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A Pre-proposal for a Planning Grant

Summer Faculty Careers Institute
for Ph.D. Candidates and Junior Faculty

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Summary:

A planning grant (SGER) is sought to develop a model summer institute aimed at preparing graduate students in science, mathematics, and engineering disciplines for academic careers while simultaneously providing junior faculty with a better understanding of the diversity of academic careers and university life. In addition to subjects covered by conventional Preparing Future Faculty programs such as teacher training, this institute would also introduce graduate students to a broad range of topics ranging from professional issues such as values and ethics to faculty activities (teaching, research, service, student mentoring, graduate student supervision, administration) to professional development (job searching, promotion and tenure) to more complex issues such as conflict of interest, intellectual property, and university governance.

We intend to design the month-long summer institute to be compatible with the ongoing demands of student research and dissertation work. The summer institute would involve the participation of faculty members from various types of institutions including liberal arts colleges, regional universities, community colleges and for-profit colleges, encouraging dialog among these diverse faculty communities. Using the combination of plenary and breakout sessions, we believe we can accommodate up to several hundred graduate students each summer. By involving faculty members as resources, participants, and discussion leaders, we can help them broaden their own understanding of their role in preparing graduate students for possible careers in higher education and provide useful materials to assist in their efforts.

Although the focus of the institute will be considerably broader than the teaching intensive experiences provided by conventional Preparing Future Faculty programs, we intend to utilize the resources of Michigan's Center for Research on Learning and Teaching which has developed a widely known and highly effective PFF training program for college-level teaching to include this material.

Of particular importance would be efforts to attract an unusually diverse community of graduate student and faculty participants from underrepresented minorities and women cadres. The University of Michigan has had considerable success in attracting underrepresented minorities and women into its graduate student and faculty ranks through programs such as the Michigan Mandate and the Michigan Agenda for Women. We believe that both our experience and success in these efforts provide an unusual resource for the summer institute, a feature of particular importance in disciplines such as science and engineering.

To support the workshop, we would develop materials (web-based, video, written) as well as a more sophisticated web portal or knowledge environment. These resources would be developed using widely available technology compatible with the NSF virtual library project.

The NSF Planning Grant would result in 1) the design and conduct of a model summer institute (offered in spring, 2002); 2) the preliminary design of supporting resources (including a web portal) compatible with the NSF virtual library project; 3) the expertise such as diversity and information technology); and 4) proposals for major scale-up and propagation of the summer institute model to seek support from both federal and private foundations.

The Challenge

The NSF GPRA Strategic Plan states that in pursuit of its historical mission, the NSF invests in <u>people</u> to develop a diverse, competitive, and globally-engaged workforce of scientists, engineers and well-prepared citizens. This goal drives the components of the NSF mission that are directed at (1) programs to strengthen scientific research potential; and (2) science and engineering education programs at all levels and in all fields of science and engineering. Among the various NSF programs aimed at achieving this goal, those concerned with preparing the instructional workforce have particular importance because of their unusual leverage and impact. While NSF programs for preparing K-12 teachers are both numerous and effective, there is relatively limited programmatic attention given to date to preparing the future instructional faculty in science, mathematics, and engineering needed by our colleges and universities. Yet it is here that the higher education community faces particular challenges.

Most graduates of our highly specialized research-dominated PhD programs are inexperienced as teachers and uninformed about academic life. They know little of the broader role of faculty in an academic community and even less about colleges and universities other than the one where they received their doctoral training. Moreover, institutional needs for graduate research and teaching assistants tend to drive the size of our graduate programs, often leading to a significant mismatch between the number of doctorates awarded and the needs of the academic marketplace. As a consequence, many of our PhDs are defeated in their search for faculty positions and frustrated with the placements they achieve. Even after years of experience, they know remarkably little about the demands on their colleagues in other fields. Those who aspire to faculty roles would benefit from understanding the professional challenges, issues and expectations they and their colleagues will face as professors.

For years, research universities have participated in "Preparing Future Faculty" programs, which provide teaching experiences for graduate students at liberal arts colleges and comprehensive universities. These are valuable experiences but the traditional PFF programs are limited in several important respects. First, both the student commitment and the financial resources required for teaching internships limit PFF programs to only a small number of student participants. Some dissertation advisory oppose student participation because of the perceived disruption that internships can cause for dissertation work or research progress, particularly in the

sciences and engineering. Second, the focus on preparation for classroom teaching is helpful as far as it goes but it does not adequately introduce graduate students to other aspects of the complex roles they will fill as faculty members. Third, these programs all too often prepare graduate students for the issues of today without sufficient attention to new roles that faculty will fill in the rapidly evolving post-secondary education enterprise.

The First Steps

To address these and related problems, we developed and taught a new course at Michigan during fall term 2000 for PhD candidates interested in academic careers. Working closely with the University of Michigan Graduate School, we selected 25 students drawn from academic programs across the university (including humanities, sciences, engineering and medical sciences). A topic outline of the course is attached. We wanted students to learn about academic life not only in their own fields but also in other academic fields. Through a range of interactive experiences with the students and their advisory, and drawing on the expertise of faculty and staff throughout the university, we were able to engage students in an unusually wide-ranging set of discussions. Student response to the course was overwhelmingly positive and demand grew throughout the term from other students to sit in as observers.

Based upon our experiences last fall as well as our experience as faculty members and academic leaders, we have identified several elements we believe important to include in such programs:

- The experience should be highly interactive, providing students with the opportunity to question faculty members such as dissertation advisors, department chairs and new faculty members on topics rarely discussed now in academic settings, such as conflict of interest and commitment or the role of teaching in academic success.

- The experience needs to provide graduate students from different academic programs an opportunity to share perspectives and experiences with each other.

- It should draw upon experienced faculty and staff members for the discussion of important topics such as academic and professional integrity, faculty rights and responsibilities, faculty governance and the social contract between universities and society.

- We believe that racial and gender diversity should be a very important component of such experiences, both in terms of the composite of participating students and faculty as well as in the content of the program.

- It should involve faculty participants from diverse academic institutions such as liberal arts colleges, regional universities, community colleges and for-profit colleges.

- Finally, our students convinced us that broad academic career programs are most effective when led by faculty members with experience as senior academic officers (deans, provosts or presidents). Such leadership provides a broad perspective on careers in higher education, but more significantly it enables a degree of candor and credibility in the discussion of sensitive topics such as hiring decisions, tenure evaluations, and faculty rights and responsibilities. The involvement of senior academic leaders provides participating students with the license to discuss such matters with faculty in their home departments.

The Summer Institute on Academic Careers

Having evaluated last year's experience, we are now prepared to restructure our initial seminar approach. We want to develop a program that reaches many more students at one time; to involve faculty members in ways that will encourage broader and more effective mentoring of graduate students in the future; and to develop a paradigm that can be propagated to other graduate programs throughout the country. We believe a summer institute program is the best vehicle for attracting several hundred graduate students each year (Michigan graduates over 600 doctorates per year) and for productively engaging faculty members from Michigan and from other colleges and universities as discussion facilitators. Most faculty members would benefit from broadening their own perspectives about university life, especially in the types of settings where most of their students will work. We think we can achieve that in a summer institute as we generate enthusiasm among faculty for their future involvement in preparing graduate students more adequately for academic careers. Finally, we expect to assemble teaching materials and demonstrate their use and exportability through the summer institute mechanism.

We propose to develop a month-long summer workshop designed to be compatible with the ongoing demands of student research and dissertation work. The workshop would involve a commitment by students to two half-day sessions each week, with additional reading and discussion assignments. Each meeting would be an intensive, interactive experience involving both plenary sessions with invited guests, breakout group discussions led by faculty members and informal discussions (luncheons, coffee klatches, web-based list-serves and chatrooms, etc.). We would work with our Center for Research on Learning and Teaching to provide workshops on college teaching techniques.

This approach has several positive features. By scheduling it during the summer, we can minimize impact on other student and faculty activities. We can also involve faculty members from various types of institutions including liberal arts colleges, regional universities, community colleges and for-profit colleges, encouraging dialog among these diverse faculty communities. Using the combination of plenary and breakout sessions, we can handle up to several hundred graduate students each summer. By involving faculty members as resources, participants and discussion leaders, we can help them broaden their own understanding of their role in preparing graduate students for possible careers in higher education and provide useful materials to assist in their efforts.

Of particular importance would be efforts to attract an unusually diverse community of graduate student and faculty participants from underrepresented minorities and women cadres. The University of Michigan has had considerable success in attracting underrepresented minorities and women into its graduate student and faculty ranks through programs such as the Michigan Mandate and the Michigan Agenda for Women. We believe that both our experience and success in these efforts provide an unusual resource for the summer institute.

To support the workshop, we would develop materials (web-based, video, written) as well as a more sophisticated web portal or knowledge environment. These resources would be developed using widely available technology (e.g., commercially available web browsers, Java applets, Real Player) so that they could be distributed to other institutions. They would also be made available to the NSF virtual library. While this early effort would be focused on the use of a summer institute to provide important preparation for academic careers for graduate students and junior faculty members, we believe it would also provide valuable insight concerning other possible initiatives, such as the formation of a national center for the study of issues related to the future of the professorate involving several other nation's leading graduate programs.

Planning Grant Proposal

We seek a planning grant to support the design and development of that component of the summer institute concerned with preparation for academic careers in science, mathematics, and engineering. In particular, we seek support for the following elements:

- To conduct surveys and focus groups involving both graduate students and junior faculty, to identify areas of particular interest, to influence the design of the institute, and to assess several funding issues (e.g., do participating faculty need to be provided with stipends; should graduate students be assessed tuition for the institute).

- To develop relationships with other potential participants (such as academic departments) and programs (e.g., the successful seminars on college teaching developed by our Center for Research on Learning and Teaching).

- To seek the involvement of external organizations that would support elements of the institute in other areas such as the arts and humanities (e.g., the Mellon Foundation, the Woodrow Wilson Fellowship Foundation, the Carnegie Foundation) or the biomedical sciences (e.g., the National Institutes of Health, the Robert Woods Johnson Foundation, the Howard Hughes Medical Foundation).

- To design and conduct a prototype summer institute in May, 2002, involving a limited number of participants (e.g., 100 graduate students and 10 faculty members).

- To complete preliminary design of supporting materials (e.g., reading materials, lecture notes) and web-based resources (e.g., web-sites, web portals, and knowledge environments to support interactions.

Products Resulting from the NSF Planning Grant

The NSF Planning Grant would result in the following products:

1. The design and conduct of a model summer institute (in spring, 2002).

2. The preliminary design of supporting resources (including web environments)

3. The identification and development of unique elements (e.g., modules in areas where we have particular expertise such as diversity and information technology).

4. Proposals for major scale-up and propagation of the summer institute model submitted to both the National Science Foundation and private foundations in spring of 2002.

Budget for the NSF Share of the Planning Grant

We seek a planning grant from the National Science Foundation to support those aspects of the project aimed at students and faculty in science, mathematics, and engineering.

Salary and wages		
Faculty support (1 month ENG)	20,000	
Graduate student assistants	30,000	
Staff support	15,000	
Total salaries and wages		65,000
Logistics		
Travel	5,000	
Supplies	10,000	15,000
Modified Indirect Costs	20,000	20,000
Total		100,000
University cost-sharing		
J. J. Duderstadt (20% AY, 1 mo)	50,000	
E. N. Goldenberg (20% AY)	30,000	
IT environment		
Total Cost Sharing		80,000+

It is our intent to seek a comparable planning grant from private foundations for the support of those aspects of the project involving students and faculty in the arts and humanities. We will also explore seeking funding from government and foundation sources to support students and faculty from the biomedical sciences.

Conclusion

The quality and commitment of the faculty determine the excellence of the academic program at any college or university. That, in turn, affects the quality of the student body, the excellence of teaching and scholarship, the service to society, and the resources attracted from public and private sources. During the next decade, most colleges and universities will experience significant faculty turnover. They will face the challenge and opportunity to use these appointments to sustain and enhance the quality of their academic programs and their institutions more broadly, and they will do so during a period of unprecedented change in higher education.

Is today's form of graduate education preparing the future faculty adequately for their roles at colleges and universities? We think not. We see a mismatch between the one-dimensional goal of preparing the next generation of researchers and the broader needs of higher education. We see graduate faculty trying to clone themselves through their graduate students. And we note the absence in graduate training of significant exposure to the values, traditions and ethical practices that should characterize the academic profession. This convinces us that a different approach is required. Our graduate students are asking for this sort of experience. We know our faculty colleagues will join us enthusiastically once they understand the need. We believe that restructuring the education for academic careers, making explicit a little-discussed set of accepted values, ethics and practices in academic life.

Appendix A: Biographical Sketches

<u>Edie N. Goldenberg</u>

Edie N. Goldenberg is Professor of Political Science and Public Policy at the University of Michigan. She has published numerous articles and two books: *Campaigning for Congress* (with Michael W. Traugott) and *Making the Papers*. She joined the Michigan faculty as Assistant Professor of Political Science in 1974.

From 1989 through 1998 Professor Goldenberg served as Dean of Michigan's College of Literature, Science and the Arts. Her term is identified with major improvements in the undergraduate experience, significant strengthening of academic programs, and the successful completion of a $180 million College fundraising campaign. She also held positions as Director of Michigan's Institute of Public Policy Studies and as senior executive at the U. S. Office of Personnel Management. She taught at Stanford University and worked as a reporter at the Boston *Globe*.

Professor Goldenberg is a member of the National Academy of Public Administration and the Corporation of the Massachusetts Institute of Technology. She was a Fellow at both the Center for Advanced Study in the Behavioral Sciences and the Woodrow Wilson Center of the Smithsonian Institute. She is currently serving as Academic Fellow to the Carnegie Corporation. Dr. Goldenberg holds a B.S. degree in political science from the MIT and a masters degree and Ph.D. from Stanford.

<u>James J. Duderstadt</u>

Dr. James J. Duderstadt is President Emeritus and University Professor of Science and Engineering at the University of Michigan. He received his baccalaureate degree in electrical engineering with highest honors from Yale University in 1964 and his doctorate in engineering science and physics from the California Institute of Technology in 1967. After a year as an Atomic Energy Commission Postdoctoral Fellow at Caltech, he joined the faculty of the University of Michigan in 1968 as Professor of Nuclear Engineering. Dr. Duderstadt became Dean of the College of Engineering in 1981 and Provost and Vice President for Academic Affairs in 1986. He was appointed as President of the University of Michigan in 1988, and served in this role until July, 1996. He currently holds a university-wide faculty appointment as University Professor of Science and Engineering.

Dr. Duderstadt's teaching and research interests have spanned a wide range of subjects in science, mathematics, and engineering, including work in areas such as nuclear systems, computer simulation, science and education policy, and information technology. Dr. Duderstadt has served on and/or chaired numerous public and private boards. These include the National Science Board; the Executive Council of the National Academy of Engineering; the Committee on Science, Engineering, and Public Policy of the National Academy of Sciences; the Nuclear Energy Research Advisory Committee of the Department of Energy; the Big Ten Athletic Conference; the University

of Michigan Hospitals; the Presidents' Council of State Universities of Michigan, and serves as a director of Unisys and CMS Energy. He was the founding president of the Michigan Virtual Automotive College (now the Michigan Virtual University).

During his career, Dr. Duderstadt has received numerous national awards for his research, teaching, and service activities, including the E. O. Lawrence Award for excellence in nuclear research, the Arthur Holy Compton Prize for outstanding teaching, and the National Medal of Technology for exemplary service to the nation. He has been elected to numerous honorific societies including the National Academy of Engineering, the American Academy of Arts and Science, Phil Beta Kappa, and Tau Beta Pi.

Appendix B

UM Graduate Course: Preparing for Academic Careers

This course was intended to provide graduate students interested in academic careers with an introduction to the profession. It focused on topics often untouched in traditional graduate programs. The intent was to provide students an opportunity to learn what may face them in their chosen careers as well as to understand the realities and pressures that will face their academic colleagues in other fields.

The format of the course was a discussion seminar, with occasional invited speakers on particular topics. Seminar preparation involved assigned readings as well as interviews with faculty in the students' fields. The course was supported by a web-based knowledge environment. We recommended that students purchase Donald Kennedy's *Academic Duty* (Harvard University Press, Cambridge, 1997) and provided as well a coursepack of readings.

Session 1:   The Culture and Values of the Academy
                     Academic freedom
                     Academic responsibility
                     Faculty panel discussion
Session 2:   Academic Environments
                     Types of institutions
                     The modern university
Session 3:   Landing the First Job
                     The job search
                     What are institutions looking for?
                     What kind of an institution should you be looking for?
                     What is negotiable (and getting it in writing)?
                     Postdocs—desirable? Necessary? How many? How long?
                     Non-tenure track positions
                     Dual careers
                     What if you don't find an academic position?
Session 4:   How Do Professors Spend Their Time?
                     Differences across institutions
                     Differences across fields
                     Differences across career states
Session 5:   Teaching
                     Importance to appointment, promotion, and salary
                     Level and load
                     Ways to improve
                     Technology
                     Politics and sensitive material
                     Grade conflict
                     Academic honesty
                     Student needs
Session 6:   Training and Mentoring
                     Ownership of ideas and data
                     Exploitation
                     Relationships between faculty and students
                     Competition among and with students

Sexual/racial harassment
Session 7:   Research and Scholarship
Importance to appointment, promotion, and salary
Different forms of scholarship—practice and value
Funding sources and grantsmanship
Competition
Academic integrity (falsification of data, ownership)
Joint authorship
Politics and sensitive material
Session 8:   Publication and Other Scholarly Products
Books vs. articles, textbooks
Multiple submissions
Status of journals, peer review
Timing and delays
Scholarly integrity (authorship, plagiarism, redundancy)
Responsibilities of referees
Technology (software, inventions)
Session 9:   Service
Importance to appointment, promotion, and salary
How and when to say "NO!"
Department, school, university, profession, community
Session 10:   Tenure and How to Prepare For It
Rules and expectations
Networking (conferences, sharing work)
Curriculum vitae
External reviewers
Academic politics
How senior colleagues can help … or hurt
Interdisciplinary challenges
Session 11:   Conflicts of Commitment
Who owns faculty time?
Consulting
Income from outside activities
Canceling classes
Session 12:   Conflict of Interest
Intellectual property
University-industry relations
Disclosure
Session 13:   Academic Administration and University Governance
Academic administration and careers
Personnel
Dispute resolution
Litigation
Session 14:   The Future
Change and the university
Where are colleges and universities likely to head
…during your career…