

PSY 3996 – Science Fair Mentoring

Fall Semester, 2017

Instructor:

Cheryl Olman

Office Hours (S251 Elliott):

by appointment (caolman@umn.edu)

Course location: Elliott Hall, during September; Murray Middle School during October, November and December.

Course Description: The goal of this class is to create a learning community in which 7th and 8th students from diverse backgrounds at Murray Middle School *want* to participate in science and *believe* they have a voice. During the months of October, November and December, students enrolled in this class will work 1:1 (ideally) or in small groups to design, execute and document (display board and paper) a science or engineering project. Although our class ends in December, the students are preparing for a science fair in early January, at which they will present their displays and papers to judges from the local scientific community. We will spend the month of September studying research related to learning and diversity and preparing activities for the class.

Here's an approximate outline of the class periods once we start meeting with students at Murray. As the semester wears on, we will be supporting their work on their science fair projects, helping them get data or write papers or put together displays or whatever they need. But for the first month (October), we will focus on building a learning community and helping students develop research ideas. So our 47 minutes together each Tuesday and Thursday in October will look *something* like this:

- 3:13-3:20: as a class, we circle up to talk about the STEAM question of the day (each day we send home a question about the world with students, and they get points for bringing back answers they got from family and friends). Ideally, that question is a lead-in for the day's activity.
- 3:20-3:25: we introduce the project for the day and students develop hypotheses about how something works and predictions for what will happen
- 3:25-3:50: as a group or individually, as it makes sense, we help the students design an experiment to test a hypothesis; we help them document their data
- 3:50-4:00: students work on their own to draw or write or dance or rap or graph their data from the day, in a lab notebook that we provide that stays in the classroom.

Required Reading: Most readings will be assigned from Susan Ambrose's book, *How Learning Works* (citation below). Some additional readings will be assigned from additional electronic sources.

Ambrose, Susan A. *How Learning Works: Seven Research-based Principles for Smart Teaching*. San Francisco, CA: Jossey-Bass, 2010.

Course Grade: The course grade is built from four categories, detailed below. There are no extra credit opportunities or points in the class.

- **Attendance: 50%.** Because the class is focused on building a learning community, 50% of the grade is attendance (1 points for every class period; 25 points total) and

professionalism (25 points total, assigned based on a student's ability to comply with and support the agreed-upon classroom norms).

- **Weekly reflection pieces: 20%.** Students will complete weekly <1-page writing assignments that reflect their evolving thoughts on the factors that support learning in diverse communities. Out of 14 possible weeks (since it's T/Th class, we'll count weeks starting on Tuesdays), students can choose which 10 they want to write (2 points for each of 10 written pieces: 20 points total). On the weeks you decide to submit an assignment, email it to caolman@umn.edu by the end of the day the following Sunday (e.g., if you write for the week of Sept 12, submit it before you go to bed on the 17th). A grading rubric will be provided on the course website.

Week:	Reflection topic
Sept 5	Describe a time when your behavior fit into one of the "supportive" environment grid boxes (Ambrose, Fig. 3.2) and a time when you fit into one of the "unsupportive" environment grid boxes. Compare and contrast your experiences to create a model for supportive environments.
Sept 12	What skills do you think Murray students are practicing in our after-school program, and how can we give them useful feedback?
Sept 19	Reflect on an experience that taught you to be an independent learner
Sept 26	What principles from Ambrose's book did you apply as you put together your science demo for the class?
Oct 3	What learning goals for the first week of Flipside and how can we structure the day to be sure we meet them?
Oct 10	In what ways did the first days of Flipside meet expectations, and in what areas can we improve?
For the following weeks, choose one of the following topics	
Oct 17	What did you learn this week about ...
Oct 24	... activating prior knowledge to help the students learn?
Oct 31	... the students' knowledge framework?
Nov 7	... helping students find value in an assignment?
Nov 14	... the students' beliefs about their own efficacy?
Nov 21	... creating a supportive environment?
Nov 28	... creating an inclusive climate, either explicitly or implicitly?
Dec 5	... using feedback effectively?
	... your student's meta-cognitive skills?

- **Science demo: 15%.** Each U of M student will be responsible for the Murray class one day in October, November or December. "Responsible for class" means (1) creating (designing, getting supplies for ...) a compelling and entertaining demonstration of a scientific concept, (2) providing instructions/materials for a follow-up, hands-on activity for the Murray students to do (and instructions for U of M peers to guide the Murray students through the activity), (3) providing a "STEAM Question" for the students to take home *before* the demo to seed discussion. Reimbursement for supplies is available.
- **Science fair display: 15%.** Each U of M student in the class will do a science fair project so we can put on a mini-science fair for the Murray students in October. The precise

timing will be determined by our schedule with the students, which we don't know until after our semester starts. The project will follow all of the requirements for the Murray students (literature review, experiment, display board). Project details will be provided at the beginning of the semester; projects will need to be completed by mid-October. Ideally, the project covers the experiment that you lead on your day to lead class. 5 points will be given for a completed display board, 5 points for a completed lit review, and 5 points for a science project that sets a good example for the students (falsifiable hypothesis and an experiment that has with clearly defined independent variables that can be controlled and dependent variables that can be measured).

The course is graded on an A-F basis (A: 93 – 100, A-: 90 – 92, B+: 88 – 89 ..., C-: 70 – 72; minimum passing grade is 60%; students taking the course pass/fail will receive an S (satisfactory) for grades higher than D).

Policy for make-up work: For legitimate absences (as defined in the University policy statement, <http://www.policy.umn.edu/Policies/Education/Education/makeupwork.html>), late submissions will be graded for full credit if (1) arranged before the due date (or as soon as possible, in the case of severe illness or emergencies) and (2) completed within a week of the original due date. All other late exams or assignments will be graded for a maximum of half credit.

Student Conduct: Instructors are responsible for maintaining order and a positive learning environment in the classroom. Therefore, students whose behavior is disruptive or disrespectful either to the instructor or to other students will be asked to leave. Students whose behavior suggests the need for counseling or other assistance may be referred to their college office or University Counseling Services. Students whose behavior may violate the University Student Conduct Code may be referred to the Director of the University Counseling Office.

Sexual Harassment: University policy prohibits sexual harassment as defined in the University policy statement of 17 May, 1984; copies of this statement are available in 419 Morrill Hall. Complaints about sexual harassment should be reported to the University Office of Equal Opportunity, 419 Morrill Hall.

Student Academic Integrity and Scholastic Dishonesty. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows: Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering forging , or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. A student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" for the course and a report to the Office for Student Academic Integrity.

Plagiarism: In all written assignments be scrupulous about avoiding plagiarism. Definitions and examples of plagiarism can be found at <http://plagiarism.org>. If you copy text or ideas from a source, particularly a website you are referencing, cite the source. Any assignment identified as plagiarizing a source will receive 0 points without possibility of making it up. Plagiarism on a second assignment will result in the assignment's point value being subtracted from the course grade. Three plagiarized assignments will result in a grade of F for the course.

Disclaimer about visibility of internet ID. In this class, our use of technology will sometimes make students' names and U of M Internet IDs visible, but only to other students in the same class. If you have concerns about the visibility of your Internet ID, please contact the instructor for further information.

Sexual Assault and higher education: Training modules and information. The Department of Psychology supports the efforts of the University of Minnesota towards prevention of sexual assault. We encourage all students to participate in the free online training that has been established for undergraduate students and graduate students. The training highlights pertinent issues regarding sexual assault, including, but not limited to: defining healthy relationships, consent, bystander intervention, and gender roles. [Haven](#) (for undergraduate students under the age of 25) and [Haven Plus](#) (for undergraduates over 25, graduate students, and professional students) is the training available at no cost to University of Minnesota students. Additionally, to learn more about how you can help reduce sexual assault at the University of Minnesota, please visit the [Aurora Center](#).

Academic integrity applies to community work done for academic credit

Any of the following actions constitute academic dishonesty within a community-based learning context and will be addressed in the same way as any other act of academic dishonesty. Incidents may also be referred to the [Office for Community Standards](#).

1. Misrepresenting hours completed at a community site or spent working on a community project. This includes documenting hours done in previous semesters or with an unauthorized organization.
2. Writing reflections or completing other assignments about events or activities the student did not actually participate in or attend at their community site. This includes drawing on community work done in previous semesters or with an unauthorized organization.

The University of MN [Student Conduct Code](#) also applies to student behavior while doing community work for academic credit

Violations or potential violation of the student conduct code applies in any setting where a student is engaged in work toward academic credit or is related to University activities. Any potential violations reported to CCEL liaisons from community partners will be forwarded to the Office for Community Standards to be addressed.

Accommodations for students registered with disability resource center doing community-engaged learning

If you are registered with the Disability Resource Center and use reasonable accommodations in your courses, you may also want to explore what accommodations may be useful in your

community-engaged learning. CCEL staff can work with you on how to bring up accommodation needs at a community learning site, or assist you in finding a site that meets your health and/or accessibility needs. We can work closely with your instructor and/or your Access Consultants to discuss the type of work environment and structure you need to be successful during your community experience. Additionally, we also strongly suggest having a conversation with your community supervisor in order to allow them to understand what you need to be successful.

Confidentiality and Privacy Issues in community work

Be aware that through your community-engaged learning, you may come to know information about individuals that is covered by policies and ethical guidelines about confidentiality. You should speak to your community supervisor about how confidentiality obligations apply to you. Examples of how these issues might arise in your community engagement include:

1. Photography: You should never take photos of anyone at your community organization without first knowing the organization's policy for obtaining consent.
2. Personal Identifiers: Be careful about revealing information that could be used to personally identify individuals you work with at your community organization. This includes changing the names of people at your organization when submitting assignments for class.

Criminal background checks are required for many community organizations

If the organization's volunteer application asks about any convictions and you have a criminal record, be honest. Failure to state convictions that are then uncovered in a background check will likely result in your immediate dismissal from the organization. If you are concerned that your record could disqualify you from the approved community-engaged learning options, please be proactive and discuss your options with your community-engaged learning liaison.

Non-Discrimination in community work

According to the University of Minnesota Board of Regents policy on *Equity, Diversity, Equal Opportunity and Affirmative Action*, the University shall,

Provide equal access to and opportunity in its programs, facilities, and employment without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression.

All CCEL partner organizations have verified that the engagement opportunities they offer to students are in compliance with this policy. If your faculty member allows community-engaged learning at an organization that is not a CCEL partner, CCEL staff will contact the organization to ensure their compliance with this non-discrimination policy before it will be approved for class credit.

Religious Service

Faith-based organizations, including religious institutions such as churches, mosques, synagogues, or temples, can be community-engaged learning sites as long as they comply with the U of MN's non-discrimination policy. However, service done as part of an academic course cannot include any of the following religious activities: providing religious education/instruction, worship activities, or any form of proselytizing.

Fall 2017 schedule (Murray dates are approximate ... copied from 2016)

Known challenges:

- The Flipside program that the Murray students will be enrolled in will also meet the week of Dec 19, Jan 4, and the weeks of Jan 9, 16 and 23.
- The actual science fair is in mid-January.

Week	Meet	Topic	Location
1	Sept 5	Course intro. Science demo design	Elliott Hall
	Sept 7	Prior knowledge and Frameworks	Elliott Hall
2	Sept 12	Motivation: Expectation and Value	Elliott Hall
	Sept 14	"Guest" lecture: Keisha Varma	Elliott Hall
3	Sept 19	Science demo design.	Elliott Hall
	Sept 21	Climate and cultural competency	Elliott Hall
4	Sept 26	Mastery and Feedback	Elliott Hall
	Sept 28	Meta-cognitive skills that support independence	Elliott Hall
5	October 3	MMS practice class	Elliott Hall
	Oct 5	MMS practice class	MMS
6	Oct 10	Flipside begins	MMS
	Oct 12		MMS
7	Oct 17		MMS
	Oct 19	No Flipside today – meet in Elliott	Elliott Hall
8	Oct 24		MMS
	Oct 26	Literature reviews due for Murray students	MMS
9	Oct 31		MMS
	Nov 2		MMS
10	Nov 7		MMS
	Nov 9		MMS
11	Nov 14	(Murray Hypothesis and procedure due)	MMS
	Nov 16	No Flipside today – Meet in Elliott	Elliott Hall
12	Nov 21		MMS
	Nov 23	No Flipside today ... let's take the day off!	No class
13	Nov 28		MMS

	Nov 30		MMS
14	Dec 5	(Murray Project paper drafts due)	MMS
	Dec 7		MMS
15	Dec 12	Last day we meet with Murray students	MMS
	Dec 14	Study day ... class at Murray is option. All are welcome to keep coming through Jan!.	