

# ISU ADVANCE Proposal Writing Initiative: Investigating the Present and Investing in the Future for Women in Science Math, Engineering, and Technology (SMET).

*Request for grant-writing support and program development to enhance ISU faculty recruitment and retention*

**Jackie Litt, Associate Professor of Sociology and Women's Studies**  
**Diane Debinski, Associate Professor of Ecology Evolution and Organismal Biology**  
**Co-Chairs, Advance Proposal-Writing Team**

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**Table 1: % of New Hires that are women, 1990-2000<sup>1</sup>**

All hires	36%
Engineering	18%
Vet Med	21%
Ag	28%
Business	33%
LAS	36%
Education	50%
Library	53%
Design	59%
FCS	60%

**Table 2: % of Women SMET Faculty by Rank<sup>1</sup>**

15.1 %	in SMET (116 of 769)
7.7 %	Full Professors (30 of 389)
17.4%	Assoc. Professors (41 of 235)
31.3%	Asst. Professors (45 of 144)
39.2%	non tenure-track (51 out of 130)

Iowa State University is not hiring, retaining, or promoting women faculty at the same rate as men faculty (*Tables 1&2*). This reflects a nation-wide trend identified by the National Science Foundation as a critical concern of universities struggling to attract and retain female students and faculty in SMET fields. “Ensuring that the climate, policies and the practices at these institutions encourage and support full participation of women in all aspects of academic life, including leadership and governance, is critical to attracting students to science and engineering careers.”<sup>3</sup> Iowa’s Board of Regents has also identified “diversity” as a “Key Result Area” in its Strategic Plan, a component adopted by ISU and targeted in President Geoffroy’s “investing in people” and “diversity” initiatives.

## ISU struggles to recruit and retain women in SMET fields

A report by the ISU’s University Committee on Women (2002) concluded that newly hired tenure-track women faculty have higher attrition rates than newly hired tenure-track men faculty, particularly in the first three years of their employment. In a comparison between men and women hired since 1994, by the end of their third year 16 percent of women had resigned compared to 4 percent of men. Moreover, despite the steadily growing pool of exceptionally qualified female faculty candidates over the course of the last 10 years, ISU hired women faculty 63% of the time.

The figures presented in Table 2 reveal that women are concentrated at lower academic ranks than men. Faculty employment statistics in SMET fields also reveal that women are radically underrepresented in almost all SMET departments except those within Family and Consumer Sciences (*Table 3*). In 18 out of 32 SMET departments women represent less than 16% of the tenure track faculty. In 19 out of 32 departments 32.8% of the potential faculty hiring pool in SMET was women,

<sup>1</sup> *Female Faculty in SMET, Fall 2000*, Office of Institutional Research

<sup>2</sup> *Female Faculty in SMET Departments Fall 2001*, Office of Institutional Research

<sup>3</sup> <http://www.nsf.gov/od/lpa/news/press/01/pr0179.htm>

women comprise only 15.1% of ISU's SMET faculty<sup>4</sup>

**Table 3: Ratio of Female to Male Tenure-track SMET Faculty<sup>2</sup>**

In 18 out of 32 SMET departments, women represented *less than 16%* of tenure track faculty.

**Summary**

115	female faculty	15.1%
769	male faculty	84.9%

<b><u>F/M</u></b>	<b><u>Department</u></b>	<b><u>% F</u></b>
1/31	Aero Eng/Eng M	3.2%
2/48	Mathematics	4.1%
2/43	Physics/Astronomy	4.3%
1/23	Ag/Biosys Eng	4.8%
1/19	Material Sc/Eng	5.3%
1/15	Plant Pathology	6.7%
2/26	Vet Diag/Prod	7.7%
4/50	Agronomy	8.0%
1/12	Ag Education/St	8.3%
1/11	Animal Ecology	9.1%
4/42	Elec Eng/CP Eng	9.5%
3/30	Civ/Constr Eng	10.0%
5/47	Animal Science	10.6%
4/33	Chemistry	12.1%
2/16	Entomology	12.5%
2/16	Chemical Eng	12.5%
4/29	Mechanical Eng	13.8%
2/14	Geol/Atmosph Sc	14.3%
2/12	Vet Pathology	16.7%
3/16	Ind/Mgr Sys Eng	18.8%
6/31	Zool/Gen	19.4%
4/20	Computer Sc	20.0%
4/20	Botany	20.0%
3/15	Biomedical Sc	20.0%
6/27	Statistics	22.2%
4/17	Horticulture	23.5%
2/8	Microbiology	25.0%
4/16	Biochem/Bioph	25.0%
4/15	Vet Mic/Prv. Med	26.7%
4/13	Forestry	30.8%

**Preliminary research points to institutional barriers and academic culture as problems for women faculty**

“[Gender inequity] *is not a matter of blame but of institutional structure.*” Abigail Stewart, PI ADVANCE grant at the University of Michigan, Ann Arbor

Past research and preliminary studies at ISU identify the following problems faced by women in SMET fields:

- Women are isolated in most SMET departments. A number of women are in departments with only 1-4 other women faculty (see column).
- Women are challenged by major and minor barriers to advancement. These barriers manifest in both subtle and overt ways—lack of transparency in regard to departmental policies and procedures, ambiguous criteria for measuring performance, and inadequate resources.
  - Women are pressured to perform a great deal of service.
  - Women report a lack of good professional mentoring which increases feelings of isolation.
  - Women struggle with issues of maintaining work/family balance and perceive little institutional support for balancing family and responsibilities.

The marginalization of women faculty in SMET fields continues despite the important steps ISU has taken to improve the hiring, retention, and advancement of women (*Table 4*). One problem is there is no central program that is dedicated to examine and improve the conditions of women faculty in SMET fields. Our ADVANCE proposal seeks to remedy this problem through the development of coordinated programs to enhance the condition of women faculty in these fields.

**Failure to recruit and retain female faculty impacts ISU economically**

Faculty turnover continues to be a costly process for the university

<sup>4</sup> <http://www.nsf.gov/sbe/srs/nsf.gov/sbe/srs/nsf003271/pdf/appb.pdf> (1998)

9/24	Vet Clinical Sc	37.5%
18/29	Food Sci/Hn	62.1%

**Table 4: Current ISU Initiatives to Support Women Faculty**

- The Women’s Leadership Consortium
- Task Force on the Retention and Recruitment of Women and Minority Faculty
- University Committee on Women
- Faculty Senate Committee on Women and Minorities
- Margaret Sloss Women’s Center
- Academic Plan and the Shared Leadership for Institutional Change (SLIC) Program for Women and Minorities
- College of Agriculture Diversity Committee
- Arrival of children policy (pending)

**Table 5: ISU ADVANCE Proposal Writing Team**

- **Diane Debinski (co-chair)**  
Associate Professor of Natural Resources Ecology & Management
- **Jacquelyn Litt (co-chair)**  
Associate Director of Women’s Studies, Associate Professor of Sociology and Women’s Studies
- **Jill Bystydzienski(consultant)**  
Director of Women’s Studies
- **Bonnie Bowen (consultant)**  
Affiliate Assistant Professor of Natural Resources Ecology &

Faculty attrition detracts from the educational mission of the inst limits the procurement of research grants, and curtails the develo of collaborative research. Indeed, ISU has suffered as many dyna faculty women use the experience they’ve gained from Iowa Stat assume prestigious roles at other universities.

What conclusions can our female students make when their role and mentors leave the university and when women are poorly represented in leadership positions? Our efforts to retain and rec female students are hindered by the turnover of the women facul might envision and spearhead these programs. ISU has begun to identify and improve the conditions of women on campus; howe with little or no funding, ISU continues to rely on already stretch faculty who, in service to this higher cause, sometimes defer acti necessary to their advancement. This is counter-productive to ou of advancing women.

**ISU’s opportunity: NSF’s multi-million dollar ADVANCE grant**

The ADVANCE proposal writing team at ISU is a multidisciplin team (*Table 5*) that is well positioned to compete for a \$3.7 milli ADVANCE grant, the National Science Foundation multi-millio dollar program to support institutional change to promote gender in SMET fields. NSF ADVANCE grants are designed to encoura research and program development at the institutional level that change “policies and practices” in ways that support the recruitm promotion, and retention of women scientists. We request Iowa S University support (resources and faculty time—see *Budget*) to c a study of institutional barriers, develop preliminary program recommendations for the advancement of women in SMET field write a grant proposal to NSF (due May 2004). Providing facult and resources will position us to produce an outstanding applicat the \$3.7 million in NSF funding to further develop and impleme ADVANCE program at ISU.

**The ADVANCE program also poses benefits for male fa experiencing similar challenges as their female colleag**

Activities developed through ADVANCE programs can provide benefits for all faculty regardless of gender. These benefits inclu transparency in departmental and university-wide policies, proce to alleviate confusion and anxiety regarding promotion and tenur excellent mentoring programs, and programs that support all fact their family and personal lives.

- Management
- **Susan Carlson (consultant)**  
Associate Provost and Professor of English
- **Ann Fields (consultant)**  
Program Coordinator and Shared Leadership for Institutional Change (SLIC)
- **Carolyn Heising (consultant)**  
Professor of Industrial and Manufacturing Systems Engineering, Committee on Women, Status on Women in Engineering
- **Karen Piconi (Grant-writer)**  
Grant Specialist, Persuade and Publish International, LLC

**Table 6: Consulting Offices & Committees for developing the ADVANCE Grant**

- Office of the Vice Provost for Research
- College Deans
- SMET Department Chairs
- Women’s Studies Program
- Committee on Women
- Faculty Senate Committee on Women and Minorities
- Shared Leadership for Institutional Change (SLIC)
- Taskforce for the Recruitment and Retention of Women and Minorities Women’s Leadership Consortium
- Status on Women in Engineering

**Table 7: ISU SMET Team**

J. Bhattacharyya	Statistics
Ruth Birch	Provost
Bonnie Bowen	NREM
Jill Bystydzienski	Cross Disc
Li Cao	Mech Eng
Diane Debinski	NREM
Ann Fields	SLIC
Shauna Hallmark	CC Eng
Carolyn Heising	IMS Eng
Carolyn Komar	An Sci

## Project Benefits

- mentors for junior faculty
- role models for students
- improved institutional climate
- enhanced diversity of faculty

## Program Goals and Objectives

ISU’s ADVANCE team proposes to identify the institutional cor that prevent the successful recruitment and retention of women f in SMET fields, and to develop programming for organizational that will strengthen women’s status in SMET fields.

To achieve these goals, our team has identified the following **objectives**:

1. Identify barriers that inhibit female faculty recruitment and retention.
2. Establish a profile of Iowa State’s SMET faculty and compare other research I and peer 11 institutions.
3. Solicit feedback from key stakeholders and develop recommendations for a program that addresses institutional barri
4. Apply for funding, via ADVANCE and other national organiz (e.g. Ford Foundation), that support further study, program development, and implementation.
5. Establish a list of “best campus practices” that are currently ir ISU.
6. Educate campus faculty and administrators about key findings recommendations.

## Project Outcomes

Over the next 14 months the proposal writing team will produce:

1. Gender profiles of Iowa State’s Faculty in SMET.

Jacquelyn Litt	Soc
Fred Lorenz	Statistics
Kim Crouch Mertz	IMS Eng
Deborah Muenschrath	Agronomy
Marzia Rosati	Phys/Astr
Ann Russell	NREM
Joyce Shiers	Ag Admin
Julie Tarbox	Provost
Cathie Woteki	Dean, COA
Lynn Zwagerman	Inst. Res

**Table 8: Project History**

- October 2002—ISU Women’s Studies Program holds a 3-day program on the status and retention of women in SMET funded by NSF
- The conference brings together 12 university teams who are developing programs to increase retention and promotion of women faculty in science and engineering fields
- One outcome of the conference is a recommendation for ISU to take advantage of the opportunity to develop an NSF ADVANCE grant for institutional transformation
- Preliminary research - exit surveys and interviews with women faculty in the College of Engineering are conducted to define barriers experienced by

2. Knowledge of the factors that contribute to the resignation of faculty previously employed by Iowa State University.
3. Clarification and evaluation of the effectiveness of campus initiatives.
4. A grant proposal to NSF that includes a plan to study, develop and implement a coordinated program for institutional transformation

### **Ensuring the engagement and participation of stakeholders**

The success of the ADVANCE grant proposal relies upon gaining endorsement and ensuring the participation of the diverse constituencies that make up our university. The President’s endorsement will be critical to the project and he will be informed of the committee’s progress through formal reports. The ADVANCE program must also be aligned with Iowa State’s strategic goals as approved by administrative units that have the influence, authority and capability to institute recommended changes. To secure these goals, we plan to solicit feedback from faculty, deans, department chairs, and other leaders in upper administration (*Table 6*). Staff interviews with members of ISU’s Human Resources and Affirmative Action Office will be conducted so that the proposed ADVANCE program can be implemented according to the guidelines established by Iowa State University, the Board of Regents, and federal and state law.

The ADVANCE committee has already secured the support of the Provost for Research for an expert grant-writer (\$8,000). A representative of the Provost’s office will serve as a member of the ADVANCE team and be involved in the development of the project.

### **ADVANCE and SMET Team’s Roles**

A multidisciplinary, campus-wide initiative of this scope requires leadership that represents diverse interests and perspectives. The ADVANCE proposal writing team is chaired by two Associate Professors: Diane Debinski (Debinski has served on the COA Diversity Committee and now serves on the University Committee on Women and the chair status of faculty subcommittee) and Jackie Litt (Litt serves in her current capacity as an established sociologist with expertise in gender and organizational work). The team also includes faculty in SMET fields who have expertise in gender issues.

ISU’s ADVANCE team is drawn from a larger group “SMET Team” whose members represent a variety of campus, college and department offices. (*Table 7; see also “Project History”, Table 8*). The SMET team represents a broad spectrum of women and men from many

female faculty and explore reasons for leaving

- We established a SMET team which is composed of two dozen science/engineering faculty, the Dean of the COA, and two Associate Provosts. From this team we established an ADVANCE team which is charged with writing the NSF grant proposal.
- ADVANCE team begins to evaluate data from surveys and from statistics provided by the Office of Institutional Research and from the UCW Status of Women Report, August 2002.
- ADVANCE team agrees to move forward to seek funding from certain ISU colleges for grant preparation and program development to define and eliminate institutional barriers to recruitment and retention of female faculty in SMET fields.

team represents a broad spectrum of women and men from many SMET fields. The group also includes the Dean of the COA and Associate Provosts. The entire SMET team will meet regularly to guide the ADVANCE teams' development of the proposal.

We consider the NSF proposal an excellent opportunity for women scientists in a broad array of positions (e.g., tenured faculty, untenured faculty, non-tenure track faculty) to work together with administrators across several colleges and the Provost's office in forging new program ideas.

Regardless of the success of our NSF grant, we will create an ADVANCE Advisory Board for the implementation of our recommendations on campus. If our grant is funded, we will hire an ADVANCE program director who will direct the implementation and evaluation of proposed programs.