying the ethics around research, in this class you will also be going through the steps of preparing submission of an IRB (Human Subjects) application. We will work to develop an appropriate plan for your treatment of human subjects and develop the required materials including a narrative, consent forms and data instruments (surveys, interviews, etc). In the event that your project is *already approved* by IRB (or that you do not need IRB approval for some other reason), please let me know early during the semester, and we will adjust the assignment accordingly on a case-by-case basis. You will submit one draft and notify me of your final IRB submission status.

University Course Hour Requirement

"Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus." Students are expected to spend 6 hours per week outside of class on course-related work.

Final Examination or Evaluation

Per SJSU guidelines, "Faculty members are required to have a culminating activity for their courses, which can include a final examination, a final research paper or project, a final creative work or performance, a final portfolio of work, or other appropriate assignment." Final presentations (science education faculty and relevant college personnel invited) and the final project proposal serve as the final evaluation (culminating activity) for this course.

Proposal (Final)

You will create a proposal that outlines your project plan for the completion of your Master's degree. The specifics of that plan will be outlined to you in Canvas, and you will be given a rubric to which to refer as you write. You will also be submitting multiple drafts prior to this final submission.

Final Presentation

On Monday, May 15, during class you will present your project proposal to an audience consisting of your classmates, adviser, and committee members if possible. Details of this proposal will be provided to you in Canvas.

✓ Grading Information

In this course, you will be expected to complete assignments, participate in discussions, and demonstrate growth in your knowledge of, and skills with, the material. You will receive ample feedback from myself, and some from your classmates as well.

This course will not be graded in the traditional sense. I will grade all assignments as either 'complete' or 'incomplete.' Should you submit an assignment that is graded as 'incomplete' I will provide direct written feedback on what is needed for completion. I ask that assignments be completed on-time so that we can engaging in meaningful classroom discussion. This is important because class activities are often based on assignments, and you and your classmates will not get the full benefit of the activity if you are not prepared. Students who complete all assignments, and thus demonstrate the course learning goals, will earn an "A" in this course. This is so that you can focus on getting the most out of your course experience without worrying about your course grade.

I have designed my course expectations in a way that it is possible and expected that every student can meet them. However, life happens and sometimes other things need to be prioritized. Should something unexpected come up, and you begin to fall behind on assignments, please come talk to me so that we can make a plan for your success. I promise to listen, be compassionate with you, and together we can brainstorm

a pathway to your success. Furthermore, you will never be required to reveal a reason, or provide a justification for falling behind the pace of the course. Please only tell me what you feel comfortable telling me.

In the event that there are any students who do not meet course expectations within the agreed upon timeframe (either by their due date, or by some time co-determined by the myself and the student) they will earn an "F" and need to repeat the course. I expect this to be an extremely rare occurrence.

University Policies

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>). Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Note: This schedule is subject to change with reasonable notice. Please review Canvas Modules for the most up-to-date information.

Week	Date	Topic	Readings & Assignments Due
1	1/30	Introduction, Research Proposal Overview	
2	2/6	Collecting Qualitative Data: Interviewing Research Questions	<i>Due: Reading Discussion Board Week 2</i> <i>Due: Research Question Brainstorm & Development Assignment</i>
3	2/13	Collecting Qualitative Data: Observations and Field Notes Rigor & Validity	<i>Due: Reading Discussion Board Week 3</i>
4	2/20	Methods Highlight: Case Study Validity in your project, Timelines	<i>Due: Reading Discussion Board Week 4</i> <i>Due: Observation Practice Assignment</i> <i>Due: Research Question Assignment 2</i>
5	2/27	Survey Studies	<i>Due: Reading Discussion Board Week 5</i> <i>Due: Reflection on Validity in your Project Assignment</i>
6	3/6	Methods Highlight: Teacher Action Research, Design-Based Research	<i>Due: Reading Discussion Board Week 6</i> <i>Due: Interview and Interview Reflection Assignment</i>
7	3/13	Quantitative Methods Highlight: Experiments and Quasi- Experiments	<i>Due: Reading Discussion Board Week 7</i> <i>Due: Meeting with Advisor Assignment</i>
8	3/20	Ethnography, Focus on Mixed Methodologies	<i>Due: Reading Discussion Board Week 8</i> <i>Due: Proposal Draft 1a of Lit Review, Methods and Data Collection</i>
	3/27	<i>No class - spring break</i>	
9	4/3	Analyzing qualitative data: coding, video and audio analysis	<i>Due: Reading Discussion Board Week 9</i>

10	4/10	Analyzing qualitative data, continued	<i>Due: Reading Discussion Board Week 10</i> <i>Due: Draft 1 of full proposal, including creation or identification of data instruments (e.g. surveys or interview protocols)</i>
11	4/17	Ethics and IRB	<i>Due: Coding and Coding Reflection</i>
12	4/24	Analyzing quantitative data	<i>Due: Reading Discussion Board Week 12</i> <i>Due: Full Proposal Draft 2</i>
13	5/1	Peer Reviewing Discussion	<i>Due: Peer review of proposal draft 2</i>
14	5/8	IRB Help & Workday	<i>Due: IRB Draft (application, all consent forms, and data instruments-surveys and/or interview protocols)</i>
15	5/15	Final Presentations	<i>Due: Final Presentation Slides due by 4:00PM</i> <i>Due in class: Final Presentation</i> <i>Due 5/17: Proposal Final draft</i>
Final Eval. Date	5/22		<i>Due: Final IRB Submission Status</i>