

**NSCI 4961: "Teaching Science"
CSU Stanislaus
Course Syllabus**

Instructor: Dr. Michael Fleming

Phone: (209) 664-6923

Office Hours: Mon 1-2pm, Tu 2:30-3:30pm, Th 8-9am, or by appointment.

Office: 269 Naraghi Hall

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Class Sessions: Tuesdays 6-8:50 PM, 229 Naraghi Hall

Course Description: This course is designed to provide you with perspective, theory, design, and practice in teaching science at the primary and secondary levels. It counts as an upper division elective in all STEM disciplines, and *satisfies the LIBS Integrative Inquiry requirement in area B**. Each class session will consist of a lab-based activity you can take with you to your classroom, articulation of the science concepts underlying the activity, discussion of assigned readings, and feedback on returned assignments. In addition, you will design and teach two mini-lessons to the class. Graduate students must also complete an extra deliverable (please see me for details).

* Contact Dr. Katie Olivant, 209-664-6813, kolivant@csustan.edu for verification on this point.

Texts: There are two texts for this course, one of which is required (although I encourage you to purchase both; good reference material is a necessary teaching tool).

For grade 7-12 teachers: R.W. Bybee, J.C. Powell and L.W. Trowbridge. 2008. *Teaching Secondary School Science: Strategies for Developing Scientific Literacy, 9th ed.* Columbus, OH: Pearson Education, Inc. 362 pgs.

For grade K-6 teachers: M.J. Goldston and L. Downey. 2013. *Your Science Classroom: Becoming an Elementary/Middle School Science Teacher.* Los Angeles: Sage Publications, Inc. 297 pgs.

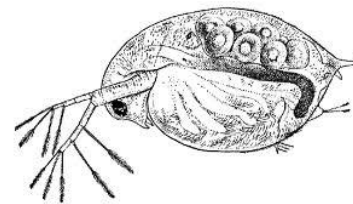
Announcements: Check BlackBoard and your email for updates, schedule changes, etc.

Course Goals: I will do my best to provide you with...

1. ...an investigation of various methods and models for teaching science in primary and secondary schools;
2. ...a study of materials, equipment, manipulatives, software, and other resources for appropriate instructional applications;
3. ...an opportunity to plan and deliver lessons to peers to gain confidence and experience with various teaching strategies;
4. ...an awareness and understanding of recent curriculum research and issues in science education;
5. ...an examination of the interaction between science and other content areas with an emphasis on interdisciplinary teaching.

My Teaching Philosophy: My teaching philosophy is grounded in high expectations, accountability, and belief in appropriate behavior conducive to learning. Five principles guide my teaching philosophy:

1. All students can become lifelong learners.
2. Significant change requires commitment and time.
3. Struggle is a necessary and important part of life.
4. Students must accept responsibility for their learning progress.
5. I will never do for students what students can do for themselves.



That said, I will work hard and use multiple ways of teaching to help you succeed in this course. Hopefully we'll also have a few laughs as we go along.

Participation and Attendance: Please arrive to class on time and ready to learn. I expect all students to attend every class session. Plenty of research shows final grades are positively correlated with attendance. To this end you will learn something valuable and probably earn points in every class session by participating actively in activities and discussions, but cannot gain from them if you are absent. As per university regulations, students who miss the first lab or have excessive tardies/absences will be dropped from the course. Note that since the activity set-up changes each week, you cannot make up missed activities. Unexcused absences always result in no points for the week, and if your absence is unexcused I will not accept your assignment due that week. Thus, if you miss even one class session without an iron-clad reason, your final grade will be negatively affected! Please bring a laptop or some other internet compatible device every class session. Assignments are due at the start of class. You will talk and work frequently in small groups, provide feedback to me and others in the class, and sometimes present your ideas to the entire class; please contribute actively and thoughtfully to every class session. Most importantly, please do not disrupt the learning environment, rights, and property of others. Finally, while I am encouraging you to bring your laptop or iPad etc. to class, all gadgets not conducive to learning in the course, such as cell phones/music devices/etc. should remain unused during class. Be honest, hold yourself accountable for your actions, and hold me accountable for mine.

Respectful Classroom Atmosphere: This class is a "judgment-free zone" at all times. This means that when you disagree with somebody's opinion on a subject, you may not sling insults, raise your voice, or destructively criticize them. I most certainly encourage disagreement on controversial topics and conversations are livelier if people do disagree on a subject. Furthermore, hearing feedback of one's teaching style can be uncomfortable, but learning from that feedback makes one a better teacher. However, polite civil disagreement or constructive criticism and outright hostility are two very different things. I will not tolerate hostility in the classroom, and anyone participating in this behavior will be escorted from the room and not allowed to return for the rest of the class session.

Activity Policies: 1) Safety. 2) Teamwork. 3) Data.

While this is not officially a lab class, we will engage in lab activities. Please demonstrate proper care for and use of lab materials and supplies. A safe teaching environment is a productive teaching environment. Please report any spills, broken equipment or any other safety concerns to me immediately. If you see something, say something!

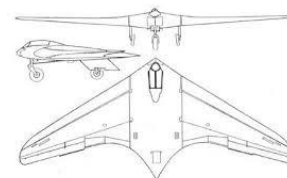
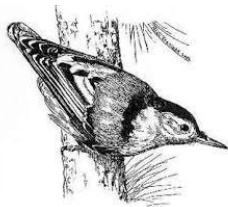
Cheating and Plagiarism: Don't do it! Your work should reflect your own effort and words. Any verified instance of cheating and/or plagiarism will be unpleasant for all involved.

Special Accommodations and Recording Lectures: This course is ADA accessible. Students with documented disabilities should seek special accommodations for all classes through the Disability Resource Services office on campus. If DRS notifies me that you require ADA accommodations, then I

will provide them for you, such as permission to record lectures. Otherwise, you have to do it the old-fashioned way with pen and paper. If you record my class in any form (video, audio, still pictures, etc.) without accommodation from DRS, that constitutes intellectual property theft and will be a bad situation for all involved. Student athletes who will miss class for games/matches should have their coach contact me, and I will accommodate your schedule by allowing alternate test dates and/or excusing points missed in class.

Grading and Assignments: There are 200 points possible in this course.

Assignment	Points	% of Total Points
Reflections (x5)	50	25%
Microteach (x2)	60	30%
Participation	30	15%
Philosophy Statement	20	10%
Teaching Literature Report	10	5%
Lesson on the Web (x2)	20	10%
Resource Purchase	10	5%
TOTAL	200	100%



I calculate grades as a function of grade point average (GPA) where A=4.0 and D=1.0 (I will show you an example of this in class). Students find this method fair and equitable. **I give + and – grades** as follows:

4.0-3.8 = A 3.7-3.6 = A- 3.5-3.3 = B+ 3.2-3.0 = B 2.9-2.6 = B- 2.5-2.3 = C+
 2.2-2.0 = C 1.9-1.6 = C- 1.5-1.3 = D+ 1.2-1.0 = D 0.9-below = F

There is no CR/NC option for this class.

Assignments:

Reflections – Following some reading assignments, you will write a 1-2 page reflection concerning any of the following: What surprised you? What did you (dis)agree with? What item(s) were most interesting and/or helpful for you? Be sure the reflection documents the entire reading.

MicroTeach – In lieu of midterm and final exams, you will teach a short science lesson to the class two times. For each lesson, prepare your plans prior to teaching. Submit plans and self-evaluation following each presentation. Refer to the “Microteach Presentations” document on Blackboard for specifics.

Philosophy Statement/Instructional Theory – This is a ~1 page personal statement that clearly and concisely describes your rationale for choice of content, instructional strategies, and assessment preferences. A strong teaching philosophy statement will be crucial for your prospects of getting a permanent teaching job! What you draft for this class may be your first try; you should build on this draft later as you gain more teaching experience and keep it in your portfolio for later use.

Teaching Literature Report – For this assignment you will survey teaching literature for lesson plans, reviews, or other relevant education tools. Refer to the “Teaching Literature” file on Blackboard for specific guidelines on this assignment.

Lesson on the Web – Collect at least three website URLs you find useful for science teaching to submit and share with the class. One of these should be an instructional simulation/tool, preferably one that you have found for free. Write a one page description and summary of its usefulness and submit electronically to me at mfleming1@csustan.edu.

Resource Purchase – Assume you have \$1000 to spend on your classroom. Prepare a short purchase request to your principal (me) that details (1) your assumptions and rationale for purchasing these items and (2) the specific items you wish to purchase, the amount(s) you want, the cost for each, and the vendor you will purchase from.

Important Dates: The last day to add the class is Sept. 6th. Census Date is Sept. 21st. This is the last day to drop the course. **I will not change grades once final grades have been submitted.**

Tentative Schedule:

Date	Topics	Activity	Be Ready to Discuss	Due
Aug. 25	Course intro Learning styles	Visual vs. verbal Learning style inventory	G&D: Ch. 9, Ch. 3 B,P&T: Chs. 2, 8	n/a
Sept. 1	Conceptual frameworks Misconceptions	Freeze temperature of water	G&D: Ch. 3-4 B,P&T: pgs. 23-24, 144- 145, 177-78, 193, 232	n/a
Sept. 8	Scientific literacy	Daphnia on drugs	G&D: Ch. 2 B,P&T: Ch. 6	Reflection #1
Sept. 15	Process and culture of science	Transport	G&D: Ch. 1 B,P&T: Chs. 3-4	Reflection #2
Sept. 22	NSES and NGSS	Bobbing eye dropper	G&D: Ch. 2, website B,P&T: Ch. 15, website	Teaching Lit. Report
Sept. 29	Inquiry	Stomata density	G&D: Chs. 5-7 B,P&T: Chs 3-4, Ch. 13	Lesson on the Web #1
Oct. 6	Assessment	Water drops on a penny	G&D: Ch. 8 B,P&T: Ch. 9	Reflection #3
Oct. 13	<i>Non-instructional day</i>	<i>No class</i>	<i>nothing!</i>	<i>nothing!</i>
Oct. 20	Microteach #1	Teach us something	n/a	Microteach eval. due by Oct. 23rd
Oct. 27	Microteach #1	Teach us something	n/a	Microteach eval. due by Oct. 30th
Nov. 3	Questioning techniques Classroom management	Adaptations	G&D: Appendix B-C, Ch. 5 B,P&T: Ch. 17, 21	Reflection #4
Nov. 10	Teaching sensitive topics	Evolution 1	G&D: special handout B,P&T: Ch. 12	Lesson on the Web #2
Nov. 17	Special needs students Diversity	Evolution 2	G&D: Ch. 10 B,P&T: Chs. 19-20	Reflection #5
Nov. 24	Where's the math? Interdisciplinary stuff	Motion probeware	G&D: Ch. 11 B,P&T: Ch. 11	Philosophy statement
Dec. 1	Commitment to teaching science, Course evaluation	Cloud in a bottle	G&D: Appendix B, Ch. 2 B,P&T: Chs. 1, 22	Resource Purchase
Dec. 8	Microteach #2	Teach us something	n/a	Microteach eval. due by Dec. 11th
Dec. 15	Microteach #2	Teach us something	n/a	Microteach eval. due by Dec. 18th