SYLLABUS
ISE 820: College Student Cognition in Science
FALL Semester 2016, NORTH KEDZIE 212 (Fri: 9-11 a.m.; online arranged)
Dr. Julie Libarkin; libarkin@msu.edu

DESCRIPTION

This course will introduce students to research methodologies and literature relevant to college student cognition in science disciplines. Material from general education, psychology, cognitive sciences, higher education, and sciences will be used to build a picture of what we do, and do not, understand about college student cognitive processes as they relate to science fields. Abstract concepts will be applied in hands-on activities and research.

COURSE OBJECTIVES

Students will:

1. Become familiar with theories of learning, cognition, and student development;
2. Understand the tools that are available for investigating cognition and learning;
3. Recognize how to apply established methods to analysis of cognition and learning data;
4. Work collaboratively to propose a research study.
5. Synthesize learning through writing of an original research paper.

GENERAL COURSE POLICIES

Attendance Policy: Plan to attend class. If you are going out of town or need to miss a class, please let me know as soon as possible.

Late Policy: Late assignments will only be accepted with a documented excuse that aligns with normal university policy.

Academic Honesty: **The university policy on academic honesty will be followed when dealing with integrity issues in class.** I encourage you to work with the other students in the class as you read the assigned articles and search the literature. However, your assignments must be written on your own. Copying material directly from any source, online or otherwise, without citation will be considered plagiarism. Students (and faculty!) often misunderstand plagiarism; therefore, please refresh your understanding before doing any writing for this course. See this site for MSU guidance: https://msu.edu/unit/ombud/academic-integrity/plagiarism-policy.html

Please see me as soon as possible if you will be traveling out of town or if you need any accommodation for this course.

TENTATIVE CLASS SCHEDULE

**All readings are available in D2L*

DATE (Mon.)	TOPIC	ASSIGNMENTS AND DUE DATES **Note:** Each week, unless noted, a discussion post and engagement in online discussion is required
Sept. 2	*Syllabus, Introductions, and Overview of Higher Education & Discipline-Based Education Research*	No assignment due
Sept. 9	*Cognition and Learning Theories*	**READ:** Long, 2012; Berkeley Overview of Learning Theories document
Sept. 16	*Assessment and Designing Research* Lab: Writing a Research Protocol	**READ:** Creswell, 2003; Knowing What Students Know Ch 2.
Sept. 23	*Looking at Learning – Human Subjects* Field Trip: Observing A Classroom	**READ:** Millis, 1992; Hora, 2015
Sept. 30	*Qualitative Data* Lab: Practicing Interviews, Capturing Drawing Data	**READ:** Grossoehme, 2014 **DUE: Research Question Ideas**
Oct. 7	*Quantitative Data; Mixed Methods* Lab: Question Writing; Critiquing Quantitative Tools	**READ:** NSF Data Collection Guide; Clark & Libarkin, 2011
Oct. 14	*Validity and Reliability* Discussion	**READ:** Golafshani, 2003; DeVellis, 2016 Chapter
Oct. 21	*No Class (Julie out of town)*	**DUE: Manuscript Outline**
Oct. 28	*Other Techniques* Lab: Eye Tracking	**READ:** Jacobs, 1999; Slykhuis, et al., 2005
Nov. 4	*Data Analysis* Lab: Analyzing Data	*No reading – finish collecting and begin to analyze your data!* **DUE: Manuscript Data Collection**
Nov. 11	*Diversity and Science*	**READ:** Cobern & Loving, 2004; Semken & Butler Freeman, 2008 **DUE: Manuscript Background**
Nov. 18	*Teaching and Learning: Lessons Learned*	**READ:** Linn & Eylon, 1988
Nov. 25	**UNIVERSITY HOLIDAY – NO CLASS**	**DUE: Manuscripts!**
Dec. 2	Paper Critiques	**READ:** Papers **DUE: Paper Reviews**
Dec. 9	*Paper Critiques*; **FINAL DAY OF CLASSES**	**READ:** Papers **DUE: Paper Reviews**
Dec. 16	*No Final*	**DUE: Revised Manuscripts**

Assignments and % of total grade

A. Online Discussion Posts and Participation: 30%
B. In-Class Discussion Leadership: 20%
C. Research Manuscript: 40%
D. Manuscript Reviews: 10%