

**ADVANCE**

Year End Report  
January 1, 2002-December 31, 2002

Lisa M. Frehill, PI  
Leroy Daugherty, Co-PI  
Richard Hills, Co-PI  
Christine Marlow, Co-PI  
Kenneth Paap, Co-PI

Pamela Hunt, Program Coordinator  
Nichol Fuchs, Graduate Assistant (ending August 2002)  
Jammie Benton-Speyer, Graduate Assistant

## **PARTICIPANTS**

### **Program Personnel**

Lisa M. Frehill, PI, Associate Professor, Department of Sociology and Anthropology  
Principal Investigator is responsible for all aspects of ADVANCE. The PI oversees all program activity, participates in and supports programs of all ADVANCE committees, conducts institutional self-study, and supervises program coordinator and graduate student. The PI serves as chair of the Committee on the Status of Women in SME. Since March, 2001, the PI has facilitated collaboration among the members of the Committee and SME faculty, in general to establish the program.

Pamela Hunt, Program Coordinator (started 3/02)

Program Coordinator facilitates and coordinates work of the Committee on the Status of Women in Science, Mathematics and Engineering and its subcommittees by: gathering institutional data and other information and providing logistical support; organizing workshops for faculty and students; coordinating with other relevant programs on campus on annual events; facilitating communication among faculty staff and administrators; maintaining website; producing program brochures/flyers; monitoring budget; writing annual reports.

Nicole M. Fuchs, Graduate Assistant (1/02-8/02)

Graduate Research Assistant supported program coordination, assisted in data collection and analysis.

Jammie Benton-Speyer, Graduate Assistant (9/02-12/02)

Assists with on-going internal data collection and analysis, including workshop evaluation and reporting.

Richard Hills, Co-PI, Associate Dean, College of Engineering

Administration of program. Serves on the Committee on the Status of Women in SME and the Research Subcommittee.

Kenneth Paap, Co-PI, Associate Dean, College of Arts and Sciences

Administration of program. Serves on the Committee on the Status of Women in SME and the Research Subcommittee.

Miley Gonzalez, Co-PI, Interim Vice Provost for Research (1/02-6/02)

Administration of program. Serves on the Committee on the Status of Women in SME.

Leroy Daugherty, Co-PI, Associate Dean, College of Agriculture and Director, Agricultural Experiment Station (7/02-12/02)

Administration of program. Serves on the Committee on the Status of Women in SME and the Recruitment Subcommittee.

*Christine Marlow, Co-PI, Associate Dean, Graduate School*  
Administration of program. (On sabbatical Spring 2002.)

### **Members, Committee of the Status of Women in SME**

In addition to the above listed program personnel, participants served on the Committee on the Status of Women in SME. Each committee member attends meetings of the committee and serves on one of the four subcommittees.

Laurie Churchill, Program Coordinator, New Mexico Alliance for Graduate Education and the Professoriate (NM-AGEP)

Sonya Cooper, Associate Professor, Engineering Technology

Leroy Daugherty, Associate Dean, College of Agriculture and Home Economics and Director, Agricultural Experiment Station

Champa Gopalan, Professor, Agronomy and Horticulture

Roger Hartley, Academic Department Head, Computer Science

Laura Huenneke, Academic Department Head, Biology

Patricia Hynes, Project Director, NM Space Grant

Colleen Jonsson, Associate Professor, Chemistry and Biochemistry

Steven Loring, Administrative Analyst, Agricultural Experiment Station

Bahram Nassersharif, Academic Department Head, Mechanical Engineering

Linda Riley, Associate Academic Department Head, Industrial Engineering

Janet Tanski, Associate Professor, Economics

Ann Vail, Academic Department Head, Family and Consumer Sciences

Mark Wise, Academic Department Head, Animal and Range Sciences

### **Subcommittees**

#### **Recruitment**

Chair, Linda Riley, Associate Academic Department Head, Industrial Engineering

Roger Hartley, Academic Department Head, Computer Science

Colleen Jonsson, Associate Professor, Chemistry and Biochemistry

Tammy May, Associate Professor, Animal and Range Sciences (1/02-6/02)

Bahram Nassersharif Academic Department Head, Mechanical Engineering

#### **Research**

Chair, Patricia Hynes, Project Director, NM Space Grant

Josefina Alvarez, Professor, Mathematical Sciences (1/02-6/02)

Tiziana Giorgi, Assistant Professor, Mathematical Sciences (started 8/02)

Champa Gopalan, Professor, Agronomy and Horticulture

Richard Hills, Associate Dean and Director, Engineering Research Center

Kenneth Paap, Associate Dean and Director, Arts and Sciences

Mark Wise, Academic Department Head, Animal and Range Sciences

### **Distinguished Visiting Professor**

Chair, Ann Vail, Academic Department Head, Family and Consumer Sciences

Sarah Harcum, Associate Professor, Chemical Engineering (1/02-6/02)

Steven Loring, Administrative Analyst, Agricultural Experiment Station

Stuart Munson-McGee Professor, Chemical Engineering

Tracy Sterling, Professor, Entomology, Plant Pathology and Weed Science (started 10/02)

### **Faculty Development**

Chair, Laura Huenneke, Academic Department Head, Biology

Laurie Churchill, Program Coordinator, Graduate School

Sonya Cooper, Associate Professor, Engineering Technology

Christine Marlow, Associate Dean, Graduate School

Mark Wise, Academic Department Head, Animal and Range Sciences

### **Participants' Summary**

Thirty-three of the 41 female STEM faculty members (80%) were involved in some aspect of the ADVANCE program during its inaugural year. All 19 STEM department heads and almost all NMSU department heads participated in ADVANCE-Sponsored programming that was part of a full day of department head workshops. The two evaluators met with 49 different people at NMSU to discuss ADVANCE. In addition, ADVANCE programming reached 77 faculty members from across the university via a Promotion and Tenure Workshop and all NMSU Deans learned of the ADVANCE program when they met with the PI, who solicited their input for a Dual Career Couple Program at NMSU. Other outreach efforts, especially those associated with Distinguished Visiting Professors' programming, reached undergraduate and graduate students in STEM, K-12 teachers in the community, and other members of the Las Cruces community with various educational programs.

### **Other Specific People Not Listed:**

Dr. Miriam Meyer, Director, Institutional Research and Planning, provided most of the institutional data required for this report. She was assisted by Dr. Judy Bosland. Drs. Meyer and Bosland will work with ADVANCE Committee members on a university-wide faculty gender equity in pay study next semester.

Dr. Cinda Clary, Interim Associate Dean, College of Agriculture and Home Economics, serves as a member of an ad hoc committee developing procedures for exit interviews of STEM faculty who leave NMSU.

Dr. Michael Johnson, Professor, Chemistry and Biochemistry, hosted a distinguished visiting professor (Dr. Debbie Crans). He will serve on the Distinguished Visiting Professor subcommittee.

Dr. Tracy Sterling, Professor, Entomology, Plant Pathology and Weed Science, hosted Dr. Deanna Namuth's visit as a distinguished visiting professor. She will serve on the Distinguished Visiting Professor subcommittee.

Dr. Tiziana Giorgi, Assistant Professor of Mathematical Sciences, replaced Dr. Josephina Alvarez on the Research Subcommittee in 10/02.

Two external evaluators were contracted by ADVANCE:

Dr. Ann Austin, Professor, Higher, Adult, and Lifelong Education, Michigan State University. (Recommended by Patricia Rankin, Program Director of ADVANCE at University of Colorado at Boulder.)

Dr. Laura Kramer, Professor, Sociology, Montclair State University.

## **ACTIVITIES AND FINDINGS**

### **Overview**

ADVANCE activities are administered through a Committee on the Status of Women in SME NMSU. The PI, Co-PIs, faculty from each of the three colleges involved in ADVANCE (Agriculture and Home Economics, Arts and Sciences, and Engineering) and three program directors from related NMSU programs work on this Committee and its four subcommittees. The four subcommittees manage the various programmatic elements and include several faculty members beyond those who work on the main Committee on the Status of Women in SME.

The *Committee on the Status of Women in SME* engages primarily in outreach activities, but is also responsible for coordinating the annual research report on the status of women in SME at NMSU. The report will form the basis for subsequent programming to address gender disparities in SME at NMSU. The Committee hired a Program Coordinator (started 2/27/02) and the Graduate Assistant (started 1/2/02); issued four press releases about the program and formed and set budgets for the four subcommittees. The Committee held six meetings between December 2001 and December 2002.

The *Recruitment Subcommittee* is involved with in outreach, research, and training and development activities. This committee met seven times. The *Faculty Development Subcommittee* (4 meetings) is involved with outreach and training and development activities. The *Research Subcommittee* met six times to administer a program of grants to existing female SME faculty for research and travel within their disciplines. And the *Distinguished Visiting Professor Subcommittee*, which met three times, administers another research-related activity that involved a strong outreach component and makes women scientists more visible.

An ad-hoc committee of the recruitment committee to develop a procedure for exit interviews was formed.

### **A. RESEARCH AND EDUCATION ACTIVITIES**

#### **1. Committee on the Status of Women in SME (CSW-SME)**

- Self-study of the status of women in SME in progress:
  - Data obtained from Institutional Research and Planning.
  - Data obtained on Space Allocation from Facilities Space Management (but not yet analyzed).
  - Copies of Letters of Offer provided to the Committee by the Colleges of Engineering and Arts and Sciences.
  - Data for the NSF annual report were compiled and discussed at the final annual meeting.

- Committee compared climate instrumentation and decided to administer a modified version of the University of Michigan instrument to STEM faculty in the Spring, 2003 semester.
- Formed ad hoc committee to conduct exit interviews.
  - Members: Cinda Clary (Interim Associate Dean, College of Agriculture and Home Economics), Laura Huenneke, Sonya Cooper, Linda Riley, and Lisa Frehill served on this committee.
  - Interview protocol was developed and discussed with the Director of Personnel.
- Ad hoc Committee on Pay Equity formed.
  - Members: Lisa Frehill, Ken Paap, Pat Hynes, and Leroy Daugherty.
  - Additional members will include: Miriam Meyer (Director, Institutional Research and Planning), Judy Bosland (Institutional Research), Robert Howell (Director of Personnel), Meg Haynes (Personnel).
  - Preliminary salary data provided by Institutional Research and Planning—full study will begin Spring, 2003.
  - Scope defined: all NMSU faculty.
  - American Association of University Professors’ publication, “Paychecks: A Guide to Conducting Salary-Equity Studies for Higher Education Faculty” reviewed by CSW-SME members.

## 2. Recruitment Subcommittee

- Distributed and compiled information from Department Head Recruitment Survey. The Program Coordinator followed up on Department Head Recruitment Survey with individual meetings with department heads.
- Organized and presented a 4-hour Recruitment Workshop for STEM search committee members.
- Crafted a general advertisement about NMSU to place in outlets not often used by STEM departments at NMSU due to cost. These included: *Science*, *AWIS Magazine*, *Hispanic Outlook in Higher Education*, *Black Issues in Higher Education*, and the *Chronicle of Higher Education*.
- PI Frehill or Committee Chair Riley met with most female STEM job candidates who visited campus during the Spring 2002 semester and with potential candidates during Fall, 2002.
- Distributed start-up package enhancements to the following, all of whom were hired during the Spring, 2002 semester as tenure-track assistant professors:

Paola Bandini (Civil and Geological Engineering)  
Jeanine Cooke (an AGEF Fellow, Electrical and Computer Engineering)  
Jing He (Computer Science)  
Tiziana Giorgi (Mathematical Sciences)  
Inna Pivkina (Computer Science)

### 3. Research Subcommittee

- Application forms and procedures for research awards established to administer program.
- 25 applications from 16 SME women faculty were received, of those, 21 awards totaling \$182,982 were won by the following 13 recipients:

Laurie Abbott, Assistant Professor, Animal and Range Sciences – a total of \$7,646: \$7,070 for rangeland vegetation studies at remote locations in New Mexico; and \$576 for research travel.

Patricia Baggett, Professor, Mathematical Sciences – \$19,642 for expanding a program of partnership mathematics courses through web development and grant preparation.

Rebecca Creamer, Assistant Professor, Entomology, Plant Pathology and Weed Science – a total of \$18,230: \$17,000 for a study of the association of a fungal endophyte; and \$1,230 for conference travel.

Martha Desmond, Assistant Professor, Fishery and Wildlife Sciences – a total of \$16,243: \$14,292 for release time for manuscript preparation: *Ecoregional Study of Wintering Grassland Birds in the Chihuahuan Desert*; and \$1,951 for travel for a related conference presentation.

Nancy Flores, Assistant Professor, Extension Home Economics – a total of \$3,341: \$2,141 for travel to a conference and continuing education program; and \$1,200 for bringing Professor Hildegard G. Heymann to the NMSU Campus.

Mai Gehrke, Professor, Mathematical Sciences – \$18,180 for work on a book on canonical extensions.

Colleen Jonsson, Associate Professor, Chemistry and Biochemistry – a total of \$17,780: \$15,515 for studies of the function of hantavirus N protein; and \$2,265 for travel to a week-long fluorescent spectroscopy workshop.

Lisa McKee, Associate Professor, Family and Consumer Sciences – a total of \$19,137: \$16,996 for a study of consumer rinsing methods for reducing microbial loads in pork chops; and \$2,141 for conference and continuing education travel.

Michele Nishiguchi, Assistant Professor, Biology – a total of \$13,304: \$10,904 for a study of environmental and ecological monitoring of symbiotic vibrio populations; and \$2,400 for related travel.

Jane Pierce, Assistant Professor, NMSU/Artesia Agricultural Science Center – \$11,000 for a study of biological control of pecan/alfalfa cropping systems.

Linda Riley, Associate Academic Department Head, Industrial Engineering –\$20,000 for the establishment of the Advanced Simulation and Modeling Laboratory.

Susana Salamanca-Riba, Associate Professor, Mathematical Sciences – a total of \$15,196: \$12,296 for a study of automorphic forms and representation theory; and \$2,900 for related conference presentations.

Tracy Sterling, Professor, Entomology, Plant Pathology and Weed Science – \$3,283 for travel to receive instrument training and to collaborate on current and future distance education grants on improvements in the area of weed physiology.

- 23 applications from 17 women were received. Of these, 5 research awards were made and 9 travel awards were made for a total of \$83,547 of funds distributed for the 2003 calendar year. The following faculty received awards:

Laurie Abbot, Assistant Professor, Animal and Range Sciences – \$6,895.00 for “Rangeland Restoration Using a Process-Oriented Approach.”

Jeanine Cook, Assistant Professor, Electrical and Chemical Engineering - \$15,000.00 for the “Expansion of the Advanced Computer Architecture Performance and Stimulation Laboratory.”

Elizabeth Gasparim, Assistant Professor, Mathematics - \$15,000.00 for “Topology of Moduli of Vector Bundles.”

Graciela Unguez, Assistant Professor, Biology - \$15,000.00 for “Investigation of the Molecular Mechanisms of Tissue Regeneration in Vertebrates.”

Nicole Vogt, Assistant Professor, Astronomy - \$14,564.00 for “Transformation of Spiral Galaxies.”

Paola Bandini, Assistant Professor – Chemical and Geological Engineering - \$14,564.00 for travel to geotechnical research facilities at Purdue and US Army Corps of Engineers, and to visit NSF headquarters.

Martha Desmond, Assistant Professor, Fishery and Wildlife Sciences – \$2,640.00 for “Influence of Seed Production and Habitat Associations on a Chihuahua Desert Avifauna.”

Nancy Flores, Assistant Professor, Food and Consumer Sciences - \$1,725.00 travel to attend an American Institute of Baking Workshop on gourmet cookie production.

Mai Gehrke, Professor, Mathematics - \$1,196.00 travel to participate in a panel for the Association for Women in Mathematics Workshop.

Jing He, Assistant Professor, Computer Science – \$2,000 for “Structural and Functional Mining of Hantavirus Protein RdRp Using Current Computational Tools.”

Michele Nishiguchi, Assistant Professor, Biology - \$2,500 for “Evolutionary Dynamics of a Sepioid Squid-Vibrio Mutualism.”

Jane Pierce, Assistant Professor, Entomology, Plant Pathology and Weed Science - \$1,618 for “Biological Control in Pecan/Alfalfa Cropping Systems.”

Jill Schroeder, Professor, Entomology, Plant Pathology and Weed Science – 1,283 for “Impact of Crop Pests and Their Management of Weeds.”

Nicole Vogt, Assistant Professor, Astronomy - \$1,731 for “Transformation of Spiral Galaxies.”

- Research Committee scope was expanded as plans to professionally develop, in cooperation with relevant STEM departments, full-time “college track” women for tenure-track jobs were established. College track faculty at NMSU teach a heavier teaching load, the positions are considered “permanent,” with the possibility of promotion to higher rank (e.g., college associate or college full professor).

#### **4. Distinguished Visiting Professor Subcommittee**

- Application forms and procedures developed to administer the program.
- Arranged visit on October 14-19, 2002 by Dr. Deana Namuth from University of Nebraska (genetics education programs) to work with NMSU scholars and local middle and high school students. The visit was hosted by Dr. Tracy Sterling, Professor, Entomology, Plant Pathology, and Weed Science.
- Arranged visit on December 3-6, 2002 by Dr. Debbie Crans from Colorado State University (Chemistry Department). The visit was hosted by Dr. Michael Johnson, Associate Professor and Associate Department Head of Chemistry and Biochemistry.
- Planned visit for April 28-May 2, 2003 by Dr. Sheila McIlraith of the Knowledge Systems Laboratory, Stanford University. Dr. Son Cao Tran, Assistant Professor of Computer Science, will host Dr. McIlraith's visit.

#### **5. Faculty Development Subcommittee**

- Mentoring Program established.
- Four-hour Mentoring Workshop held on September 14, 2002. Dr. Lindsey Stoddard-Cameron (University of Wisconsin at Madison) facilitated the workshop, which was attended by 28 people.
- Participation in the University's first Department Head Training workshop—Lakesia Johnson sponsored to discuss "Diversity and Hiring."
- Co-sponsored (with the Hispanic Caucus and the Provost's Office) and evaluated a Promotion and Tenure Workshop on September 21, 2002.
- PI and Committee Members are working with the new NMSU Teaching Academy, the Hispanic Caucus, the Provost's Office, and the newly-established university Roles and Rewards Committee on an on-going basis.

## **B. FINDINGS**

Tables reporting data about the status of women in STEM at NMSU are included in Appendix A. General findings from these tables:

- Like other research extensive universities nationwide, women account for 31 percent of NMSU's tenure and tenure track faculty but 57 percent of temporary, non-tenure-track faculty. (Table 1)
- Women constitute 41 percent of SBS tenure and tenure-track faculty at NMSU but only 18 percent of comparable STEM faculty. (Table 2)
- While women account for only one in four temporary/non-tenure track faculty in the SBS disciplines, they account for nearly two in three such faculty in the STEM fields. (Table 2)
- The number of women STEM faculty increased by about 20 percent since 1995. (Table 3)
- Between 1995-1999 there was a net increase of 8 women in STEM disciplines (from 34 to 42 women). After the start of a wave of retirements in 1999, the number of women faculty in 2002 was 41, which includes one woman who is expected to leave within the next academic year. (Table 3)
- As is the case nationwide, women are unevenly distributed among the STEM departments at NMSU. (Table 3A)
  - Women accounted for 88 percent of the members of the Family and Consumer Sciences Department, a third of those in the Geological Sciences Department and 30 percent of those in both Mathematical Sciences and in Entomology, Plant Pathology and Weed Sciences.
  - Eight of the 19 departments had only one female faculty member (Animal and Range Science, Fishery and Wildlife Science, Astronomy, Chemistry and Biochemistry, Physics, Electrical and Computer Engineering, and Industrial Engineering).
  - Two departments (Mechanical Engineering and Survey Engineering) had no female faculty members.
- Use of full time, non-tenure track faculty (called college track at NMSU) varies substantially across the STEM departments. There are few such faculty in the College of Agriculture and Home Economics (one woman in Family and Consumer Sciences) and in the College of Engineering (a total of five, one woman). The College of Arts and Sciences, in which many of the university's general education classes are taught had 25 such faculty, of whom 17 (68 percent) were women. (Tables 3B and 3C)
- Within both the SBS and STEM departments, women are concentrated on the lowest rungs of the ladder:
  - While 37 percent of women STEM faculty were untenured assistant professors, only 27 percent of men STEM faculty were in similar rank and tenure positions.

- While 37 percent of STEM faculty men were tenured full professors, 32 percent of female STEM faculty were on the top rung of the rank and tenure ladder.
- These differences were even more pronounced in the SBS disciplines, where only 14 percent of SBS faculty women were tenured full professors versus 40 percent of men in these six fields. 43 percent of women in SBS were in tenure-track, assistant professor positions.
- White males account for two-thirds of all STEM and just over one-half of SBS tenured and tenure-track faculty. White females account for another 12.5% of STEM tenured and tenure track faculty but are one-third of SBS faculty. (Table 5)
- Asian males account for 9% of STEM faculty but Asian females account for only 2.6% of STEM faculty. There is only one Asian tenured or tenure track faculty member in the SBS disciplines. (Table 5)
- Only 4 (1.7%) of STEM faculty were Hispanic women and 13 (5.6%) were Hispanic men. This is quite different than the NMSU student body in which Hispanic students account for 41% of undergraduate students. (Table 5)
- Minority representation is not much better in the SBS disciplines. There are 2 Hispanic females and 2 Hispanic males (7.8% combined) in tenure track or tenured positions in the 6 SBS departments. (Table 5)
- Among STEM assistant professor cohorts, women were twice as likely as men to leave NMSU. By 2002, 14.3% of women but only 7.9% of men hired as assistant professors between 1995-2002 had left NMSU by 2002. (Table 6A)
- Among SBS assistant professor cohorts, men were twice as likely as women to leave the institution. Between 1995-2002 6 of 13 men hired as assistant professors in SBS left versus only 3 of the 13 women hired in that same period. (Table 6B)
- Women in associate professor STEM 1995-2002 cohorts were twice as likely as men to be promoted to full professor by 2002 but were also more than two times as likely as men to leave the institution. (Table 7A)
- Regarding attrition of STEM women at the mid-career level, two associate professor cohorts merit specific attention.
  - Of the 4 women who were associate professors in 1998, 2 (50%) had left NMSU and one (25%) had been promoted to full professor by 2002. None of the 8 male associate professors left and only one (12.5%) had been promoted. (Table 7A)
  - Of the three women in the 2000 STEM associate professor cohort, 2 had left and the one that remained had already been promoted to full professor

by 2002. None of the 9 male STEM associate professors in this cohort had left and only one had been promoted to full professor by 2002. (Table 7A)

- Women who achieved the rank of associate professor in SBS disciplines during the 1995-2002 period were less likely than men to have been promoted to full professor by 2002, but only one of the 7 women had left the institution. (Table 7B)
- Gender gaps in age, overall years of experience and time to tenure were generally larger among the SBS tenured and tenure track faculty than they were among the STEM faculty. (Table 8)
- Tenured and tenure track women in STEM were, on average, two years younger, had four fewer years of experience, and had been at NMSU for three years less than their male counterparts but there was no sex difference in the time to tenure for STEM faculty. (Table 8)
- Sex gaps in pay were larger in the SBS fields than in the STEM fields. STEM faculty women earned an average of \$0.94 for every dollar the average male STEM faculty earned but, on average, SBS women earned only \$0.84 for every dollar earned by the average SBS man. (Table 9)
- Sex gaps in pay varied by rank. Within the STEM fields the sex gap in pay widened as rank increased. (Table 9)
  - At the assistant professor level, STEM women earned nearly as much as STEM men (ratio was only 0.983).
  - Among the 84 full professors, women earned on average \$0.93 for every dollar men earned.
- While the sex gap in pay increased for associate professors within the SBS fields, the three female SBS full professors' salaries were much higher than those of their male counterparts. (Table 9)
- Non-contract SBS female faculty, despite being almost 8 years older with 11 more years of experience and being at NMSU for six more years made substantially less than their male counterparts. (Table 10)
- Non-contract female and male STEM faculty had only slight differences in age, years of experience and time at NMSU: women were slightly younger, had been at NMSU just over a year longer and had about three more years of experience than their male counterparts. (Table 10)

- In the case of STEM non-contract faculty, the sex gap in pay was fairly small. Women's median earnings were actually \$158.80 per month higher than those of men. (Table 10)
- Although women account for relatively few of the academic leadership, recent hires at the university have increased women's representation in top leadership positions. Women now account for two of three vice provosts and for two of the five vice president/provosts. (Table 11)
- There was only one woman among the 6 Regents' Professors (a new program in 2002) and only one STEM faculty member (male). (Table 12)
- The College of Agriculture and Home Economics has the best record among the three colleges in terms of women's representation on the college-level tenure and promotion committee. For the past several years, the five-member committee has had two women. The College of Arts and Sciences has had only one woman among the six members of its committee. With only one full professor female in the entire college, it is not surprising that the College of Engineering has not had a female on its 6-7-member promotion and tenure committee in the past six academic years. (Table 13)
- Comparable male and female STEM candidates hired by the College of Engineering and the College of Arts and Sciences between 1995-2002 received different starting salaries and start-up packages. The estimated dollar value of moving expenses was greater for men but women received more funds for research support. (Table 14).
- The average starting salary for the three new women hired by the engineering college between 1995-2002 was greater than the average among the 17 men hired in the same period. (Table 14)
- In the College of Arts and Sciences, men garnered higher average starting salaries than did women in the STEM fields. (Table 14)
- In both the College of Engineering and the College of Arts and Sciences, men were given more years credit towards tenure at the time of hire than were women. (Table 15)
- Almost all of the newly hired faculty in both the College of Engineering and the College of Arts and Sciences were hired as assistant, tenure-track professors. (Table 15)

### **C. TRAINING AND DEVELOPMENT ACTIVITIES**

## 1. Recruitment Subcommittee

- Recruitment Workshop for faculty search committee members, September 6, 2002.
- Attended by 19 faculty, 15 of which were from 10 of our 19 STEM departments.
- Very favorable evaluation by participants.

## 2. Faculty Development Subcommittee

- Organized mentoring workshop and luncheon held September 14, 2002, a half-day orientation workshop led by Lindsey Stoddard Cameron, coordinator of the Women Faculty Mentoring Program at University of Wisconsin at Madison.
- Planned August 12, 2002 diversity workshop as part of the Provost's department head training. ADVANCE identified, recruited, and funded Lakesia Johnson of Denison University to lead this workshop.
- Provided support for a Time Management Workshop, to be run in conjunction with NMSU's new Teaching Academy on February 14, 2003.
- Co-sponsored a Promotion and Tenure Workshop with the Hispanic Caucus and the Provost's Office.
- Mentoring Program Participants: the Program Coordinator collected and compiled information about each participant, "matched" mentors and protégés in consultation with the Faculty Development Committee Chair and the PI, and contacted each participant to discuss the mentoring program. Criteria in matching mentors and protégés included gender (at faculty request) and general disciplinary area (e.g., a life scientist from Biology would be paired with a life scientist in Agronomy and Horticulture). The matching process will be modified. The participants are (mentors: M, protégés: P. Some people who are being mentored are also mentoring a more junior faculty member):

Laurie Abbott, Assistant Professor, Animal and Range Science (P)

Josefina Alvarez, Professor, Mathematical Sciences (M)

Paola Bandini, Assistant Professor, Civil and Geological  
Engineering (P)

Devah Borah, Assistant Professor, Electrical and Computer  
Engineering (P)

James Botsford, Professor, Biology (M)

Donald Caccamise, Academic Department Head, Fishery and Wildlife Science (M)  
Joe Cecil, Assistant Professor, Industrial Engineering (P)  
Jeanine Cooke, Assistant Professor, Electrical and Computer Engineering (P)  
Rebecca Creamer, Assistant Professor, Entomology, Plant Pathology and Weed Science (P)  
Martha Desmond, Assistant Professor, Fisheries and Wildlife Science (P)  
Nancy Flores, Assistant Professor, Extension Home Economics (P)  
Elizabeth Gasparim, Assistant Professor, Mathematical Sciences (P)  
Tiziana Giorgi, Assistant Professor, Mathematical Sciences (P)  
Wendy Hamilton, Department Head, Cooperative Extension Service (M)  
Jing He, Assistant Professor, Computer Science (P)  
Laura Huenneke, Academic Department Head, Biology (M)  
Colleen Jonsson, Associate Professor, Chemistry and Biochemistry (M)  
Douglas Kurtz, Professor, Mathematical Sciences (M)  
Gerald Lodder, Associate Professor, Mathematical Sciences (M)  
Tammy May, Associate Professor, Animal and Range Science (M)  
Nancy McMillan, Associate Professor Geological Sciences (M, P)  
Martha Mitchell, Assistant Professor, Chemical Engineering (P)  
Patrick Morandi, Professor, Mathematical Sciences (M)  
Michele Nishiguchi, Assistant Professor, Biology (P)  
Mary O'Connell, Professor, Agronomy and Horticulture (M)  
Edward Pines, Academic Department Head, Industrial Engineering (M)  
Inna Pivkina, Assistant Professor, Computer Science (P)  
Enrico Pontelli, Associate Professor, Computer Science (P)  
Gary Rayson, Associate Professor, Chemistry and Biochemistry (M)  
Timothy Ross, Assistant Academic Department Head, Animal and Range Science (M)  
Susana Salamanca-Riba, Associate Professor, Mathematical Sciences (P)  
Jill Schroeder, Professor, Entomology, Plant Pathology and Weed Science (M)  
Tracy Sterling, Professor, Entomology, Plant Pathology and Weed Science (M, P)  
Irena Swanson, Associate Professor, Mathematical Sciences (on sabbatical, M)  
Jack Thomas, Professor, Animal and Range Science (M)  
April Ulery, Assistant Professor, Agronomy and Horticulture (P)  
Graciela Unguez, Assistant Professor, Biology (P)

Ann Vail, Academic Department Head, Family and Consumer  
Science (M)

## **D. OUTREACH ACTIVITIES**

### **1. Committee on the Status of Women in SME**

- PI met with all STEM department heads to discuss program November 2001 – February 2002.
- PI and Program Coordinator attended the NSF ADVANCE Principal Investigators' meeting, April 22-23, 2002.
- Reception at President Gouge's house on May 9, 2002: attendance included all SME department heads, program personnel, Committee on the Status of Women in SME members, and the Regents for NMSU.
- Program personnel have become involved in other transformative activities at NMSU. PI is involved in the Teaching Academy Planning Committee, the Women's Studies Steering Committee, and chairs a university-wide Committee on the Status of Women; the Program Coordinator is a member of the Campus Childcare Advisory Board.
- Funded SME women's attendance at the New Mexico Women's Studies Conference (March 2002 in Albuquerque, NM): Colleen Jonsson, Associate Professor, Chemistry and Biochemistry; Ramona Parra, Specialist I, SWAT Lab (and a NM-AGEP Scholar); Graciela Unguez, Assistant Professor, Biology.
- PI organized and presented information about ADVANCE at the New Mexico Women's Studies Conference, Albuquerque, NM, March 8-9, 2002.
- PI and Program Coordinator attended the Women in Engineering Program and Advocates' Network Conference in San Juan, Puerto Rico, June 8-11, 2002. PI organized and moderated a session about ADVANCE programs. The Program Coordinator presented a poster about the program.
- Program Coordinator attended the International Conference for Women in Engineering and Science Conference, July 27-31, 2002 in Ottawa, Ontario.

- PI organized a session about ADVANCE at the NM-AGEP Conference, Albuquerque, NM, September 12-13, 2002. Session included presentations by the PI, Program Coordinator, and Patricia Baggett, Professor of Mathematical Sciences and recipient of an ADVANCE research award.
- PI and Program Coordinator presented separate papers at the NSF funded conference “Retaining Women in Early SMET Careers” October 17-20, at Iowa State University, Ames, IA. Co-PI Marlow and Dr. Laurie Churchill (member, CSW-SME and Program Coordinator for NM-AGEP) also attended the conference. Papers presented: Frehill: “Building bridges between personal narratives and institutional practices: Gender equity in higher education” and Hunt: “The NSF-funded ADVANCE: Institutional Transformation program at New Mexico State University.”
- PI prepared “Proposal: NMSU Dual Career Couple Program” at the request of the Provost. The proposal involved meeting with the Provost and the new Vice Provost for Research, all eight of NMSU’s deans, professional staff members in the Personnel Department and Career and Placement Services, and communication with the 19 ADVANCE department heads and members of the CSW-SME. The proposal includes a proposed dual career couple policy statement, a program modeled on existing programs at other universities, and ADVANCE commitment to compiling and distributing a brochure about the program and to organizing and sponsoring training for NMSU department heads and search committee members about the new program and policy.
- PI, Co-PI Marlow, Program Coordinator, and Sonya Cooper (member, CSW-SME) are working with a cross-disciplinary team to draft a proposal to submit to NSF’s Gender Equity Program.

## **2. Research Committee**

- Collaborative award to Nancy Flores and Lisa McKee (food scientists in the Department of Family and Consumer Sciences) for visit by Dr. Hildegard Heymann, Food Scientist, University of Missouri-Columbia. In addition to meetings with faculty and students, this visit included an industry seminar: “What Sensory Science Can Do for You”.

## **3. Recruitment Subcommittee**

- Procedures developed for department heads to request matching start-up funds to hire female faculty. Allocated \$189,335 in enhanced start-up funds to:  
  
Paola Bandini, Civil, Agricultural, and Geological Engineering  
Jeanine Cook, Electrical and Computer Engineering  
Inna Pivkina, Computer Science  
Jing He, Computer Science  
Tiziana Giorgi, Mathematical Science
- Committee members served as consultants to SME department search committees: provided advisement on recruiting female faculty and met with prospective female faculty during campus interview visits.
- Committee organized a half-day Recruitment Workshop for STEM search committee members.

#### **4. Faculty Development Subcommittee**

- Organized two informal “mixers” for mentoring program.
- Organized a half-day Mentoring Workshop.
- Co-Sponsored full day Promotion and Tenure Workshop with Hispanic Caucus and the Office of the Provost.

#### **5. Distinguished Visiting Professor Subcommittee**

- Both Dr. Namuth and Dr. Crans met with groups of faculty and relevant disciplinary classes as identified and arranged by the host.
- Dr. Deanna Namuth visit included the following:
  - Seminar: “Building and Supporting a Distance Education Program in the Sciences”
  - Seminar: “Creating Effective Modules for Web-Based Science Teaching”
  - 2 Workshops: “Distance Education in the Sciences”
  - Seminar and workshop for high school and middle school teachers: “Biotechnology on the Internet”.
- Dr. Debbie Crans visit included:
  - Mini Workshop for K-12 science teachers: “A Strategy to Introduce Science at K-12”
  - Research seminar: “A Series of Transition Metal Dipycolinate Complexes and Their Effects on Diabetic Animals: Compound Profiles and DNA Microarray Analysis”

- Public lecture “Diabetes: Combating one of America’s Heavyweights”
- Luncheon and mini-workshop for STEM faculty and students: “Mentoring Women in Science”

## **PUBLICATIONS AND PRODUCTS**

- Web page (URL: <http://www.nmsu.edu/~advprog>).
- Ann E. Austin, December 2, 2002, "Evaluation of the New Mexico State University ADVANCE Program." The report has already been provided to all of the members of the Committee on the Status of Women in SME. It will be made available to anyone via the ADVANCE program webpage.
- Laura Kramer, December 27, 2002, “Evaluation of ADVANCE at NMSU”. The report will be provided to all of the members of the Committee on the Status of Women in SME and will be made available to anyone via the ADVANCE program webpage.
- Frehill, Lisa M. “Proposal: NMSU Dual Career Couple Program” prepared at the request of the Provost. The PI met with all 8 deans, one associate dean, with representatives from Personnel and Career and Placement Services in addition to the Provost and the Vice Provost for Research and solicited input from STEM department heads and ADVANCE co-pi's. The report includes a proposed policy statement, a list of existing dual career couple resources at NMSU and a proposed procedure to hire "trainling spouses" who are part of dual career couples. The report was sent to all of the people with whom the PI met about the program, to all STEM department heads and to all members of the Committee of the Status of Women in SME at NMSU. The report will also be made available via the ADVANCE program webpage.

## **CONTRIBUTIONS**

### 1. Contributions Within Discipline

The PI’s discipline is sociology in which her focus has been on how race/ethnicity, class, and gender affect educational and occupational outcomes with particular attention to gender and engineering in the United States. The program’s goal of institutional transformation is of great interest to sociologists who study social change at the middle level of analysis (i.e., that of the level of work organizations). The program approach is based on sociological theories of social change. According to our evaluators—one from an educational administration background and the other from sociology—the program has made an excellent start towards the institutional changes that were desired.

The collection and presentation of the institutional data about women’s status relative to that of men in the 19 STEM and the six social and behavioral science (SBS) fields (for comparison purposes, since these fields are not targeted by NMSU’s ADVANCE

program) is another important contribution. The ADVANCE award to NMSU provided the PI with the time, resources, and access to confidential data that were necessary to undertake this study. Compilation of these data will enable comparison to other institutions to better demonstrate programmatic impact over time on women's status relative to men's in STEM fields.

## 2. Contributions to Other Disciplines

The start-up packages and research and travel awards made to women faculty in STEM fields at NMSU have enabled the program funds to impact almost every one of the STEM disciplines represented by the 19 STEM departments targeted by the ADVANCE program at NMSU. Funds were provided for projects in the following areas: astronomy, biochemistry, biology, civil engineering, computer science, electrical engineering, entomology, plant pathology and weed science, wildlife science, food science, industrial engineering, mathematics, mathematics education, and range science. Awards were made to 22 different women from 12 departments. Conference presentations in these fields were supported and publications that used the support provided by these awards will make their way into the relevant disciplinary venues over the next several years.

## 3. Contributions to Human Resources Development

Human resources development is one of the principal aims of ADVANCE at NMSU. NMSU is in the midst of hiring new faculty due to a wave of retirements over the past few years. The ADVANCE program has already made a substantial contribution to the university because the enhanced start-up packages enabled the university to make competitive offers to successfully recruit five female candidates in STEM. Department Heads reported to the PI that without these enhanced start-up funds, it was unlikely they could have successfully recruited these candidates. Indeed, in one case the PI spoke directly to a candidate with a competing offer in-hand: the commitment of additional ADVANCE funds won this candidate for NMSU.

NMSU's Provost, Dr. William Flores, is committed to the institutional transformation goals of ADVANCE. He has established a Teaching Academy; is in the process of establishing a university-wide Committee on the Status of Women; has established a Roles and Rewards Committee; has begun the process of formalizing the training and information provided to department heads; and plans to insure that diversity training is incorporated into all programs that come from his office. The development of a Teaching Academy at NMSU will have a far-reaching impact on the institution since its goal is recognition and rewarding of teaching activities to be on par with those of research, especially in the promotion and tenure review process. In addition, improvement of teaching is expected to enhance the recruitment and retention of women into SME at all levels. ADVANCE monetary support is absolutely essential in the early stages of the Teaching Academy, since few other sources of support for this new effort are available.

Workshops and seminars provided by ADVANCE on promotion and tenure, recruitment, mentoring and distance education were also important contributions to human resources

development. Prior to ADVANCE, NMSU had no formal mentoring program but because of the ADVANCE Mentoring Program, the university has an excellent model on which to base a program that would be available across the institution. Distance education at NMSU is still in a developmental stage. Dr. Deanna Namuth's workshops, part of the ADVANCE Distinguished Visiting Professor Program, provided important training to NMSU faculty and staff to support the development of distance learning opportunities in STEM fields.

#### 4. Contributions to Resources for Research and Education

As discussed above, 22 women received funds for their research and travel. Some travel enabled advanced associate and full professors to develop new skills. The "seed money" provided by ADVANCE and the allocation of the indirect costs associated with these funds to departments in which these women work has had a significant positive impact on women faculty's ability to conduct and report their research and to maintain professional networks with colleagues beyond NMSU.

#### 5. Contributions Beyond Science and Engineering

ADVANCE co-sponsored activities that reached beyond the 19 STEM departments.

These included:

- Diversity and Hiring speaker Lakesia Johnson at the Department Head Workshop.
- Promotion and Tenure Workshop.
- Development of a Dual Career Couple Program and Policy for NMSU.
- Participation in the new NMSU Teaching Academy, including funding for a Time Management Seminar, which will be open to all NMSU faculty.
- PI serves as a co-chair (with Pat Hynes, Director, NASA Space Grant and CSW-SME Recruitment Committee Chair) on the university Committee on the Status of Women.
- Program Coordinator serves on a university childcare taskforce.

STEM faculty account for approximately half of all faculty members at NMSU. Because ADVANCE is an institutional transformation program, contributions beyond science and engineering are essential to bring about changes at NMSU. Department Heads represent important points of contact across the institution. Providing resources and training for these key personnel is also essential to bringing about changes in the institution that enable gender equity.

All too often, programs that aim at gender equity and those that aim at ethnic equity appear to compete with one another for scarce resources. Forging an alliance with the Hispanic Caucus is essential to ADVANCE's goals to ensure that gender equity does not come at the expense of ethnic equity at NMSU, which is a Hispanic serving institution.

Finally, the program has highlighted women's participation and accomplishments in STEM fields to a larger audience via the press releases about the program and the visits of the two Distinguished Visiting Professors.

## **OBJECTIVES AND SCOPE**

The external evaluators' reports and the ADVANCE CSW-SME have informed the following list of activities planned for the 2003 calendar year. We plan to continue and build upon the successful components of the program and to further enlarge the scope of our activities.

The evaluators indicated that ADVANCE needed clerical support, which necessitates additional space, in order for the program to be efficient and effective. Plans to hire a full-time clerk and to move to a different location are underway. We require direct cost to support the clerk's salary and fringe but will allocate indirect cost to pay rent for the office and for continued support of the office functions.

Activities for 2003 will continue those begun in 2002. Two important research activities will be spearheaded by the ADVANCE CSW-SME:

1. University-wide gender equity in faculty pay study.
2. Survey of Academic Climate and Activities survey of STEM departments.

The latter survey will also be administered to the six social and behavioral science (SBS) departments in the College of Arts and Sciences that are serving as the ADVANCE comparison group.

The Exit Interview Protocol will be finalized and plans made to implement exit interviews.

The PI and Program Coordinator will continue to present papers at conferences to disseminate information about the ADVANCE program. Both the PI and the Program Coordinator will begin publishing in relevant venues. For example, the Program Coordinator is preparing a literature review for the Society of Women Engineers' magazine annual edition that disseminates new information about research on women in engineering to its members.

### **Scope**

The program will develop ways to enable departments to professionally develop women who are currently employed as full-time college track faculty. Women account for only 18% of tenured and tenure track STEM faculty but for 49% of non-tenure track STEM faculty.

The program will continue to work with the Teaching Academy and Hispanic Caucus to better engage male STEM faculty. The mentoring program will be expanded as one way to approach male STEM faculty.

### **Justification for Changes in Objective and Scope**

Not all of the above are significant changes in objectives or scope. The proposed changes will increase program personnel effectiveness and efficiency to enable programmatic maintenance and expansion.

The use of direct cost to support the clerk's salary and fringe is essential because of the way that IDC generated by the program has been allocated. Specifically, more than half of the IDC "follows" the start-up, research and travel awards to the targeted STEM departments. Such a process has generated goodwill towards the program (to avoid possible backlash) and provides additional funds for faculty members' research and development. The clerk will work in the ADVANCE office, reporting directly to the ADVANCE Program Coordinator, performing only work related to the ADVANCE Program. Clerical tasks currently consume much of the Program Coordinator's time.

Once presented with the data, the CSW-SME saw extension of the program components to the pool of prospective women faculty currently teaching in non-tenure track positions as a wise way to increase women's faculty status in SME disciplines at NMSU. These women have proven track records for teaching in the institution and have established themselves as valuable members of the faculty.

Increasing men's participation in ADVANCE is essential to prevent backlash and to insure institutional change.

Expanding the gender equity in faculty pay study to the university and including six SBS departments in the Survey of Academic Climate and Activities will provide important points of comparison to evaluate the impact of the ADVANCE program.