Ethics Education for Ph.D. Graduate Students in Engineering: Issues and Approach

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Background

ENGINEERING STUDENTS
- Engineering Management Master’s Program
  50 new students each year, approx. 50% domestic / 50% international
  Coursework Master’s, with (a) group project and (b) off-site internship
- MS and PhD programs
  40 new students each year, approx. 70% domestic / 30% international
  Research based. Not all have research experience

ISSUES
- all the usual lab science considerations: evaluation of data, time pressure to publish, what to include when publishing, what to reference on ppt, what is sponsor interest......questions most have never considered
- group projects, internships – some, first outside-of-classroom experience
- Dartmouth Honor Code: non-proctored exams, take-home exams
Departure-from-Classroom Challenge

CHANGE IN METRICS FOR SUCCESS
- CLASSROOM: Search for the “right” answer
- LABORATORY: Search for the “new” answer

NEW SET OF EXPECTATIONS
- Most students don’t take course in research procedures
- Lab norm established by adviser, senior students
- ADVISER: Prior research in lab creates expectations
- STUDENT: May feel pressure to produce quickly, publishable results
  - Throw away “bad” data?
  - Photo-shop image to improve presentation?

Dartmouth Approach

BROAD ETHICS TRAINING COURSE
ALL new science and engineering students
starts in orientation but CONTINUES through term
FACULTY and SENIOR GRAD STUDENT facilitators
Overseen by university-wide ETHICS INSTITUTE

NEED*
- Complex issues facing graduate students
- Take proactive approach to address increase in student misconduct issues.
- Increase competitiveness with funding agencies

* K. Landers, Graduate Affairs, Nat. Assoc. for Grad. Studies conference presentation 2008
Development of Program

- Began in ’04; collaborated w/ Dartmouth Ethics Institute
- Faculty buy-in to make requirement
- Orientation program sets tone, community building
- Trained facilitators in case method approach
  - Professionalism
  - Mentoring
  - Data Collection
  - Authorship
- Columbia example in packets one of several used

* K. Landers, Graduate Affairs, Nat. Assoc. for Grad. Studies conference presentation 2008

Assessment

Program Assessment in Winter 2008. Strengths:

- A majority of graduate students surveyed reported a clearer understanding of their ethical responsibilities
- Tracking of honor code violations over time suggests a decline after implementation of the program – but small numbers make it difficult to tell whether significant w/o add’l yrs of data
- Helps build stronger sense of community among grad students
- Student comments that appreciate insight into issues they “had not thought of before”

* K. Landers, Graduate Affairs, Nat. Assoc. for Grad. Studies conference presentation 2008
**Assessment (cont’d)**

**Weaknesses**

- Existing cases do not address all fields
- Some students express that program a waste of their time
- Similar comments – prior ugrad ChemE REU program
  - Year 1: philosophy faculty lead discussion, essays
  - Year 2: AAAS workshop on broad issues
  - Year 3: AAAS workshop with video, faculty reviewed essay
- Challenge: getting students to understand relevance before they are in the lab

* incl. data from K. Landers, Graduate Affairs, Nat. Assoc. for Grad. Studies conference presentation 2008

**Impediments: Administrator Perspective**

**MULTI-NATIONAL, MULTI-CULTURAL CHALLENGE**

- Issue frequently identified by faculty
- Recent conversation w/ one int’l graduate student related to Honor Code: anecdote illustrates challenge
  - ugrad education theoretical, text based
  - single correct answer, std exams, relationship w/ prof irrelevant
- Honor Code?
  - Here, small prob that small number would violate
  - There, no such concept – expect many would violate
  - Why? High grades publicly praised, low grades publicly chided. Goal: solution by any means
- Challenge to instill research ethical concepts broadly w/o being culturally accusatory or insulting. Perspectives differ.