Women ADVANCE at USM Initiative

Institutional Memory

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University of Southern Maine ADVANCE IT-Catalyst: Project Description

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Project Description

A.   Background

The literature is replete with studies and reports that have well documented the very low number of women faculty in Science, Technology, Engineering and Mathematics (STEM) fields nationally—at every level and in most disciplines (National Science Foundation, 2008). Also well documented is the issue of the leaky educational pipeline, beginning in childhood, as being held partly responsible for the unequal numbers of men and women in faculty positions in STEM disciplines (Pell, 1996; Huyer, 2002; Carrell et al., 2009; and Price, 2010).

A number of programs have worked to increase the talent pool of women students in science and education (American Council on Education, 1988; National Research Council, 1991). However, despite such efforts, these programs have only succeeded in increasing the pool of women doctorates and the presence of women on the STEM faculty remains disproportionately low, constituting just 34% of Associate Professors and 19% of Professors (National Science Board, 2008).

Research by Kulis et al (2002), Bentley and Adamson (2003), and Xu (2008) attempts to explain the basis for women not entering STEM careers even though men and women are equally committed to their academic careers. Explanations include women voluntarily opt out of careers that are research-oriented and have an isolating and competitive environment; prefer jobs that leave time for teaching and collegial collaboration; social and political biases in STEM disciplines limit the opportunities for women; and gender bias influence the chances for women to be hired and retained and create conditions of isolation, marginalization, stereotyping, insufficient support, delay in advancement and other adversities. Other explanations include an academic organizational structure that creates a poor work climate, a limitation in opportunities for advancement, unequal criteria or criteria unequally enforced, and differential pay scales, all leading to greater job dissatisfaction and higher attrition. Xu (2008) suggests that women's underrepresentation is more a function of the social culture in academia rather than innate gender differences in ability or in differential preferences for jobs that are less demanding.

The results of the 2007 Tenure-track Faculty Job Satisfaction Survey conducted by the Collaborative on Academic Careers in Higher Education (COACHE) provided some support for most of these explanations. The survey measured clarity and reasonableness of tenure processes and review; importance and effectiveness of common policies and procedures; workload and support for teaching and research; climate, culture, and collegiality on campus; and job satisfaction. The results suggest that a combination of campus climate and work related policies have a considerable influence on women faculty retention and advancements and efforts to retain women in academia must provide a clear approach to both creating a nurturing academic climate and policies and procedures that influence attraction and retention of women faculty.

Studies have shown varying degrees of influence (none to positive) of women faculty on the persistence of women students in the STEM fields (Carrell et al., 2009; Price, 2010). However, as a comprehensive regional university that primarily focuses on teaching and providing research opportunities to undergraduate students, recruiting, retaining, promoting, supporting, and sustaining a diverse faculty population that reflects the community it serves is very important to the mission of the University of Southern Maine (USM). These successful women faculty will serve as role models and enhance recruitment and retention of women and minority-undergraduate students in STEM, social and behavioral sciences disciplines.

B.   Institutional Context and Data

B-1.   USM Background
USM is accredited by the New England Association of Schools and Colleges and is Maine's only public, regional, comprehensive university with campuses in Portland, Gorham, and Lewiston-Auburn. USM offers Baccalaureate, Master's and Doctoral programs in the Arts, Humanities, Social Sciences, and STEM. USM has been many things to many people since first opening its doors to the public in late

December of 1878. USM has been referred to as a regional normal school, a state teachers college, a junior business college, an extension of the University of Maine (the state's land grant institution), one of seven institutions created through a merger of Gorham State Teachers College and the University of Maine at Portland as part of a new statewide university system (the University of Maine System, UMS), or the state's only urban, regional comprehensive university. Over the last two decades, however, USM has experienced a period of unprecedented growth and transformation, one unmatched even by the historical standards of a university that emerged from no fewer than seven predecessor institutions. Beginning in 2007, however, this period of rapid growth came to an end. USM, like other institutions of higher learning, is facing the challenges of changing population demographics, the emergence of accessible and less expensive educational options and the now all-too-familiar financial crises.

It was in this environment that the UMS Board of Trustees appointed Dr. Selma Botman as USM's 10th president. Shortly after her appointment in the spring of 2008, President Botman told faculty and staff, "The circumstances we are facing as a university, as a state, and as a nation require us to think carefully about what we do and have the courage - and the vision - to face the challenge of doing things differently in order to ensure that we do them most effectively." Facing this challenge of "doing things differently" has resulted in a period of profound institutional transformation, during which a campus culture is emerging with a consistent and systematic focus on institutional priorities, particularly those of fiscal sustainability and improving student persistence toward graduation.

The completed academic reorganization will distinguish and energize our academic mission and reposition USM for future growth and sustainability. Most importantly, it will enhance the educational experience for our students. Six schools and colleges were consolidated into three new colleges. The new college structure is designed to foster the grouping of academic disciplines in ways that will cultivate opportunities for new and innovative interdisciplinary studies. For example, the new *College of Science, Technology and Health (CSTH)* was formed by bringing together the College of Nursing and Health Professions; the School of Applied Science, Engineering, and Technology; and Science and Mathematics departments from the College of Arts and Sciences. CSTH has 15 academic units focused on STEM, nursing, and health professions. It is also the home of two research units: the Maine Center for Toxicology and Environmental Health, and the Special Programs for Information and Innovation. CSTH offers over 40 different academic programs under the direction of approximately 120 faculty and 60 staff.

B-2.   Community Demographics

The Portland and Gorham campuses are located in the Greater Portland area in the southern region of the state. Lewiston-Auburn is in the central region of the state and serves both as a campus and the location of the Lewiston-Auburn College. The central and southern Maine regions account for 75% of the state's population and are considered a desirable place to live with reasonable job opportunities. Combined, both regions are the most diverse in the state and have a substantial immigrant and refugee populations, many of whom are from Somalia, the Sudan, eastern Asia and elsewhere (Table 1). The minority population in the Portland area has population of 2.2% two or more races, whereas the Lewiston-Auburn area has a minority population of two or more races of 9.2% (Culture Coach International, 2010).

Table 1: The Central and Southern regions of Maine are the most diverse in the state.

Race/Ethnicity	US	Maine	Portland	Lewiston
White	72.4%	95.2%	87.2%	81.5%
Hispanic/Latino	16.3%	1.3%	2.8%	1.9%
Black/African American	12.8%	1.2%	5.6%	7.5%
American Indian/Alaskan Native	0.2%	0.6%	0.4%	0.5%
Asian	4.8%	1.0%	3.5%	0.6%
Native Hawaiian/Pacific Islander	0.2%	*	0.1%	0.0%
Some other Race	6.2%	0.3%	1.0%	0.8%
Two or more Races	2.9%	1.6%	2.2%	9.2%
Foreign Born	n/a	3.3%	10.0%	7.1%
English as a Second Language	n/a	7.5%	12.6%	1.5%

Source: Census data from the 2010 Census and Culture Coach International (2010). *: Confidential data.

USM's feeder school districts are the largest and most ethnically diverse school districts in the state. For example, in the Portland Public Schools there are more than 35 different languages spoken among the student population with enrollment of English Language Learners at 23% (Valenzuela, 2007).   This constitutes 1,432 minority learners in a student body of 7,100. While this level of racial/ethnic diversity is not high by some standards, the school districts of Lewiston and Portland are only 85.1% and 75% white compared to the state as a whole, which reports 95.3% of the student population as white. The racial/ethnic changes in the central and southern Maine regions mirror those that are occurring in many places across the country. Recent growth in the number of immigrants from, for example, Africa and southeast Asia has resulted in a rapid increase in community services and cultural venues in Maine as is happening across the country.

B-3.   Diversity of Student Population
On the average, USM enrolls a student population of 10,000, including 8,000 undergraduates and 2,000 graduate/law students that are broadly representative of the population it serves. As shown in Table 2, in the fall 2010 the student body, in most cases, did not reflect the minority populations in the communities from which USM recruits most of its students. However, the number of minority students at USM has risen from 6.56% (633) in 2009 to 7.42 % (716) in 2010[1]. Much of this increase has come from Hispanic/Latino, Non-Resident Aliens and students from two or more races.

Table 2: Fall 2010 Student Headcount Enrollment by Race/Ethnicity (Self-Reported).

Race/Ethnicity	Portland	Lewiston	USM Student Headcount	
			Number	Percentage
White	87.2%	81.5%	7,499	79.1%
Hispanic/Latino	2.8%	1.9%	157	1.2%
Black/African American	5.6%	7.5%	178	1.2%
American Indian/Alaskan Native	0.4%	0.5%	95	1.4%
Asian	3.5%	0.6%	132	1.1%
Native Hawaiian/Pacific Islander	0.1%	0.0%	5	0.0%
Two or more Races	2.2%	9.2%	103	1.0%
Not Specified	n/a	n/a	1,439	11.8%

Source: USM Fall 2010 Enrollment Report. n/a; not available.

In the fall of 2011 women represented almost 60% of total enrollment at USM but 35% of total STEM enrollment. In terms of enrollment in STEM disciplines at USM, women approached or exceeded 50% of enrollment in Mathematics, Environmental Science, Chemistry, and Biological Sciences (Table 3). This is consistent with the literature, which indicates that women represented only 34% of Physical, Earth, Atmospheric, and Ocean Sciences enrollments; 29% of Computer Sciences enrollments; and 20% of Engineering enrollments (Cassell and Slaughter, 2006).

Table 3: Women represented 35% of total STEM enrollment at USM in the fall 2011

Department	Male	Female	Total	% Women
Biochemistry	4	6	10	60%
Biology	116	172	288	60%
Chemistry	17	15	32	47%
Computer Science	81	14	95	15%
Engineering	109	12	121	10%
Environmental Science	36	32	68	47%
Geosciences	13	8	21	38%
Mathematics	34	28	62	45%
Physics	15	4	19	21%
Technology Management	167	25	192	13%
Total	592	316	908	35%

Source: USM Office of Institutional Research and Assessment (September 2011).

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[1] Data on USM demographic trends reported throughout this proposal were gathered from various institutional resources, including USM's Office of Institutional Research and Assessment, the Office of Undergraduate Admissions, and the Division of Human Resources.

B-3.　　Faculty Population

The University's faculty consists of 396 full-time and 340 part-time faculty. Full-time faculty have appointments at the rank of lecturer, instructor, assistant professor, associate professor, and professor. Eighty-four percent of full-time faculty hold a terminal degree in their respective disciplines. Tenure-track faculty are generally hired for a 6-year probationary period, during which they work on a series of 1- and 2-year contracts with evaluations each year. Unless the probationary period is extended for 1 year for exceptional life circumstances, tenure-track faculty are considered for tenure in their sixth year of service at the latest. The evaluation of effectiveness of faculty is primarily carried out through the traditional peer review system of tenure and promotion based on department/program criteria in 4 areas: teaching, scholarship, university and community service. There is also a quadrennial post-tenure review process.

The student-to-faculty ratio is 15:1 which compares favorably to other peer institutions. This suggests that USM has an adequate number of faculty to fulfill its mission. That being said, however, there has been a decrease in the number of full-time faculty in each of the last three years. The decreasing number of full-time faculty in combination with the reduction in support staff has increased the administrative burden of faculty. There is also an increased demand for the time and resources of full-time faculty with regard to student advising, programmatic and curricular management and development, and University and community service. The move toward providing on-line classes demands more time from faculty as does the new General Education program, which requires the development of new courses usually outside of those required by degree programs within which all faculty teach.

Faculty teach a three-course load per semester with the fourth class considered "release" from teaching in order to participate in scholarship and/or service to the community. The median teaching load, in terms of credit hours, for a Professor is 9.3, for an Associate 9.8, and for an Assistant 10.4. The comparison of part-time faculty to full-time faculty shows that part-time faculty deliver a significant portion of the curriculum. Certain schools also depend more heavily on part-time instruction than others. For example the Muskie School of Public Service relies upon part-time instruction for only 5% of their courses, while the School of Nursing hires part-time faculty for 57% of their courses.

B-4.　　Faculty Diversity

A core aim of USM is to "advocate diversity in all aspects of its campus life and academic work" in a way that reflects the populations in the central and southern Maine regions, the most diverse regions in the state. The significant racial/ethnic changes in this region have resulted in a rapid increase in ethnic community support services and activities and cultural venues, making these regions more desirable locations to live for diverse women faculty candidates, especially those from underrepresented populations. Yet, current USM demographic data indicate inequity in the representation and advancement of women in STEM disciplines.

Since the last accreditation visit in 2010, the character and size of the University has continued to change. Women, who filled 22% and 39% of the tenured/tenure-track positions in 1990 and 2000, respectively, now fill 41.8% of the tenured/tenure track positions as of 2011 (Table 4). This is considerably higher than the national rate of 31% (NSF, 2008). In contrast, USM women faculty hold 24.2% of tenured/tenure track positions in STEM disciplines which is lower than the national average of 28.1% (NSF, 2008). Women fair better in Social Sciences at USM where they represent 44.7% of tenured/tenure-track positions, a rate higher than the national average of 34.4% (NSF, 2008).

Table 4: Women in Tenured and Tenure-Track STEM and Social Sciences Positions, 2011

	Tenured/Tenure-Track				% Women		% Women Minorities	
	Total	**Men**	**Women**	**Women Minorities**	**USM**	**Nat. Avg.**	**USM**	**Nat. Avg.**
USM Overall	318	188	133	15	41.8%	31.0%	4.9%	21.5%
STEM	66	50	16	2	24.2%	28.1%	3.0%	6.4%
Social Sciences	114	63	51	6	44.7%	34.4%	5.3%	9.0%

Sources: USM Division of Human Resources (October 2011), NSF Science and Engineering Indicators 2010; and NSF Women, Minorities, and Persons with Disabilities in Science and Engineering (2009).

In recent years, representatives of ethnic and racial minorities have joined the faculty, part of the ongoing and systematic efforts to diversify the University. However, in 2011 the percentage of faculty who are members of ethnic minority groups (Asian, Blacks, Hispanics, and American Indians/Alaska Natives) is one of the lowest (4.9%) in the University of Maine System (average 5.7%; range = 3.1% to 13.9%) and is lower than the national average of 21.5% (NSF, 2009) (Table 4). Representation of women minorities (3.0% in STEM and 5.3% in Social Sciences) is lower than the national averages of 6.4% and 9.0%, respectively (NSF, 2009). This lack of ethnic diversity is particularly problematic considering USM's location in Portland. Table 5 provides a breakdown of race and ethnicity among USM faculty members in STEM and Social Sciences.

Table 5: STEM and Social Sciences Faculty Diversity by Race/Ethnicity (Self-Reported)

Race/Ethnicity	Total	Men	Women
White	169	108	61
Hispanic/Latino	6	4	2
Black/African American	0	0	0
American Indian/Alaskan Native	2	0	2
Asian	11	4	7
Native Hawaiian/Pacific Islander	0	0	0
Not Specified	27	16	11

Source: USM Division of Human Resources, October 2011.

Faculty equity in promotion is of concern at USM where women make up 16.0% of full professors (compared with 39% university-wide), 25.8% of associate professors and 66.7% of assistant professors (Table 6) in STEM programs. In comparison, the national averages are 17.7%, 33.5% and 39.3% (National Science Foundation, 2009). In Social Sciences, women make up 27.8% of full professors, 55.3% of associate professors and 66.7% of assistant professors. The national averages are 21%, 45.5% and 43.3%, respectively.

Women minorities hold associate and assistance professorships in STEM and Social Sciences but not as full professors. Of the 275 faculty in STEM and Social Sciences, 95 or 34.5% are full-time and part-time instructors and lecturers, of which 51 (53.7%) are women with only three women minorities. STEM departments rely less on women instructors and lecturers when compared with the Social Sciences departments.

Table 6: Percentage of Full-time Women STEM and Social Sciences Faculty by Rank, 2011

	Total	Men	Women	Women Minorities	% Women		% Women Minorities	
					USM	Nat. Avg.	USM	Nat. Avg.
STEM								
Professors	25	21	4	0	16.0%	17.7%	0.0%	2.8%
Assoc. Professors	35	27	8	1	22.8%	33.5%	2.8%	6.7%
Assist. Professors	6	2	4	1	66.7%	39.3%	16.7%	11.1%
Instructors/Lecturers	44	26	18	2	40.9 %	45.2%	4.5%	9.6%
Social Sciences								
Professors	57	40	17	0	29.8%	21.0%	0.0%	2.8%
Assoc. Professors	49	21	28	5	57.1%	45.5%	10.2%	7.9%
Assist. Professors	8	2	6	1	75.0%	43.3%	12.5%	13.3%
Instructors/Lecturers	51	18	33	1	64.7%	47.4%	1.9%	5.3%

Sources: USM Division of Human Resources (October 2011), NSF Science and Engineering Indicators 2010; and NSF Women, Minorities, and Persons with Disabilities in Science and Engineering (2009).

Of the 13 STEM programs at USM (Table 7), only Biology, Environmental Science and Linguistics have women full-time full professors and the numbers are small, one each in Biology and Environmental Science and two in Linguistics. In Social Sciences, seven of the 11 programs have women full-time full professors, six in Law, one each in Economics and Geography/Anthropology, three in Public Administration, two each in Social Work and Sociology, and three at the Lewiston-Auburn College.

Table 7: Percentage of Tenure/Tenure-Track Full-Time Women Full Professors, Associate Professors and Assistant Professors by Department, 2011.

	Full Professors			Associate Professors			Assistant Professors		
	T	%W	%WM	T	%W	%WM	T	%W	%WM
STEM Departments									
Applied Medical Sciences	3	0.0%	0.0%	2	0.0%	0.0%	0	0.0%	0.0%
Biology	5	20.0%	0.0%	7	42.9%	0.0%	0	0.0%	0.0%
Chemistry	1	0.0%	0.0%	2	50.0%	0.0%	2	50.0%	0.0%
Computer Science	2	0.0%	0.0%	4	25.0%	0.0%	0	0.0%	0.0%
Engineering	1	0.0%	0.0%	3	0.0%	0.0%	2	50.0%	50.0%
Environmental Science	2	50.0%	0.0%	1	0.0%	0.0%	0	0.0%	0.0%
Geoscience	4	0.0%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Linguistics	3	66.7%	0.0%	0	0.0%	0.0%	0	0.0%	0.0%
Mathematics	3	0.0%	0.0%	4	50.0%	25.0%	0	0.0%	0.0%
Physics	1	0.0%	0.0%	2	0.0%	0.0%	1	100.0%	0.0%
Psychology	3	0.0%	0.0%	4	25.0%	0.0%	1	100.0%	0.0%
Technology Management	0	0.0%	0.0%	4	0.0%	0.0%	0	0.0%	0.0%
Natural and Applied Sciences (Lewiston-Auburn College)	0	0.0%	0.0%	4	0.0%	0.0%	0	0.0%	0.0%
Total	*25*	*16.0%*	*0.0%*	*35*	*22.8%*	*2.8%*	*6*	*66.7%*	*16.7%*
Social Sciences Departments									
Law	16	37.5%	0.0%	5	40.0%	0.0%	0	0.0%	0.0%
Criminology	4	0.0%	0.0%	1	100.0%	0.0%	0	0.0%	0.0%
Economics	3	33.3%	0.0%	3	66.7%	33.3%	0	0.0%	0.0%
Geography and Anthropology	2	50.0%	0.0%	4	25.0%	25.0%	0	0.0%	0.0%
History	2	0.0%	0.0%	6	50.0%	16.7%	1	100.0%	0.0%
Human Resource Development/Education	9	0.0%	0.0%	16	62.5%	6.3%	4	75.0%	0.0%
Public Administration	9	33.3%	0.0%	1	100.0%	0.0%	1	0.0%	0.0%
Political Science	2	0.0%	0.0%	3	33.3%	0.0%	0	0.0%	0.0%
Social Work	4	50.0%	0.0%	5	80.0%	20.0%	0	0.0%	0.0%
Sociology	3	66.7%	0.0%	3	33.3%	0.0%	0	0.0%	0.0%
Social and Behavioral Sciences (Lewiston-Auburn College)	3	66.7%	0.0%	2	100.0%	0.0%	2	100%	50%
Total	*57*	*29.8%*	*0.0%*	*49*	*57.1%*	*10.2%*	*8*	*75.0%*	*12.5%*

T = total men and women faculty; %W = percentage of women faculty; %WM = percentage of women faculty who are minorities.

C.   Support Programs for USM Women Faculty

USM offers extensive diversity programs and services to support women students, including women students from underrepresented populations. The newly reconfigured Office of Equity and Compliance has increased its commitment to access and diversity, as can be seen in the development of the new Office of Multicultural Student Affairs, the Safe Zones Program, and the new Coordinator of the Gay, Lesbian, Bisexual, Transgender, and Queer (GLBTQ) Resource Program. In contrast, support services for women faculty are sparse. The Women & Gender Studies is the only program that offers any activities or services for women faculty. They do so through the following activities:

- Faculty development workshops to showcase and support faculty research & scholarship through hosting retreats where faculty present and discuss their research & scholarship.
- Guest scholars of global note are faculty in residence at USM while teaching courses and holding seminars on their field research.
- Diversity Committee - works with their programming committee to ensure that diversity topics and issues are presented in co-curricular programs (supporting and augmenting course work) each semester, often featuring national and international feminist scholars.
- Affiliated Scholars - Feminist scholars from across the university's disciplines, are invited to participate in their co-curricular event planning and their faculty development retreats.

USM has recently become more aggressive in recognizing women faculty for excellence in their fields. For example, in the past year Associate Professor Lorrayne Carroll (English) was awarded the Maine Campus Compact Award, Associate Professor Linda Meyer (Recreation and Leisure Studies) was presented with the Annual Therapeutic Recreation Service Award by the Maine Recreation & Park Association, and Assistant Professor Clare Bates Congdon (Computer Science) was recognized for her National Science Foundation "CAREER" grant award which is designed to support the work of teacher-scholars who most effectively integrate their research with the education of students. In October 2011, Professors Kathleen Ashley (English) and Rose Marasco (Art) were recently honored as USM's Distinguished Professors.

Clearly more needs to be done. Through the *Women ADVANCE at USM Initiative (WAUI)* the University is committed to creating a culture and environment for attaining and sustaining a diverse faculty population (especially women and under-represented minorities) that reflects the community it serves. The letters of support from the President and the Provost demonstrate this commitment.   This commitment is important since USM has a large number of women in leadership positions on campus who support this initiative. The President, the Associate Provost of Academic Affairs and the Associate Vice President of Academic Affairs for Research, Scholarship and Creative Activity, the Chief Operating Officer, as are the Deans of the Colleges of Arts, Humanities and Social Sciences, and the Lewiston-Auburn College are women. They are providing very visible support for increasing the number of women, particularly women from underrepresented groups, in leadership positions on campus and for increasing attention on the importance of a diversified workforce.

D.   Need for External Funding for ADVANCE Planning

Even with the recent transformative changes at USM, the institution still faces constrained state appropriations and a student body that is increasingly challenged by tuition increases despite added university funded financial aid. These trends, combined with declining demographics and a prolonged recession ignited by a global financial crisis, have created a non-sustainable financial condition for the University. As a state-supported university, USM receives approximately 28.8% of its total operating budget from state appropriations and 61.0% is generated through student revenues (FY2012 Operating Budget and Student Charges, 2011), the remainder comes from grants & contracts, sales of services, and charitable giving. The decreasing trend in enrollment is also contributing to the institution's efforts to generate revenues for new programs and to strengthen existing programs. For example, fall 2011 enrollments are down 3.7% (compared to fall 2010) and student credit hours are down 4.0% (USM Office of Institutional Research and Assessment, 2011). The percentage of undergraduate certificate and non-degree seeking students was lower (4.1%) than the percentage of undergraduate degree-seeking students (3.2%). For graduate students, the percentage loss for graduate certificate studies and non-degree students was 20.2% compared to relatively no loss for degree-seeking graduate students. As state support has remained relatively level, external funding is becoming increasingly vital in maintaining the quality and strength of the University.

E.   Self-Assessment Activities

The long-term goal of WAUI is to increase the representation and success of women faculty in STEM and Social Sciences disciplines at USM. The immediate goal is to develop a systematic approach to addressing factors that have resulted in an underrepresentation of women on our campus.   Our objectives are to:

1. Assess the current status of women STEM and Social Sciences faculty at USM by undertaking a data collection process that supplies both quantitative and qualitative information to better understand the extent of the barriers to recruitment, employment, retention and promotion of women in STEM and Social Sciences faculty positions.
2. Establish "institutional peer" relationships with comprehensive universities that have existing ADVANCE IT-Catalyst support in order to share experiences and lessons learned.
3. Through the presentation and publication of data and the development of programs, workshops, and symposia, lay the groundwork for institutional transformation that will result in more women

faculty in STEM and Social Sciences fields, particularly at the associate and full professor levels.
4. Prepare and submit a coordinated Partnership for Adaptation, Implementation and Dissemination (PAID) or IT Award proposal, potentially in partnership with the institutional mentors.

Objective 1: Assess the current status of USM women faculty.

Measure of Success: More clarity in understanding the dynamics on our campus, and identification of factors related to underrepresentation of women faculty.

The main focus of our proposed activities is a self-study of the current professional standing of women in STEM and Social Sciences departments at USM. Our proposed assessment plan involves gathering information in three areas: 1) institutional trends, 2) current policies and practices, and 3) the academic climate.

Assessment of Institutional Trends. When Frehill (2006, 2009) looked at more than 30 separate institutions' reports on commissions on the status of women, four questions emerged as fundamental in understanding women's status as faculty within academic institutions and provide a framework for documenting progress toward institutional transformation. These questions are (1) To what extent are women and men in "gender equitable" departments and positions?; (2) Are USM's processes of advancement fair to men and women?; (3) To what extent do women hold powerful positions within USM?; and (4) To what extent are resources allocated equitably by gender? The 12 NSF ADVANCE metrics (Frehill, 2009) (Table 8) that need to be collected to answer these questions fall into the following four categories: current distribution of STEM and social sciences faculty by gender, rank and department at USM; outcomes of institutional processes of recruitment and advancement for men and women at USM over the last 5 years; current gender distribution of STEM and social sciences faculty in leadership positions at USM; and the current allocation of resources for STEM and social sciences faculty by gender at USM. These metrics have not changed significantly since the inception of the ADVANCE program.

Table 8: Baseline metrics

Metric	Q1	Q2	Q3	Q4
1. Number and % of women faculty in science/engineering by department	X			
2. Number and % of women in tenure-line positions by rank and department	X		X	
3. Tenure promotion outcomes by gender		X		
4. Years in rank by gender		X		
5. a.Time at institution and b. attrition by gender		X		
6. Number of women who are in non-tenure-track positions (teaching and research)	X			
7. Number and % of women scientists and engineers in administrative positions			X	
8. Number of women faculty in endowed/ named chairs		X	X	
9. Number and % of women faculty on promotion and tenure committees			X	
10. Salary of faculty by gender (controlling for department, rank, years in rank)				X
11. Space allocation of faculty by gender (with additional controls such as dept., etc.)				X
12. Start-up packages of newly hired faculty by gender (with additional controls such as field/department, rank, etc.)				X

Sources: Frehill (2006, 2009)

As described in Section B we have been able to document the current distribution of tenured and tenure-track women faculty in STEM and Social Sciences departments (metrics 1, 2 and 6). To answer Questions 2-4, we will gather information addressing the remaining nine metrics. Currently, USM does not have a central clearinghouse for these kinds of data. The WAUI Leadership Team (Section F) will work closely with the Advisory Board, the Working Committees, the Assessment Resource Group, the Division of Human Resources Office, and the Office of Institutional Research and Assessment to develop a central clearinghouse for the collection of the data and to provide the framework for documenting progress toward institutional transformation. In addition, we will find out what factors attracted women in the targeted disciplines to USM, and what factors might have either helped or hindered their ability to succeed.   We will contrast our findings with our institutional peers to develop a set of benchmarks by discipline and year to determine what the pipelines per discipline would be for each area.

Assessment of Policies and Practices. We plan to review the current institutional policies and practices that directly or indirectly impact women faculty at USM. The Provost has agreed to establish three university-wide working committees that will examine policies and practices in three areas: a) recruitment and hiring, b) retention, promotion and tenure, and c) work-family life. Committee members will be appointed by the Provost and will represent faculty administrators, and both senior and junior faculty. The WAUI Leadership Team will coordinate the gathering of information from these committees.

Assessment of the Academic Climate. Current perceptions of the academic climate at USM (including particular issues involving gender, race/ethnicity, sexual orientation and national origin) will be assessed by way of an on-line climate survey, focus groups, and town hall meetings.

Climate Survey. Faculty and faculty administrators across campus (both STEM and non-STEM departments) will be invited by the Provost to complete an anonymous survey assessing perceptions of USM's academic climate. Our goal is to reach all faculty at USM. We propose using existing climate measures employed by established ADVANCE institutions including our institutional peers. Many of the items on these surveys overlap, and our climate survey will employ those items that repeat consistently across multiple institutions, augmented by items specific to USM. Our climate survey will be administrated by the Muskie School of Public Service, which has the expertise in creating and administering on-line surveys and ensuring that the on-line surveys are secure and confidential.

Focus Groups. We will hold a series of focus group discussions that will center mainly on those issues that the climate survey identifies as particularly critical. We anticipate that the discussion themes will likely include issues involving the challenges of the teacher-scholar model, work-family balance, and levels of administrative support and faculty development resources. For each identified theme, our focus groups will be comprised of the following: a) faculty from STEM and Social Sciences departments with the worst faculty gender ratio and b) faculty from STEM and Social Sciences departments with the best gender faculty ratio. These two groups of faculty will further be divided into groups comprised of: female-only tenure track faculty; female-only tenured faculty; male-only tenure track faculty; and male-only tenured faculty. Additional focus groups targeting STEM and Social Sciences department chairs and administrators will also be included. We anticipate holding approximately 10 focus groups to cover these groupings adequately. The Division of Human Resources will facilitate the focus groups.

Town Hall Meetings. We propose to hold two town hall-type meetings, both facilitated by the Division of Human Resources. Like the focus group discussions, themes for the town hall meetings will be generated through climate survey findings. Unlike the focus groups, which will specifically target STEM and Social Sciences faculty, the town hall meetings will be open to all faculty and administrators on campus to better understand the overall issues that are identified as facilitating or impeding faculty success at USM.

Analyses of Data. One of the Co-PIs, Dr. Dahlia Lynn, Associate Provost for Academic Affairs, will take the lead in coordinating the analyses of both the quantitative and qualitative data in her leadership capacity of the Assessment Resource Group (see Section F).

Objective 2: Establish "Institutional Peer and Mentor" relationships with existing ADVANCE IT institutions.

Measure of Success: Formation of working relationships with comparable ADVANCE institutions.

An important component of our proposal is to learn from the planning experiences of comprehensive universities that currently have ADVANCE IT-Catalyst awards. In putting together this proposal, considerable time and effort has been taken to investigate the materials produced by current ADVANCE IT-Catalyst institutions. We have targeted Southern Illinois University at Edwardsville and the State University of New York at Oswego as *institutional peers*. Both are comprehensive regional universities and are currently in their second year of their projects. The ADVANCE Directors of both institutions have agreed to serve as institutional peers (see support letters) and to share their experiences with USM during our planning efforts. As part of this relationship, we have planned site visits to both institutions at

the beginning of our project (see Timeline, Section F). In Year 2 of the project, our institutional peers will visit the USM campus to meet with university leadership, the WAUI Leadership Team, the Advisory Board and other stakeholders, share their respective experiences and lessons learned, and to explore and identify with the WAUI Team in identifying change initiatives that may be included in USM's institutional transformation plan. We will also explore with our institutional peers the potential for partnering with USM in an ADVANCE PAID or IT proposal.

We have also identified the University of Maine (UMaine) as an *institutional mentor*. UMaine recently received an ADVANCE grant and, like USM, UMaine is a member of the University of Maine System (UMS). As part of UMaine's ADVANCE mission, they are establishing best practices that they hope can be disseminated to other UMS campuses. At this point in time, it remains unclear whether the initiatives planned by UMaine will be relevant to our institution since UMaine is a R1 research institution and USM is a comprehensive university. Because they are at the beginning stages of their program, we anticipate that at the end of our proposed work plan they will be in a better position for partnership. Therefore, we have included in our plan a "comparative summit" with UMaine towards the end of our timeline. At that point we will be prepared to discuss our findings and explore the possibility of a partnership (see support letter).

Objective 3. Develop the Institutional Transformation Plan

<u>Measure of Success:</u> Campus buy-in for the institutional transformation plan.

In order to make institutional transformation possible we will undertake a concerted effort to raise awareness on campus. To do this, we will provide a number of opportunities for faculty and staff to discuss our findings. The following activities are proposed:

<u>Presenting results of studies to campus constituents.</u> We will present the results of the analyses from the variety of data sources to different campus groups including:

- Department chairs in all Colleges and Schools at USM.
- Provost's Academic Council and the President's University and Diversity Councils.
- Relevant offices and organizations on campus, including Human Resources, the unions and the Faculty Senate.

<u>Town Meetings.</u> We will present a series of interactive talks for all interested faculty in order to initiate discussion and understanding of the research findings.

<u>Women in STEM and Social Sciences Symposia.</u> We will establish a symposia during the project period which will bring together women and men faculty at USM and outside of USM to increase their awareness of how women faculty are enhancing campus environment, education and research in STEM and Social Sciences. Once a semester for a total of three semesters we will invite women who have been hired by and benefited from institutions with long running, successful, and nationally recognized ADVANCE programs. One of the proposed invitees is Dr. Lisa Frehill, Director of Research, Evaluation and Policy at the National Action Council for Minorities in Engineering.

Objective 4: Develop an ADVANCE PAID or IT Proposal.

<u>Measure of Success:</u> Complete NSF ADVANCE proposal

Following the above activities, a team of faculty, administrators and staff will work together on an ADVANCE PAID or IT proposal. This will use all the data collected in the project to locate the specific areas in which the institution needs improvement, to develop plans to make significant changes in those areas, and to develop an implementation plan for the success of those plans. The WAUI Leadership Team will coordinate the development of the grant proposal for submission.

F.   Management Plan

F-1.   WAUI Leadership Team and Supporting Structure

WAUI Leadership Team: The WAUI Leadership Team is the oversight committee for the project. It will coordinate the work of all the subcommittees, do formative evaluations on the progress of the work, make sure the project is on time relative to the timetable proposed, and report on a regular basis to the Advisory Board. The WAUI Leadership Team includes:

Principal Investigator: Dr. Samantha Langley-Turnbaugh, Associate Vice President for Research, Scholarship and Creative Activity, and Professor of Environmental Science (10%). Dr. Langley-Turnbaugh will have primary responsibility for the project including leadership of faculty and institutional administrative support personnel.
Co-PI: Dr. Joyce Gibson, Dean of the Lewiston-Auburn College (5%). Dr. Gibson's responsibility is to liaison with the departments and faculty at Lewiston-Auburn, and to ensure collection of required data and dissemination of information to the faculty.
Co-PI: Dr. Andrew Anderson, Dean of CSTH (5%). Dr. Anderson's responsibility is to liaison with the STEM departments and faculty, and to ensure collection of required data and dissemination of information to the faculty.
Co-PI: Dr. Dahlia Lynn, Associate Provost for Academic Affairs (5%). Dr. Lynn will coordinate the development, implementation and data analysis of all surveys using social sciences methodology.

Dr. Langley-Turnbaugh will be assisted by two graduate students who will work on data analysis and evaluation, provide clerical support for the program, develop literature reviews, and coordinate materials for the subcommittees.

Our goal in the management plan for this proposal is to develop and refine an institutional infrastructure that will administer our assessment efforts and coordinate the development and implementation of the institutional transformation plan. Large shifts in faculty demographics, active "bottom up" cross-institutional groups, and "top down" institution-wide interests all combine to create a window of opportunity for comprehensive assessment and institutional transformation at USM. It is within this specific framework that WAUI will operate as the structural key to our efforts at assessing the situation of women STEM and Social Sciences faculty and readying USM for systemic change.

The WAUI will be housed within the *Office of the Provost*, placing it at the center of the institution (see Provost's letter of support). The WAUI Leadership Team (the PI and Co-PIs of this proposal) will take the lead in executing the proposed assessment plans and will coordinate existing climate-related initiatives. In order to ensure cooperation and buy-in at all levels of the institution, the Provost will chair the Advisory Board (see below) and appoint working committees. The administrative structure of WAUI includes:

(a) An *Advisory Board,* chaired by the Provost, will meet frequently with the WAUI Leadership Team throughout the project to disseminate information on assessment initiatives, assist in collection of relevant department and college data and survey implementation, resolve project issues, and assist in the development of and campus-wide buy-in of the Institutional Transformation Plan. Members of the Advisory Board include:

- Dr. John Wright, Provost and Vice President for Academic Affairs.
- Dr. Lynn Kuzma, Dean of the College of Arts, Humanities and Social Sciences.
- Dr. Cristi Carson, Director, Office of Institutional Research and Assessment.
- Daryl McIlwain, Director, Office of Equity & Compliance.
- Dr. Wendy Chapkis, Director of Women and Gender Studies and Professor of Women and Gender Studies and Sociology.
- STEM and Social Sciences department chairs.
- Kathleen Greenleaf, Chief Operating Officer.
- Judy Ryan, Vice President of Human Resources.

- President of the Faculty Senate.
- Dr. Ed Collum, Associate Professor of Sociology and USM President, Associated Faculties of the Universities of Maine (AFUM).

(b) An *Assessment Resource Group* that will work closely with the WAUI Leadership Team to design and execute proposed assessment activities. This group is responsible for collecting and analyzing all the data from a variety of sources at USM and will also be responsible for benchmarking this data against that of other institutions. Members of the Assessment Resource Group include:

- Dr. Dahlia Lynn, Associate Provost for Academic Affairs.
- Dr. Cristi Carson, Director, Office of Institutional Research and Assessment.
- Dr. Wendy Chapkis, Director of Women and Gender Studies, Professor of Women and Gender Studies and Sociology.
- Joan Boggis, Human Resources Specialist for Academic Affairs.
- Gabriel Demaine, Coordinator for Diversity & Inclusivity Programming.

(c) *Working Committees* - Three university-wide working committees will be created and appointed by the Provost: (a) Recruitment and Hiring Practices, (b) Retention, Promotion & Tenure Practices, and (c) Work-Family Life Practices. These committees will review the current institutional policies and practices that directly or indirectly impact women faculty (especially faculty from historically underrepresented groups) at USM. Committee members will represent faculty administrators, and both senior and junior faculty. The WAUI Leadership Team will coordinate the gathering of information from these committees.

Figure 1. Proposed Administrative Structure of the Women ADVANCE at USM Initiative
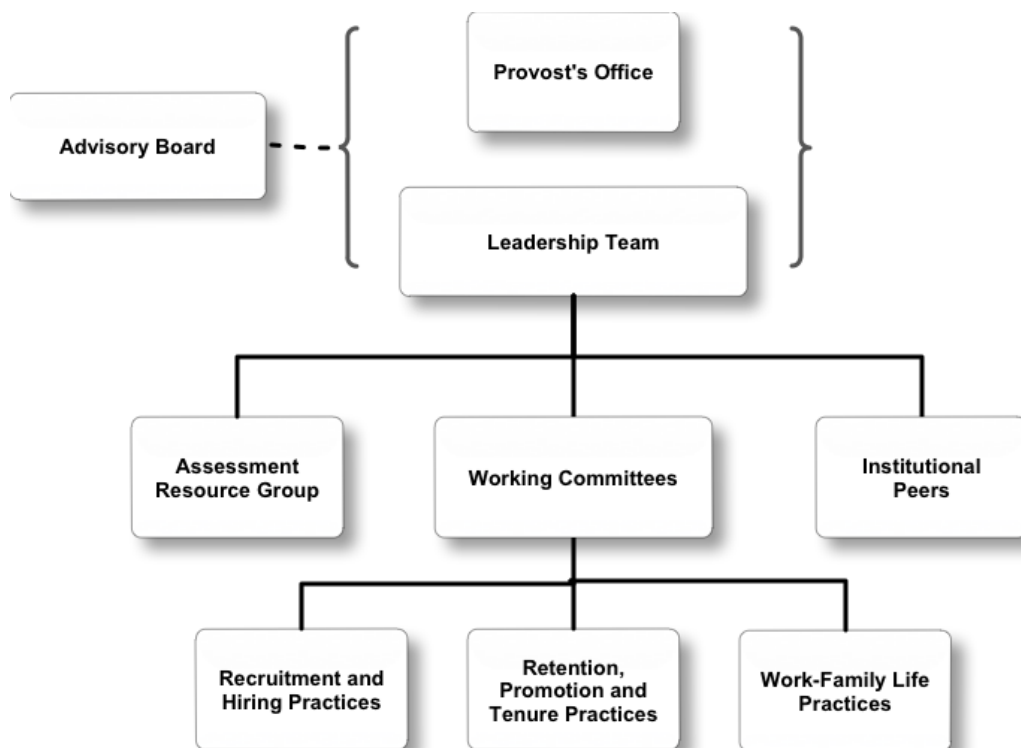
A web site will be developed to synthesize WAUI initiatives on campus that support STEM and Social Sciences women and to enable communication with relevant constituents. The USM Blackboard system will be used to enable chat groups and online discussions, as appropriate. The WAUI Leadership Team will meet weekly to discuss project progress.

F-2.   Timeline

The proposed project is designed to take place over 24 months. We have charted our proposed schedule of activities below. We have planned our activities so that we begin by gathering a wide breadth of information from our on-line survey. These data will then be used to structure the focus group discussions and town hall meetings. Throughout this initiative, we will be working on gathering data on institutional trends. Additionally, at the start of the grant, the WAUI Leadership Team members will make site visits to the institutional mentors. The following spring, representatives from these institutions will visit our campus to consult with us on our findings. Finally, we have planned for a comparative summit meeting with UMaine, to share information and explore the possibility of a partnership with the institutional mentors, which would lead to a NSF ADVANCE PAID or IT proposal.

Table 9: Project Timeline by Objective

Activities	Year 1			Year 2			
	Summer 2012	Fall 2012	Spring 2013	Summer 2013	Fall 2013	Spring 2014	June 2014
Objective 1: Assess the current status of USM women faculty							
Develop USM ADVANCE website	■						
Assessment of Institutional Trends		■	■				
Assessment of Policies and Procedures			■				
Assessment of the Academic Climate							
Develop and deploy on-line climate survey		■	■				
Focus Groups			■	■			
Town Hall Meetings			■				
Analysis of Data		■	■				
Objective 2: Establish institutional peer and mentor relationships with existing ADVANCE institutions							
Site visits to Peer institutions	■						
Site visits by Peer/Mentor Institutions					■		
Objective 3: Develop the institutional transformation plan							
Draft initial Plan				■	■		
Presentations of results to campus constituents					■	■	
Town Hall Meetings					■	■	
Symposia		■	■				
Finalize plan						■	
Objective 4: Develop an ADVANCE PAID or IT proposal							
Write PAID or IT Proposal							■

G.   Project Evaluation

Project evaluation will be ongoing and will include formative and summative components. The purpose of the evaluation is to document the project's progress toward its stated goals and objectives and to measure the success of the self-assessment activities. Key evaluation questions are:

- Are project activities implemented as planned?
- Are the self-assessment methods sound and rigorous and are its findings valid and reliable?
- What is the impact of the project on key USM stakeholders' awareness of the underrepresentation of female STEM and Social Sciences faculty and factors responsible for it?
- What is the impact of the project on key USM stakeholders' commitment to institutionalizing changes designed to increase the representation of female STEM and Social Sciences faculty?

Dr. Babette Moeller from the Education Development Center will serve as the external evaluator. Dr. Moeller brings more than 25 years of experience conducting evaluation research in education.

To determine the progress that the project is making towards its goals, the external evaluator will review project activities and reports to determine if activities are consistent with the project's goals and objectives, are of high quality, and are on schedule. The evaluator will also review the design of the self-assessment, instruments, data analysis plans, and draft reports. These reviews will address both the strengths and weaknesses of the proposed approach, offer constructive suggestions and recommendations for improvement, and proceed iteratively until project staff and the evaluator are in agreement that the final products are both substantively appropriate and meet high standards of methodological rigor. Emerging findings from the formative evaluation will be reviewed frequently by the project team and the external evaluator, and used to inform the iterative refinement of project activities.

To document the impact of the self-assessment activities, the external evaluator will conduct interviews with samples of key stakeholders at USM, including university leaders, and faculty and deans from different STEM departments. The interviews will be conducted in Year 2 of the project. Interview questions will probe for stakeholders' awareness of the results of the self-assessment study, their buy-in to the Women ADVANCE at USM Initiative, their commitment to the institutional transformation plan, and their participation in its implementation. The interviews will be tape-recorded and transcribed. Answers to interview questions will be coded and quantified wherever possible. The findings from the interviews will be summarized separately for different stakeholder groups (faculty, deans, university leaders; faculty and deans from different departments), and similarities and differences between stakeholder groups will be identified.

H.   Results from Prior NSF Support

Dr. Samantha Langley-Turnbaugh is the PI on Cooperative Agreements HRD-0333316 (10/01/03-9/30/08) and HRD–0833567 (10/01/08-9/30/13) for the Eastern Alliance in Science, Technology, Engineering and Mathematics for Students with Disabilities [EAST and EAST-2, respectively, hereby referred to as EAST]. Under the direction of Dr. Langley-Turnbaugh, EAST has established itself as an organization that serves to fulfill a common vision to increase the number and quality of students with disabilities (SWD) receiving undergraduate degrees in Science, Technology, Engineering and Mathematics (STEM) and ultimately entering STEM disciplines by involving students, transforming the academic and professional environments in which they function, and catalyzing STEM activities in Maine. EAST has established partnerships and practices that are proven to support success in STEM education and research for SWD.

EAST has designed a model that includes the creation of a pipeline of supports and services for high school and college students with disabilities as they successfully negotiate critical transitions. The EAST pipeline focuses on undergraduate STEM research experiences and the development of capacity within high schools, community colleges, and universities to fully support students with disabilities. It has developed and employed evidence-based practices that have helped to increase the quality and quantity of students with disabilities who enroll and persist in post-secondary STEM programs and complete STEM degrees at USM, and partnering community colleges. Through professional development for teachers and faculty EAST has made an impact on the participating high schools and institutes of higher education. EAST has also learned a great deal about the effective implementation of support strategies and practices and is now poised to work on their institutionalization and the dissemination of research findings during years 4 and 5 of the cooperative agreement. Rigorous external evaluation has shown that EAST has been successful in increasing the quality and quantity of students with disabilities who enroll and persist in post-secondary STEM programs and complete STEM degrees at USM, and the collaborating community colleges. With proper support SWD can excel in STEM majors. Therefore, this team collaboration is well suited to increase the STEM interest and success for a broad and inclusive student population.

The number of students receiving disability services enrolled in STEM programs has increased 31% over baseline for EAST. Students with disabilities who participate in EAST activities are less likely to transfer

out of their 4- year college program or to drop out than the national population of students with disabilities. EAST activities for students (undergraduate research fellowships/internships, learning community seminars, high school STEM institutes, college transition sessions) and teachers and faculty (professional development) are highly valued by participants and are successful in helping them achieve the desired learning outcomes. So far, our preliminary analysis suggests that compared to local and national comparison groups, postsecondary EAST pipeline students are pursuing STEM majors at a higher rate; they are doing well academically, and they persist and are on track to graduation. For example, t*he retention rate for students who participate in the EAST STEM Learning Seminar is 91% and 97% of the EAST Undergraduate Research fellows are either on track to complete their BS in a STEM degree, pursuing a MS or PhD in a STEM field, or are STEM employed*. Students with disabilities who participate in multiple EAST activities and are taking advantage of the pipeline of supports are more likely to be enrolled in STEM and have higher grades than students who participate in isolated EAST activities.