



# National Research Council (NRC) Assessment of Research Doctorate Programs

<http://www7.nationalacademies.org/resdoc/index.html>



# Historical Information

- Previous assessments, 1983 and 1995
- Committee formed to update methodology
  - Update taxonomy
  - Add student questionnaire
  - Add quantitative measures of research output
  - Update ranking procedure
- Participating institutions, estimated 230



# Objective of 2006 Assessment

- Improve the quality of Ph.D. programs through benchmarking
- Provide potential students and the public readily available information on doctoral programs nationwide
- Enhance the nation's overall research capacity



# Purdue's NRC Task Force

- Started more than Two Years Ago
- Rab Mukerjea appointed Institutional Coordinator in July, 2006
- Representation from every College/School, The Graduate School, Offices of the President, the Provost, Vice Provost for Research, and Institutional Research
- NRC Task Force Members are contacts for the Colleges/Schools



# Purdue NRC Coordinating Office

- Institutional Coordinator
  - Rabindra Mukerjea, Office of the President
    - Office of Institutional Research - Jacque Frost, Charlyce Patterson, Chris Maxwell
- Graduate School
  - Cindy Nakatsu, Interim Dean
  - Phil Pope, Associate Dean
    - Jeff Bridgham



# Basic Procedure

- Institutional questionnaire to identify programs
- Program questionnaire, information about the programs and participating faculty
- Faculty questionnaire, all those listed by program
- Students questionnaire, only to those in selected programs
- Rating questionnaire, select group of faculty
- An on-line database will be developed and made available to the public at the end of 2007



# NRC Fields

- Categorizes academic programs into four broad fields:
  - Life Sciences
  - Physical Sciences, Mathematics and Engineering
  - Social Sciences
  - Arts and Humanities
- Mappings identified by NRC Task Force members with consultation of the Colleges/Schools
- 49 Purdue programs were mapped -- not all Purdue programs are included in the NRC taxonomy



# QUESTIONNAIRES



# Institutional Questionnaire

- Completed by Purdue NRC Coordinating Office
- Policies and Practices
- Health Benefits & Services
- Collective Bargaining
- New Ph.D. Programs since 1995
- Doctoral Student Retention by race/ethnicity
  - Data aggregated by broad fields



# Program Questionnaire

- Completed by NRC Coordinating Office AND Departments
- Program Faculty List & Demographic Info
- Admissions, Enrollment and Degree Completion
- Names of Degree Recipients
- Program Characteristics Financial Support
- Postdoctoral Scholars



# Faculty Questionnaire

- Completed by Core faculty in each program
- Dissertation committee service
- Prior employment
- Educational background and postdoctoral training
- Recent scholarly activity
- Recent doctoral students
- Demographic information
- Subjective question about the importance of a variety of program characteristics to the quality of a doctoral program



# Student Questionnaire

- Completed by students with candidacy in English, Economics, Physics, Chemical Engineering and Neuroscience/Neurobiology
- Education
- Scholarly activity
- Available resources/support
- Postgraduate plans
- Demographic information



# Rating Questionnaire



# New to Ratings

- Goal: greater transparency and usefulness of results to students
- More emphasis on quantitative measures
- Broader coverage of fields
- On-going updates of quantitative variables identified from this study should continue after the study is completed



# Basis of Rating

- By Program, based on NRC taxonomy
- Methodology will be a refinement of that described by the Committee to Examine the Methodology for the Assessment of Research-Doctorate Programs (resulting from previous NRC assessment)
- Explicit and implicit assessment of collected data



# Explicit Data Analysis

- Key variables will be identified, either empirically (through factor analysis) or judgmentally
- **Faculty assign weights to key quantitative variables**
- Based on answers to subjective question on Faculty Questionnaire



# Explicit Data Analysis

- Each program is quantitatively rated - Program specific value is applied to each variable
- Range of ratings is determined using the variability across the weight assigned to each variable by faculty
- Intrinsic uncertainty in the process is factored into all subsequent stages of the analysis



# Implicit: Rating Questionnaire

- Random sample of faculty from each field
- Faculty must agree to participate in rating
- Selected from faculty who completed the faculty questionnaire by Feb. 15, 2007
- Raters will receive a list of program faculty for a sample of 15 to 20 programs



# Rating Questionnaire

Should Faculty choose to be a rater???

- Depends on familiarity with your program
- A great deal of data will be provided
- Problems encountered in the past
  - High rating of non-existent programs



# Rating Questionnaire

Raters will be provided with:

- Program URL
- Racial/ethnic diversity of the faculty (percent non-white)
- Gender diversity of the faculty (percent female)
- Number of Ph.D.s per year over the last five years
- Percentage of entering students who complete a doctoral degree in ten years or less
- Time to degree
- Percentage of students placed in academic positions (from NSF)



# Rating Questionnaire

- Programs rated on the basis of perceived quality of the PhD program

The respondent will:

- Be asked his or her degree of familiarity with the program
- Quality of the graduate program rated on a five-point scale



# Implicit Data Analysis

- Correlations (by regression analysis) between perceived ratings and quantitative variables
- Regression coefficients are used as weights
- These values can be used in future ratings of programs
- Range of ratings is determined using the variability across the raters



# Implicit Anchoring Study

- Regression analysis will determine quantitative variables that most closely predict program ratings
- An anchoring study will be performed for each field, since the function which best predicts program ratings may differ by field.
- Additional analyses may be developed to combine the “explicit” and “implicit” measures.



# Subsequent Data Availability

- Website containing quantitative data for each program will be available
- Software will be provided so that users can construct their own ratings of selected programs based on the variables that they view as important and weights that they have chosen
- Users will be able to disagree with the assigned weights and justify their alternative approach



# Potential Additional Analysis

- To highlight specific components of program quality

Examples:

- Research Impact
  - Citations/faculty member, publications/faculty member, honors and awards etc
- Student Support and Outcomes
  - Fraction of students having full support, time to degree, attrition rate, job placement, etc.
- Diversity of Academic Environment
  - fraction of students and faculty that are female and minority etc.



# Faculty Productivity

Citations and publications allocation for faculty members who are core in one or more programs

$$A_i = (5P_i + n_i + 5(d_i/m)) / \sum_j (5P_j + n_j + 5(d_j/m))$$

Where:

$A_i$  is the share of publications and citations allocated to the faculty member in program  $i$

$P_i$  is the number of committees in program  $i$  for which the faculty member serves as chair or principal adviser

$n_i$  is the number of committees in program  $i$  on which the faculty member serves in another capacity

$d$  is a variable that takes on the value 1 if the faculty member is a core faculty member in program  $i$  and is 0 otherwise

$m$  is the total number of programs where the faculty member is a core faculty member



# Time-Line

<b>Questionnaire</b>	<b>Deadlines</b>
Institutional	2/1/07
Program	2/1/07
Faculty	2/15/07
Student	4/1/07
Rating	Administered in March/April. Only faculty members who completed Faculty Questionnaires will be eligible.



# Questions?

NRC Website:

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