

Certificate in College Teaching

IDND 30521: Mentoring Undergraduate Research (1 credit)

Fall 2008

LOCATION: Clark University, Room TBD

DAYS: Thursdays: September 25, October 2, October 9, October 16, October 30

TIMES: 4-7p (except where otherwise noted – see attached page)

FACULTY:

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This course introduces students to the concepts and practices associated with mentoring undergraduate research, so that current/prospective university faculty can serve as effective research mentors for their undergraduate students. After taking this course, students will be able to design their own undergraduate research program. These skills will be evaluated via a final product, namely a (~1500 word maximum) description of a hypothetical undergraduate research program that the author may wish to propose in the context of a job interview for a faculty position, or of a request to a Dean to establish an undergraduate research program at your current university/college.

COURSE OBJECTIVES:

At the successful completion of this course, students will have prepared a personal statement articulating their philosophy concerning the role and structure of an undergraduate research program, suitable for inclusion in a teaching portfolio or job application. Students will articulate:

1. A brief, overarching philosophy of mentoring undergraduate research;
2. The fundamental elements of scholarship within their discipline, & which of the elements undergraduate students can engage effectively;
3. One potential project that undergraduate students could engage effectively;
4. Performance-based objectives for evaluating the success of an undergraduate research program;
5. A plan for recruiting and supporting undergraduate researchers; and
6. The roles and responsibilities of students, faculty, and administrators in the execution and promotion of the chosen undergraduate research program.

To help students achieve these objectives, this course is divided into two main parts: the Instructors will first describe the approaches of a few existing undergraduate research programs, and second invite reflections on operational challenges and opportunities from a group of individuals with relevant experience (practitioners – mentoring faculty, participants – undergraduate students, and administrators – e.g., Deans), as well as from the course instructors. Meetings 1 & 2 constitute the first portion of the course; meetings 3-5 constitute the second portion of the course.

There will be five class meetings. All meetings will last 3 hours, except for the final meeting, which will last 2 hours. To earn credit for this course, students will be expected to: attend class, complete the readings prior to the class for which the readings are assigned, participate meaningfully in class, and complete the assignments by their stated due dates. Reading/assignment list is on the attached page.

Meeting #1: Introduction (Polsky/Robertson)

1. Is there a tension between teaching and research in the academy?
2. What is "undergraduate research"? Do NSF and other funding agencies really care about undergraduate research?

Meeting #2: Views from the field: Two Clark "REU" programs (Polsky/Robertson)

1. HERO/Geography: Polsky
2. Biology: Robertson

Meeting #3: (Miller)

1. Assessment: What is it? Why do it?
2. Assessment: How to do it?

Meeting #4: (Polsky)

1. Nuts-and-bolts: funding an undergraduate research program
2. Nuts-and-bolts: staffing an undergraduate research program

Meeting #5: Views from other disciplines and Administrators

1. 'Student independence' in topic selection & publishing. Presenters include:
 - 1a. Chemistry: Turnbull
 - 1b. Psychology: Cordova
 - 1c. Geography: Pontius
 - 1d. Inter-disciplinary: Krueger (WPI)
2. Leadership round-table
 - 2a. Provost: Angel
 - 2b. Dean: Wright
 - 2c. Director: Johnston

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List of Readings & Activities

Come with questions/comments every day. Students will be expected to participate meaningfully in each class.

week #	Date/Time (4-7p unless otherwise noted)	Topics	Reading to complete prior to the day noted	Activity to complete prior to the day noted
1	Thur Sep 25	<p>1. Introduction. Is there a tension between teaching and research in the academy?</p> <p>2. What is 'undergraduate research'? Do NSF & other funding agencies <i>really</i> care about undergraduate research?</p>	<p>Evans, 1911. The Place of Research in Undergraduate Schools. <i>Science</i>.XXXIII. No. 846. 402-411</p> <p>Mervis, J. 2001. Student research: what is it good for. <i>Science</i> . 293:1614-1615</p> <p>Ward, K., 2001. Research with undergraduates: survey of best practices. <i>Journal of Computing Sciences in Colleges</i> 21(1):169-176.</p> <p>National Science Foundation statement on the importance of undergraduate reseearch.</p> <p>Merkel, Carolyn and Shenda Baker, 2002. "How to Mentor Undergraduate Researchers." <i>Council on Undergraduate Research Quarterly</i> .</p>	<p>Initial reflections document (maximum 500 words). Questions to consider when writing this document: What are your research interests? What are the elements of scholarship in your discipline (in other words, what activities constitute scholarly contributions)? What do you think undergraduate research <i>is</i>, and what you think it <i>should be</i>? Is research equivalent to learning? Is research a legitimate substitute for classroom time? What might an undergraduate student gain by having a research experience? What might an undergraduate student risk losing by having a research experience?</p>
2	Thur Oct 2, 4-6p	<p>1. Views from the field: Two Clark "REU" programs: HERO (Polsky)</p> <p>2. Views from the field: Two Clark "REU" programs: Biology (Robertson)</p>	<p>Polsky, C., Rogan, J., Pontius, R.G. and Turner, B.L., 2007. Undergraduate GIScience Research at Clark University: The HERO Program. <i>Council on Undergraduate Research Quarterly</i> , 27(3): 124-129.</p> <p>Yarnal, B. and Neff, R., 2006. Teaching Global Change in Local Places: the HERO Research Experiences for Undergraduates Program. <i>Journal of Geography in Higher Education</i> , 31(3): 413-426.</p> <p>Mabrouk and Peters, 2000. Student perspectives on undergraduate research experiences in chemistry and biology. <i>Council on Undergraduate Research Quarterly</i> . 25-33.</p>	<p>Participate in class Blackboard discussion -- monitored by the Instructors -- on two topics: (1) "Should we encourage undergraduates to engage in a research program? Why or why not?" (2) "How (if at all) is 'undergraduate research' different from a traditional class?"</p>
3	Thur Oct 9	<p>1. Assessment: Why do it (Miller)</p> <p>2. Assessment: How to do it (Miller)</p>	<p>Special Issue on "Assessment" in <i>Council on Undergraduate Research Quarterly</i>.</p>	<p>Define briefly (maximum 500 words) the research project in which you might propose to a Dean to lead a group of undergraduate students. Define this project using (a) a brief statement of the problem that is poorly understood by existing research; and (b) a set of focused research questions.</p>

List of Readings & Activities

Come with questions/comments every day. Students will be expected to participate meaningfully in each class.

week #	Date/Time (4-7p unless otherwise noted)	Topics	Reading to complete prior to the day noted	Activity to complete prior to the day noted
4	Thur Oct 16	1. Nuts-and-bolts: funding an undergraduate research program (including how to prepare a budget) 2. Nuts-and-bolts: staffing an undergraduate research program		Participate in Blackboard discussion -- monitored by the Instructors -- on one or more of these topics: How do we measure success (is publication the only metric)? What constitutes authorship within your discipline? What type of institution do you see yourself working at (to answer this question, identify 3-5 existing job openings in your discipline)? What do you anticipate being important criteria for promotion and tenure? How does undergraduate research fit in to this model?
5	Thur Oct 30	1. Views from multiple disciplines: Publishing and 'independence' 1a. Chemistry: Turnbull 1b. Psychology: Cordova 1c. International Development: Pontius 1d. Inter-disciplinary: WPI/IQP (Krueger) 2. Views from the Administration: Leadership round-table 2a. Provost (Angel) 2b. Dean (Wright) 2c. Chair (Johnston)		Statement on what funding and personnel your undergraduate research program would require (maximum 500 words). Statement on how you would assess the success of your undergraduate research program (maximum 500 words).

FINAL PRODUCT (two items): due exactly 1 week following the last class meeting.

(1) Personal statement of how YOU would structure and lead an undergraduate research program. Write this document (maximum ~1500 words) as though it would be included in your application to a tenure-track faculty position, or as though it formed the basis for a proposal to your current Dean. Include text on: your philosophy and objectives (grounded at least in part on the course readings), the research question(s) you would examine with your undergraduate students, the operational environment you would need to permit the students to succeed, what funds you would require to run the program, how you might acquire those funds, and how you would assess undergraduate performance. This document must reflect the comments received from the Instructors on the student's preceding assignments.

(2) Annotated bibliography. Submit a few sentences of your reactions to/commentary on each of the readings for the course.