



Model Institutions for Excellence



MIE FACT BOOK 2002

PART I: MIE Overall Progress Report

PART II: MIE Institutions' Key Indicator Reports

July 2003

Rev. July 2004

MIE Program Funded by:
National Science Foundation and
National Aeronautics and Space Administration



Systemic Research, Inc.

MODEL INSTITUTIONS FOR EXCELLENCE

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Based on the MIE Self-Evaluation Template (MSET-2002)

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"Evaluation Study of Model Institutions for Excellence [MIE] Based on MIE Self-Evaluation Template [MSET]"



MIE FACT BOOK 2002

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Reference Web Site: www.systemic.com/mie

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About Model Institutions for Excellence

The Model Institutions for Excellence (MIE) program is a long-term groundbreaking initiative designed to empower universities to serve as models to improve the quantity and quality of our nation's science, technology, engineering, and mathematics (STEM) graduates. Funded by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA), MIE's goal is to strengthen the infrastructure of higher education institutions in STEM education and undergraduate research, and to increase the number of students who pursue advanced STEM degrees. Included among the MIE goals are:

- To provide opportunities to define methods for improving selected higher education institutions in STEM education and undergraduate research
- To target a small number of institutions poised to make a substantial contribution to the goal of increasing the number of underrepresented students who earn STEM baccalaureate degrees and go on to enter graduate-level STEM degree programs or STEM-related careers
- To strengthen institutions that will serve as models for the successful recruitment, education and production of quality-trained STEM baccalaureate degree recipients

In 1995, NSF and NASA selected six MIE institutions with track records of educating students who have been historically underrepresented in STEM fields. These institutions are: Bowie State University, Spelman College, Universidad Metropolitana, The University of Texas at El Paso, Xavier University of

Louisiana, and the Oyate Consortium. From the plains of South Dakota to the inner cities of the Mid-Atlantic States to the island of Puerto Rico, the MIE institutions reflect the unique cultural composition of our society that enriches and invigorates us.

The MIE schools concentrate on the recruitment and retention of STEM students, counseling, academic enrichment, encouragement of students to attend graduate school, and enhancing the education of their students. NSF expects these institutions to become successful models of high-quality STEM education that can be replicated at other colleges and universities nationwide. In brief,

- MIE is an opportunity for institutions to improve the quality of their STEM education and undergraduate research
- MIE promotes overall institutional progress while emphasizing the development of STEM department and programs
- MIE institutions are expected to be student-centered, accountable and performance driven, and have high expectations and retention rates
- MIE institutions seek to significantly increase the number of STEM baccalaureate degrees they award, and the percentage of their STEM graduates enrolling in graduate school

MIE seeks to disseminate information about successful STEM programs and envisions replicating them in institutions throughout America





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MIE Self-Evaluation Template (MSET) Phase II

The MIE Self-Evaluation Template (MSET) has been designed, developed, and implemented according to the "Conceptual and Operational Framework for MIE Evaluation Design" defined in the NSF contract awarded to Systemic Research, Inc. (HRD-9731966). The MSET design principles are:

- To provide "self-assessment" or "self-study" guidelines to assist the MIE institutions in developing internal assessment plans that correlate with the process and outcome indicators defined by NSF.
- To provide formative as well as summative, and both qualitative and quantitative evaluation guidelines that span the implementation stages and the specific program outcomes.
- To provide a self-contained, modular program package adaptable to individual institutions and reusable for the entire project period.

Since 1995, MSET has been extensively used in MIE institutions for annual progress data monitoring, compiling, and reporting. The current MSET database contains up to ten years of longitudinal progress data focusing on key indicators relevant to improvement of STEM education in each institution, as well as the MIE program collectively. MIE Fact Books have been published each year as formative indicator reports in two volumes.

For Phase II of the MIE program, MSET was substantially streamlined and simplified based on feedback and self-study of key indicators during 2001. MSET 2002 consists of Part A (Quantitative Indicators) and

Part B (Qualitative Indicators) composed of eight sections as follows:

1. Institution and MIE Profile
2. Budget Profile
3. Academic Resources Profile
4. Student Enrollment and Degrees Conferred
5. Student MIE Activity Summary
6. Faculty Demographics
7. STEM Faculty Activities
8. STEM Department Profiles and Progress

Microsoft Excel[®] - based Part A (Quantitative) contains multiple worksheets in a single workbook, while the web-based Part B (Qualitative) contains 21 descriptive questions relevant to critical key indicators across all six MIE institutions. MSET has been customized for each MIE institution while maintaining a uniform database structure.

MIE Fact Book 2002

MIE Fact Book has been published each year as formative indicator reports in two parts: Part I- MIE Overall Progress Report and Part II- MIE Institutions' Key Indicator Report. The 2002 Fact Book has been updated to include data up to AY 2001-02. MIE Fact Book Part II presents each institution's progress with 12 key indicators.

	Institution Profile in Brief
	MIE Objectives/Goals
	STEM Degrees
	MIE Profile
Key Indicator 1	Undergraduate STEM Student Enrollment Trends
Key Indicator 2	Undergraduate STEM Student Enrollment Trends by STEM Major
Key Indicator 3	Undergraduate STEM Student Degrees Conferred Trends
Key Indicator 4	Undergraduate STEM Students' Retention Rate Trends
Key Indicator 5	STEM Student Activities and Achievements
Key Indicator 6	Students Advanced to Graduate Programs or STEM Careers Trends
Key Indicator 7	Faculty Demographic Trends
Key Indicator 8	Faculty Research and Activities
Key Indicator 9	Collaborative and Pre-College Activities
Key Indicator 10	Research and Computing Resources
Key Indicator 11	Major Academic Events
Key Indicator 12	Major MIE Activities



Model Institutions for Excellence (MIE)



MIE Program Funded by:
National Science Foundation
National Aeronautics and Space Administration





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MIE Fact Book 2002 Highlights

MIE Fact Book Part I presents overall program progress and Fact Book Part II presents individual MIE institutions' progress from baseline year (AY 1994-95) to AY 2001-02 based on the Model Institutions for Excellence (MIE) Self-Evaluation Template (MSET).

Part II overall progress report includes eight MIE institutions:

- Bowie State University
- Oyate Consortium
 - Oglala Lakota College
 - Sinte Gleska University (no data was available, therefore SGU is not included in the overall Fact Book)
 - Sisseton Wahpeton College
 - Sitting Bull College
- Spelman College
- Universidad Metropolitana
- The University of Texas at El Paso
- Xavier University of Louisiana

These highlights briefly summarize overall progress focusing on the following five key indicators relevant to MIE goals and objectives:

- Undergraduate Total and STEM Student Enrollment Trends
- STEM Bachelors' Degrees Conferred Trends
- Undergraduate STEM Retention Rate Trends
- Faculty Demographic Trends
- Comparison of MIE Enrollment and Degrees Conferred to Nationwide Trends

Undergraduate STEM Student Enrollment Trends

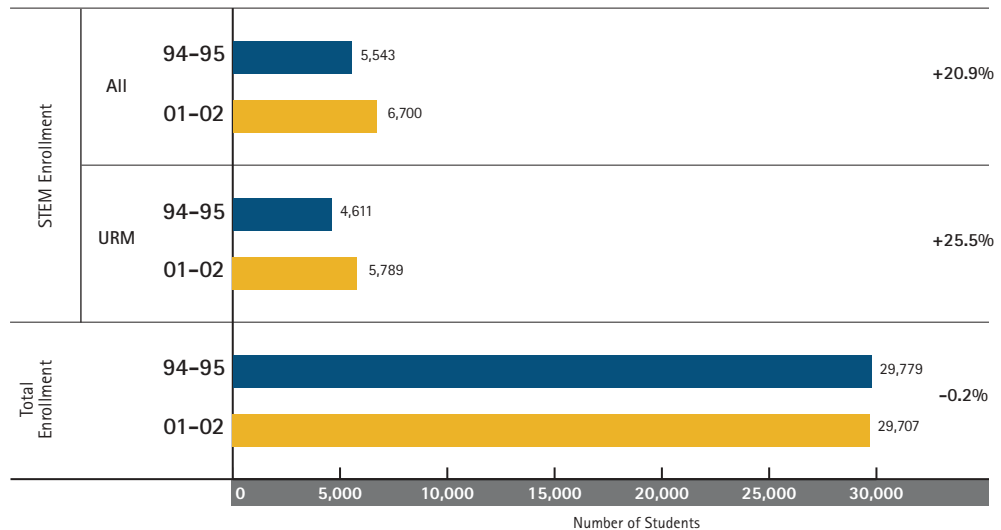
STEM enrollment increased (20.9%) as total enrollment experienced a slight decrease (0.2%). STEM underrepresented minority student (URM) enrollment increased (25.5%), more than overall student STEM.

STEM student enrollment increased 20.9% from 5,543 to 6,700 students compared to a total undergraduate student enrollment decrease of 0.2%

from the baseline year (1994-95) to 2001-02; (Figure 1). The 25.5% increase in underrepresented minority STEM students from 4,611 to 5,789 is even more encouraging. These increases are largely attributable to the growth in underrepresented minority STEM student enrollment at Bowie State University and Universidad Metropolitana of 129% and 127% respectively. Oglala Lakota College and Sitting Bull initiated their STEM programs in 1996-97 and enrolled 93 students in 2001-02.

In 2001-02 there were 29,707 undergraduate students enrolled in the eight MIE institutions with

Figure 1
Undergraduate Total and STEM Student Enrollment Change from AY 1994-95 to 2001-02



URM: Underrepresented Minority includes African American, Asian/Pacific Islander, Hispanic and Native American.

Bowie State University, Oglala Lakota College, Spelman College, Sisseton Wahpeton College, Universidad Metropolitana, The University of Texas at El Paso, and Xavier University of Louisiana.



available data. Science, Technology, Engineering, and Mathematics (STEM) majors comprised 23% (6,700) of the student body. On average, STEM enrollment was 838, with a range of 2,914 at The University of Texas at El Paso to 15 at Sitting Bull College.

Females comprised 63% of the total STEM student enrollment in the program. The all woman student

body at Spelman College contributed substantially to the female majority in STEM enrollment.

In 2001-02, African American students were the most widely represented racial/ethnic group in the eight MIE institutions, comprising 45% of the STEM undergraduate population. The second largest ethnic group was Hispanic students at 39%.

STEM Bachelors' Degrees Conferred Trends

The increase in number of STEM Bachelor's degrees conferred to underrepresented minority students outperforms their peers (46.8% vs. 35.7%).

The total number of undergraduate STEM degrees conferred in eight MIE institutions (Figure 3) increased 35.7% from 602 in the baseline year

Figure 2
Demographics, AY 2001-02
Gender

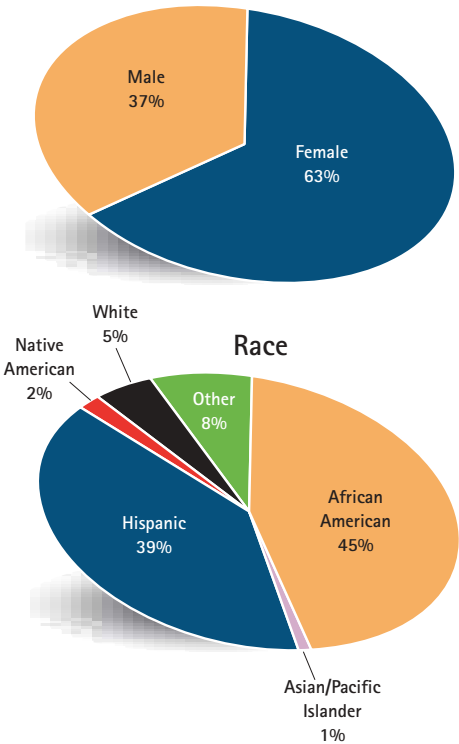
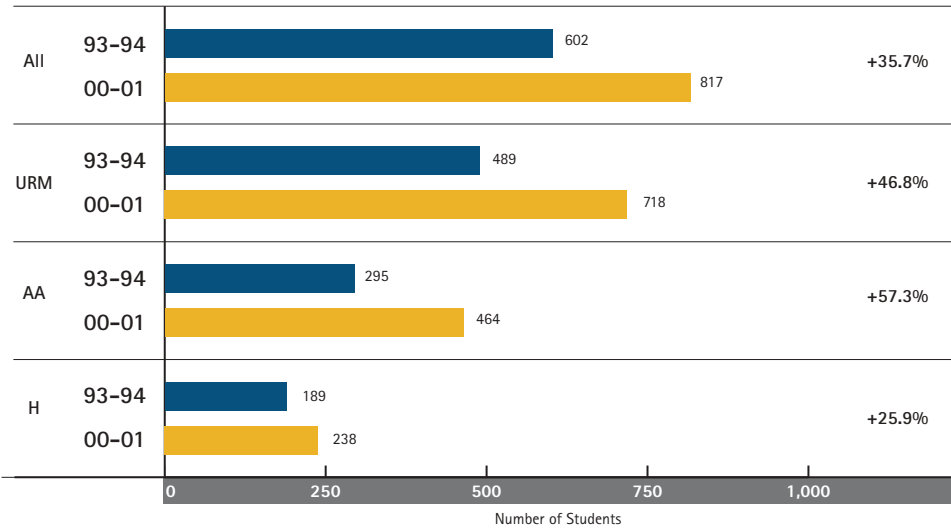


Figure 3
STEM Bachelor Degrees Conferred
Change from AY 1993-94 to 2000-01



- URM: Underrepresented Minority includes African American, Asian/Pacific Islander, Hispanic and Native American.
- AA: African American H: Hispanic
- Bowie State University, Oglala Lakota College, Spelman College, Sisseton Wahpeton College, Universidad Metropolitana, The University of Texas at El Paso, and Xavier University of Louisiana.





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(1993-94) to 817 in 2000-01. Underrepresented minority students earned 88% (718) of the total STEM Bachelor's degrees in 2000-01. This was an increase of 46.8% from the 489 degrees conferred in 1993-94. The 136% increase in number of STEM degrees conferred by Bowie State University was the largest among all MIE institutions. Spelman College was the only institution to experience a decline in the number of STEM degrees conferred (-13%, 119 to 103) during this period.

Among MIE students, African Americans and Hispanics experienced the greatest increases in the number of degrees earned at rates of 57% and 39%, respectively.

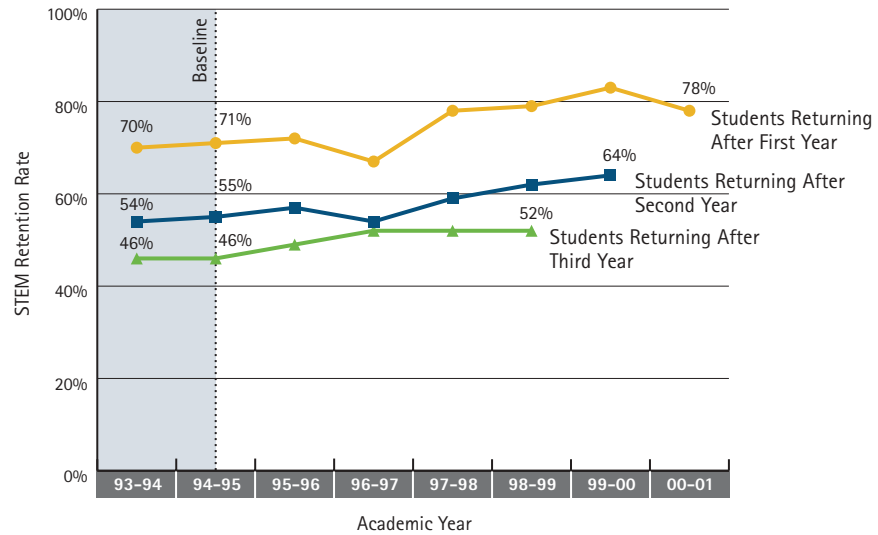
In 2000-01, female students earned 63% of all the STEM degrees conferred. This represents a 48% increase overall from 346 in the baseline year to 511 in 2000-01, despite the decrease in STEM degrees awarded in the all-women Spelman College in 2000-01.

Undergraduate STEM Retention Rate Trends

The average retention rate has improved slightly from 1993-94 to 2000-01

Figure 4 presents the undergraduate STEM retention rates for the seven MIE institutions with available data - Bowie State University, Oglala Lakota College, Sitting Bull College, Spelman College, Universidad Metropolitana, The University of Texas at El Paso, and Xavier University of Louisiana. The cohorts were

Figure 4
Non-Weighted Retention Rates



Percentage Returning After	Cohort Year (year Freshman Class entered)							
	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01
1st Year	70%	71%	72%	67%	78%	79%	83%	78%
2nd Year	54%	55%	57%	54%	59%	62%	64%	
3rd Year	46%	46%	49%	52%	52%	52%		
4th Year	20%	18%	27%	25%	25%			
5th Year	12%	11%	16%	12%				
6th Year	7%	7%	9%	0%				

Non-weighted retention rate average of Bowie State University, Oglala Lakota College, Sitting Bull College, Spelman College, Universidad Metropolitana, The University of Texas at El Paso, and Xavier University of Louisiana.



identified by the first year that the students are enrolled- Cohort Year. Beginning with the freshman class of 1993-94, retention rates were calculated as the percentage of students returning each succeeding year from the previous year's class.

The non-weighted average retention rates are derived by averaging the percentage of returning students per institution per cohort per year. First year retention rates increased by eight percentage points from 70% in 1993-94 to 78% in 2000-01, second year rates increased ten percentage points between 1993-94 and 1999-00 from 54% to 64% and returning after third year retention rates increased six percentage points between 1993-94 and 1998-99 from 46% to 52%. Retention rates fell following the fourth and succeeding years due to student graduation from four-year degree programs. Some programs at Bowie State University, The University of Texas at El Paso, and Xavier University of Louisiana are designed as six-year programs.

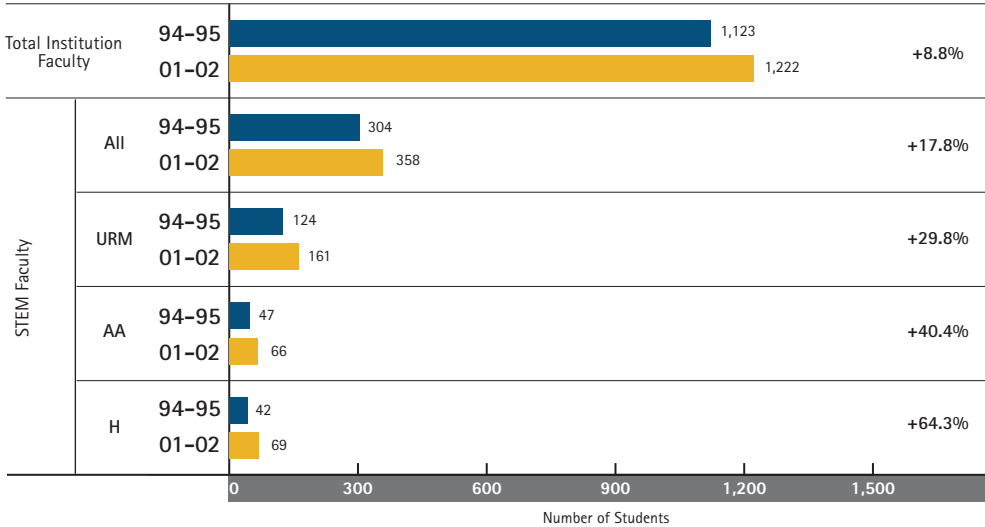
Faculty Demographic Trends

The number of STEM faculty, especially underrepresented minority members, has increased at a faster pace than the faculty as a whole.

There were a total of 2,367 full and part time faculty members in the eight MIE institutions with available data in 2001-02: 53% full-time and 47% part time. Five hundred nine of the 2,367 were in STEM departments, representing 22% of the total faculty.

Longitudinal data on faculty was available for seven institutions. As shown in Figure 5, the percentage of

Figure 5
**Full-time Total and STEM Faculty (Seven Institutions)
Change from AY 1994-95 to 2001-02**



- URM: Underrepresented Minority includes African American, Asian/Pacific Islander, Hispanic and Native American.
- AA: African American H: Hispanic
- Bowie State University, Oglala Lakota College, Spelman College, Sitting Bull College, Universidad Metropolitana, The University of Texas at El Paso, and Xavier University of Louisiana.

full time STEM faculty in the MIE institutions grew at a rate of 17.8% from 304 to 358 in 2001-02 compared to a 8.8 % increase in total faculty from 1,123. The number of underrepresented minority STEM faculty members rose 29.8% from 124 to 161 during the same time period.

STEM faculty demographics now more closely reflect those of the students they teach. The number of Hispanic faculty members has increased 64.3% from 42 to 69 between 1994-95 and 2001-02, while the

number of African American faculty members increased 40.4% from 47 to 66 in the same time period.

The percentage of total STEM faculty members holding Doctoral and Master's degrees in the MIE institutions in 2001-02 is 70% and 25% respectively.





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Comparison of MIE Enrollment and Degrees Conferred to Nationwide Trends

MIE institutions graduation trends are slightly above the national average in most areas.

According to the most up-to-date national undergraduate total enrollment data available (Table 1) from 1994-95 to 1999-00 nation-wide undergraduate enrollment increased by 3.4%. During this period, enrollment at MIE institutions declined by 6.9% overall, while STEM enrollment increased by 16.3%. By 2001-02, total MIE institution undergraduate enrollment decreased 0.2% below baseline levels (from 29,779 to 29,707), while STEM enrollment improved by 20.9% (from 5,543 to 6,700).

African American undergraduate STEM enrollment increased by 11.6% nationally from 1994-95 to 1999-00 compared to an increase of 24.6% from 1994-95 to 1999-00 by MIE institutions. By 2001-02 African American STEM enrollment had increased by 29.1% in MIE institutions. Nationally, Hispanic enrollments increased 25.2% between 1994-95 and 1999-00. Over this period Hispanic STEM enrollment at the MIE institutions increased by 14.5%, and by 2001-02 STEM enrollment increases surpassed the national trend by improving 19.4% over baseline.

The graduation trends of the MIE institutions outpaced the national average in most areas. In 1999-00, the number of STEM Bachelor's degrees earned in the MIE institutions increased by 15.8% over baseline (1993-94) from 602 to 697, compared to an improvement of 13.0% nationally. By 2000-01 the numbers of Bachelor's degrees conferred in STEM majors increased by 35.7% in MIE institutions (Table 2).

Table 1
Percentage Change in Student Enrollment: AY 1994-95 to AY 1999-00

		AY 1994-95	AY 1999-00	AY 2001-02	% change from 1994-95 to 1999-00	% change from 1994-95 to 2001-02	
Undergraduate Fall Enrollment	Total	MIE STEM Majors	5,543	6,449	6,700	+16.3%	+20.9%
		MIE Institutions	29,779	27,731	29,707	-6.9%	-0.2%
		Nationwide ¹	12,262,600	12,681,200	m	+3.4%	n.a.
	African American	MIE STEM Majors	2,305	2,873	2,976	+24.8%	+29.2%
		MIE Institutions ²	6,392	8,100	8,400	+26.7%	+31.4%
		Nationwide	1,317,300	1,470,500	m	+11.6%	n.a.
	Hispanic	MIE STEM Majors	2,180	2,497	2,603	+14.5%	+19.4%
		MIE Institutions ²	16,363	14,468	15,795	-11.6%	-3.5%
		Nationwide	968,300	1,212,300	m	+25.2%	n.a.
	American Indian/ Alaskan Native	MIE STEM Majors	15	116	131	+671.1%	+773.3%
		MIE Institutions ²	1,295	1,195	1,308	-7.8%	+1.0%
		Nationwide	117,400	133,300	m	+13.5%	n.a.
	Male	MIE STEM Majors	2,636	2,980	3,211	+13.1%	+21.8%
		MIE Institutions	11,191	10,277	10,869	-8.2%	-2.9%
	Female	MIE STEM Majors	2,907	3,469	3,489	+19.4%	+20.0%
		MIE Institutions	18,588	17,454	18,838	-6.1%	+1.3%

Table 2
STEM Bachelors' Degrees Earned by Race/Ethnicity

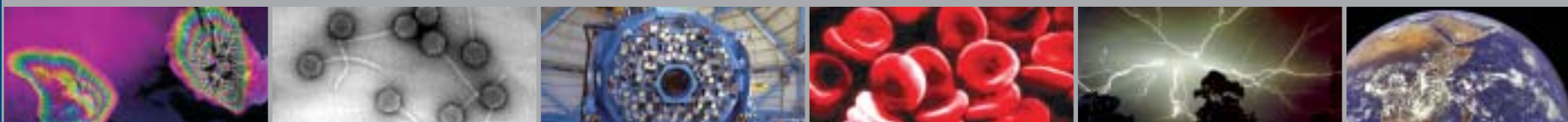
			AY 1993-94	AY 1999-00	AY 2000-01	% change from 1993-94 to 1999-00	% change from 1993-94 to 2000-01
Earned STEM Bachelor's Degrees	Total	MIE	602	697	817	+15.8%	+35.7%
		Nationwide	185,754	209,909	m	+13.0%	m
	African American	MIE	295	368	464	+24.7%	+57.3%
		Nationwide	10,218	13,696	m	+34.0%	m
	Hispanic	MIE	189	206	238	+9.0%	+25.9%
		Nationwide	8,791	12,830	m	+45.9%	m
	American Indian / Alaskan Native	MIE	0	15	10	n.a.	n.a.
		Nationwide	793	1,243	m	+56.7%	m

In 1999-00, the number of STEM degrees awarded to African American students by MIE institutions improved by 24.7% over baseline compared to 34% nationally. By 2000-01, gains in STEM degrees awarded to Black students by the MIE increased 57.3% over baseline. Baccalaureate awards to Hispanic students exhibited a similar trend. Those

awarded degrees in MIE STEM majors increased 9% from baseline to 1999-00 compared to the national Hispanic average gain of 45.9%. By 2000-01, the increase in the number of bachelor's degrees earned by Hispanic students increased 25.9% from 1993-94 to 2000-01.



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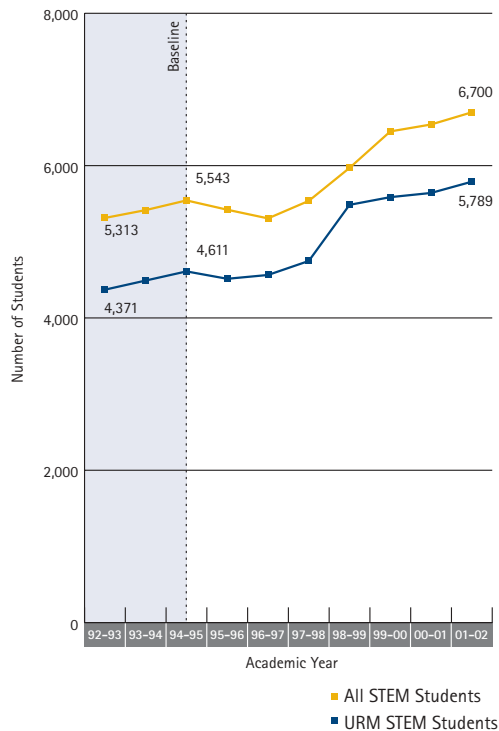


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INDICATOR 1.A: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2001-02

Figure 1a
Undergraduate STEM Student Enrollment:
All Students Compared to URM Students



Undergraduate STEM Student Enrollment (Full and Part-Time) ¹

	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00 ²	00-01 ²	01-02	% change
All STEM Students	5,313	5,416	5,543	5,421	5,307	5,537	5,970	6,449	6,540	6,700	+21%
URM ³ STEM Students ²	4,371	4,491	4,611	4,574	4,504	4,748	5,186	5,586	5,641	5,789	+26%
Percentage URM	82%	83%	83%	84%	85%	86%	87%	87%	86%	86%	+3pp

Institution Total Undergraduate Student Enrollment (Full and Part-Time)

	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	29,954	29,414	29,779	28,352	27,032	26,212	27,244	27,731	28,736	29,707	-0.24%

Notes

- ¹ Data included from eight MIE institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU: OLC and SBC instituted their STEM program in AY 1996-97.
- ² BSU data imputed.
- ³ URM: Underrepresented Minorities includes African American, Asian or Pacific Islander, Hispanic, and Native American

Highlights

Change in undergraduate STEM student enrollment from AY 1994-95 to AY 2001-02:

- All STEM Students (from 5,543 to 6,700 students) +21%
- URM STEM Students (from 4,611 to 5,789 students) +26%
- Percentage URM Enrollment (from 83% to 86%) +3pp

The STEM enrollment increases are noteworthy, especially considering the slight decrease in overall enrollment.

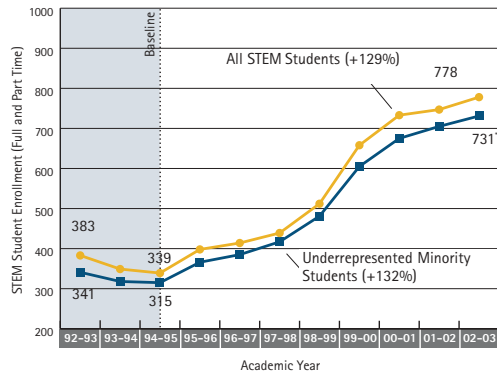




MIE Overall Progress Report

INDICATOR 1.B: Undergraduate STEM Student Enrollment Trends by Institution: AY 1992-93 to 2001-02 (Data for BSU, SWC and XU available through AY 2002-03)

Figure 1b.1
Bowie State University



Highlights

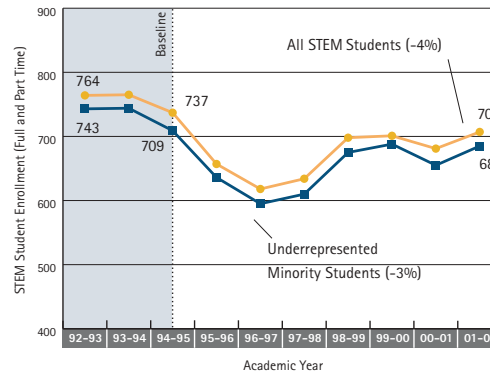
STEM student enrollment % change from baseline to AY 2002-03

- All STEM (from 339 to 778 students) +129%
- URM STEM (from 315 to 731 students) +132%

STEM enrollment grew by 129% from the baseline year of AY 1994-95 (339 students) to AY 2002-03 (778 students). Underrepresented minority students, representing about 94% of all STEM enrollees at Bowie State, grew by 132%. Much of the growth can be attributed to enrollments in the Computer Science program, which experienced a 228% increase. Growth in the Computer Science area is primarily due to the addition of the Computer Technology Program and improved visibility of the STEM programs at Bowie State University. A persistent yet focused recruitment effort at the secondary and community college levels has resulted in an increased enrollment in all of the STEM program. In AY 2001-02, over twenty-five recruitment visits were made to high schools and community colleges as well as to college fairs locally and nationally.

¹Data imputed.

Figure 1b.2
Spelman College



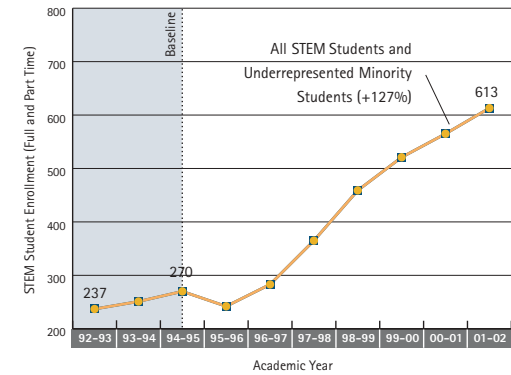
Highlights

STEM student enrollment % change from baseline to AY 2001-02

- All STEM (from 737 to 707 students) -4%
- Underrepresented Minority STEM (from 709 to 685 students) -3%

Overall institution enrollment dropped purposely to a low of 1,899 in AY 1996-97.

Figure 1b.3
Universidad Metropolitana



Highlights

STEM student enrollment % change from baseline to AY 2001-02

- All STEM (from 270 to 613 students) +127%

STEM enrollment is 100% underrepresented minority students.



INDICATOR 1.B: Undergraduate STEM Student Enrollment Trends by Institution: AY 1992-93 to 2001-02 (continued) (Data for BSU, SWC and XU available through AY 2002-03)

Figure 1b.4
The University of Texas at El Paso

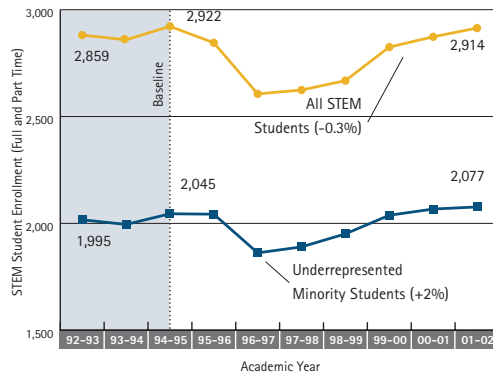
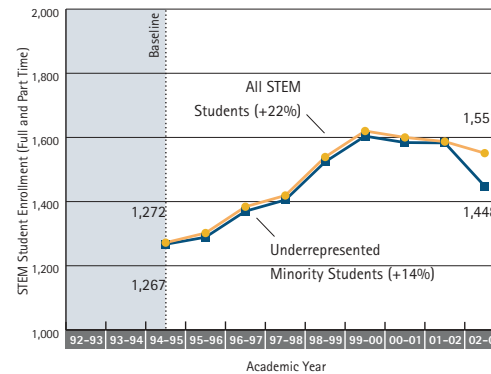


Figure 1b.5
Xavier University of Louisiana



Highlights

STEM student enrollment % change from baseline to AY 2001-02

- All STEM (from 2,922 to 2,914 students) -0.3%
- Underrepresented Minority STEM (from 2,045 to 2,077 students) +2%

STEM enrollment at UTEP has remained stable from AY 1994-95 to AY 2000-01. URM STEM enrollment has experienced a slight increase.

Enrollment in the College of Science and the College of Engineering have increased, accompanied by a decrease in Biology/Life Science and Other Sciences (see Indicator 2.B)

Highlights

STEM student enrollment % change from baseline to AY 2002-03

- All STEM (from 1,272 to 1,551 students) +22%
- Underrepresented Minority STEM (from 1,267 to 1,448 students) +14%

Student enrollment in undergraduate STEM courses increased 22% between AY 1994-95 and 2002-03. Almost 93% of all students are from an underrepresented minority group.

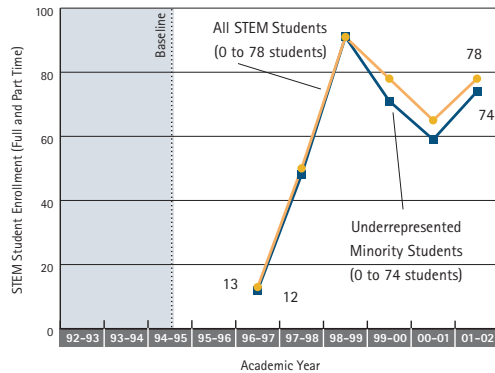




MIE Overall Progress Report

INDICATOR 1.B: Undergraduate STEM Student Enrollment Trends by Institution: AY 1992-93 to 2001-02 (continued) (Data for BSU, SWC and XU available through AY 2002-03)

Figure 1b.6
Oglala Lakota College



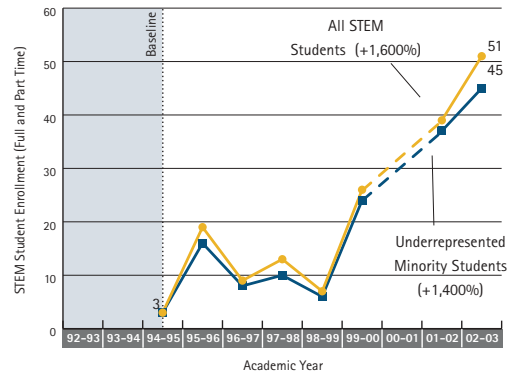
Highlights

STEM student enrollment % change from baseline to AY 2001-02

- All STEM (from 0 to 78 students)
- Underrepresented Minority STEM (from 0 to 74 students)

The first STEM program was initiated in AY 1996-97 with 13 students. Enrollment in STEM courses increased to 78 by AY 2001-02, with a peak of 91 in AY 1998-99. Ninety-five percent of STEM enrollment is by underrepresented minority students.

Figure 1b.7
Sisseton-Wahpeton College

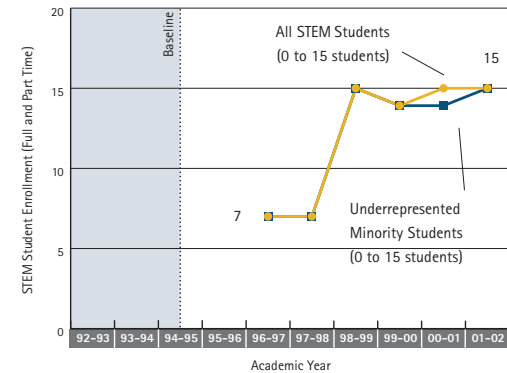


Highlights

STEM student enrollment % change from baseline to AY 2002-03

- All STEM (from 3 to 51 students) +1,600%
- Underrepresented Minority STEM (from 3 to 45 students) +1,400%

Figure 1b.8
Sitting Bull College



Highlights

STEM student enrollment % change from baseline to AY 2001-02

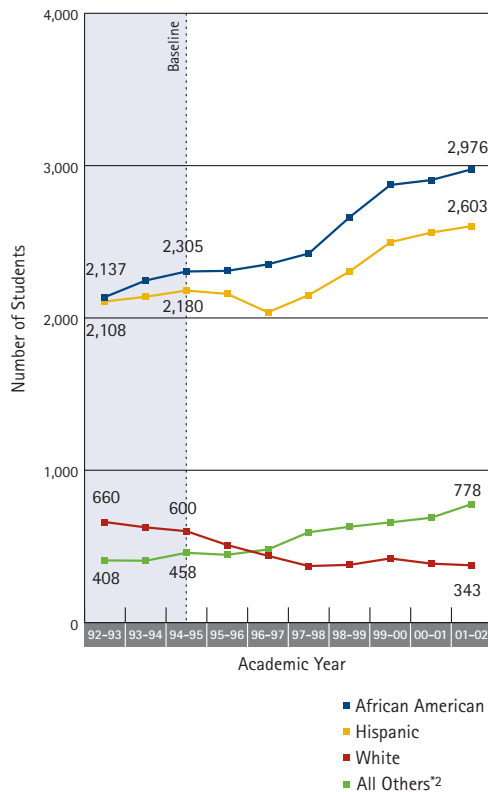
- All STEM (from 0 to 15 students)
- Underrepresented Minority STEM (from 0 to 15 students)

The number of students enrolled in STEM majors increased to 15 by 2001-02. Enrollment remained stable from 1998-99 through 2001-02 at approximately 15; all were underrepresented minority students, with the exception of one student enrolled in 2001-02.



INDICATOR 1.C: Undergraduate STEM Student Enrollment Trends by Race/Ethnicity: AY 1992-93 to 2001-02

Figure 1c
Undergraduate STEM Student Enrollment by Race/Ethnicity



Undergraduate STEM Student Total Enrollment (Full and Part-Time) ¹ ²

	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
African American	2,137	2,246	2,305	2,309	2,352	2,423	2,661	2,873	2,905	2,976	+29%
Asian or Pacific Islander	98	78	111	82	80	101	101	100	86	79	-29%
Hispanic	2,108	2,139	2,180	2,158	2,037	2,150	2,302	2,497	2,560	2,603	+19%
Native American	28	28	15	25	35	74	122	116	90	131	+773%
White	660	625	600	509	438	371	379	421	387	343	-43%
Other	282	300	332	338	365	418	406	442	512	568	+71%
Total	5,313	5,416	5,543	5,421	5,307	5,537	5,970	6,449	6,540	6,700	+21%

Notes

¹ Data included from eight MIE institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU: OLC and SBC instituted their STEM program in AY 1996-97.

² Data imputed for BSU AY 1995-96 to AY 1997-98; SWC, UTEP and XU for all years.

Highlights

Change in undergraduate STEM student enrollment from AY 1994-95 to AY 2001-02 by race/ethnicity:

- African American (from 2,305 to 2,976 students) +29%
- Asian or Pacific Islander (from 111 to 79 students) -29%
- Hispanic (from 2,180 to 2,603 students) +19%
- Native American (from 15 to 131 students) +773%
- White (from 600 to 343 students) -43%
- Other (from 332 to 568 students) +71%

From baseline to AY 2001-02, African American STEM enrollment experienced the greatest numerical increase at 671 students; the largest percentage increase was Native American students at 773%.

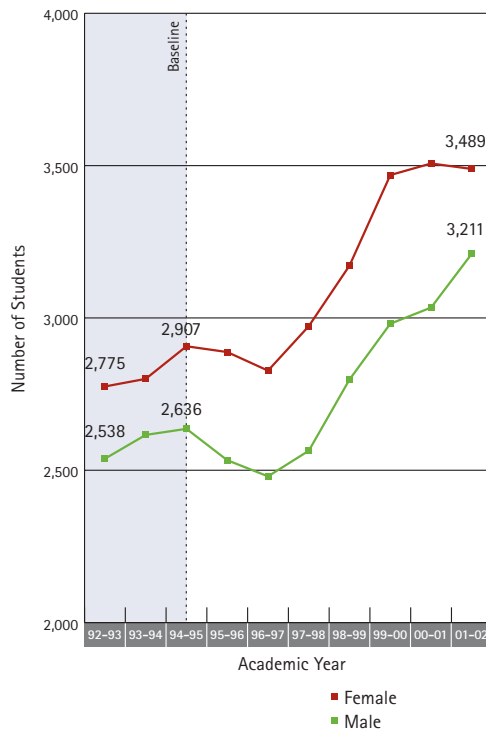




MIE Overall Progress Report

INDICATOR 1.D: Undergraduate STEM Student Enrollment Trends by Gender: AY 1992-93 to 2001-02

Figure 1d
Undergraduate STEM Student Enrollment by Gender



Undergraduate STEM Student Enrollment by Gender (Full and Part-Time) ¹

	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Female	2,775	2,800	2,907	2,888	2,827	2,973	3,172	3,469	3,507	3,489	+20%
Male	2,538	2,616	2,636	2,533	2,480	2,564	2,798	2,980	3,033	3,211	+22%
Total	5,313	5,416	5,543	5,421	5,307	5,537	5,970	6,449	6,540	6,700	+21%

Institution Total Undergraduate Student Enrollment by Gender (Full and Part-Time)

	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Female	18,433	18,105	18,588	17,765	16,896	16,436	16,924	17,454	18,079	18,838	+1%
Male	11,521	11,309	11,191	10,587	10,136	9,776	10,320	10,277	10,657	10,869	-3%
Total	29,954	29,414	29,779	28,352	27,032	26,212	27,244	27,731	28,736	29,707	-0.24%

Notes

- ¹ Data included from eight MIE institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU: OLC and SBC instituted their STEM program in AY 1996-97.
- ² SBC, UTEP and Xavier data imputed based on proportion of All and URM student totals.

Highlights

Change in undergraduate student enrollment from AY 1994-95 to AY 2001-02 by gender:

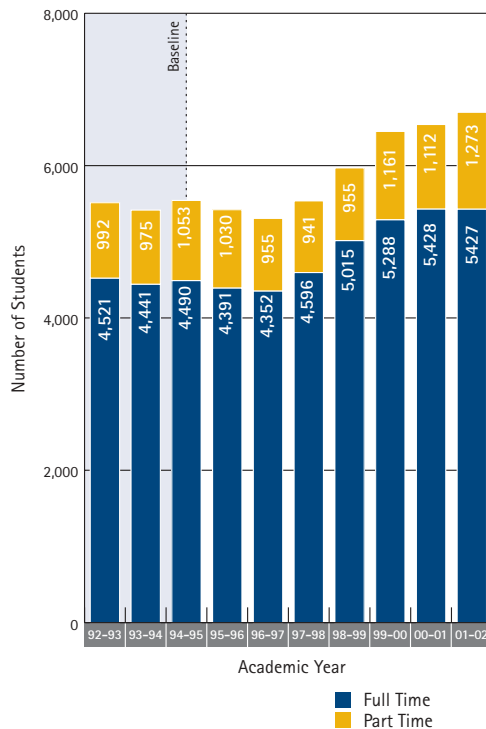
- STEM:
- Female (from 2,907 to 3,489 students) +20%
 - Male (from 2,636 to 3,211 students) +22%
- Institution:
- Female (from 18,588 to 18,838 students) +1%
 - Male (from 11,191 to 10,869 students) -3%

The STEM enrollment disparity between female and male students has been reduced as the proportion of male students has increased.



INDICATOR 1.E: Undergraduate STEM Student Enrollment Trends by Full and Part Time: AY 1992-93 to 2001-02

Figure 1e
Undergraduate STEM Student Total Enrollment by Full and Part Time



Undergraduate STEM Student Enrollment ^{1 2}

	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Full Time	4,521	4,441	4,490	4,391	4,352	4,596	5,015	5,288	5,428	5,427	+21%
Part Time	992	975	1,053	1,030	955	941	955	1,161	1,112	1,273	+21%
Total	5,513	5,416	5,543	5,421	5,307	5,537	5,970	6,449	6,540	6,700	+21%
Percent Full Time	82%	82%	81%	81%	82%	83%	84%	82%	83%	81%	no change

Notes

- ¹ Data included from seven MIE institutions: BSU, OLC, SC, SWC, UMET, UTEP and XU; OLC instituted their STEM program in AY 1996-97.
- ² Data imputed based on the proportion of full and part-time students in the population.

Highlights

Change in undergraduate STEM student enrollment from AY 1994-95 to AY 2001-02 by full and part time:

- Total (from 5,543 to 6,700 students) +21%
- Full Time (from 4,490 to 5,427 students) +21%
- Part Time (from 1,053 to 1,273 students) +21%

The percentage of full time students is stable at between 81-83%.

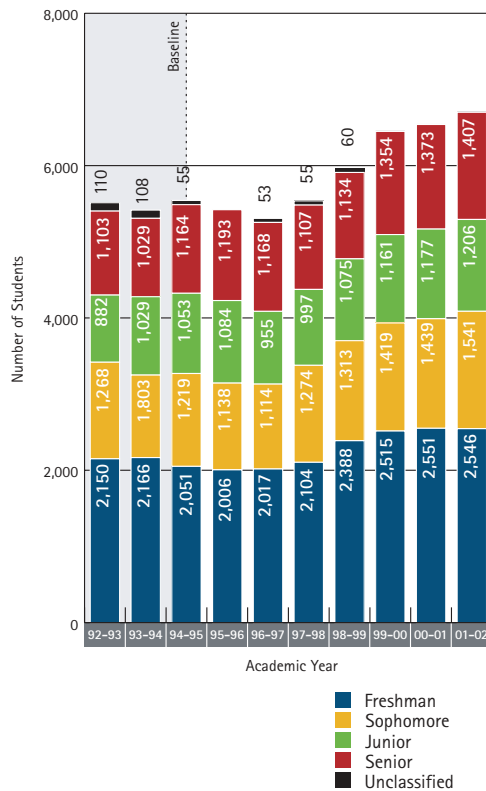




MIE Overall Progress Report

INDICATOR 1.F: Undergraduate Full-Time Student Enrollment by Class: AY 1992-93 to 2001-02

Figure 1f
Undergraduate STEM Student Total Enrollment by Class



Undergraduate STEM Student Enrollment by Class ^{1 2}

Class	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Freshman	2,150	2,166	2,051	2,006	2,017	2,104	2,388	2,515	2,551	2,546	+24%
Sophomore	1,268	1,083	1,219	1,138	1,114	1,274	1,313	1,419	1,439	1,541	+26%
Junior	882	1,029	1,053	1,084	955	997	1,075	1,161	1,177	1,206	+15%
Senior	1,103	1,029	1,164	1,193	1,168	1,107	1,134	1,354	1,373	1,407	+21%
Unclassified	110	108	55	0	53	55	60	0	0	0	-100%
Total	5,513	5,416	5,543	5,421	5,307	5,537	5,970	6,449	6,540	6,700	+21%

Notes

¹ Data included from seven MIE institutions: BSU, OLC, SC, SWC, UMET, UTEP and XU; OLC instituted their STEM program in AY 1996-97.

² Data imputed based on the proportion of class size in the total student population.

Highlights

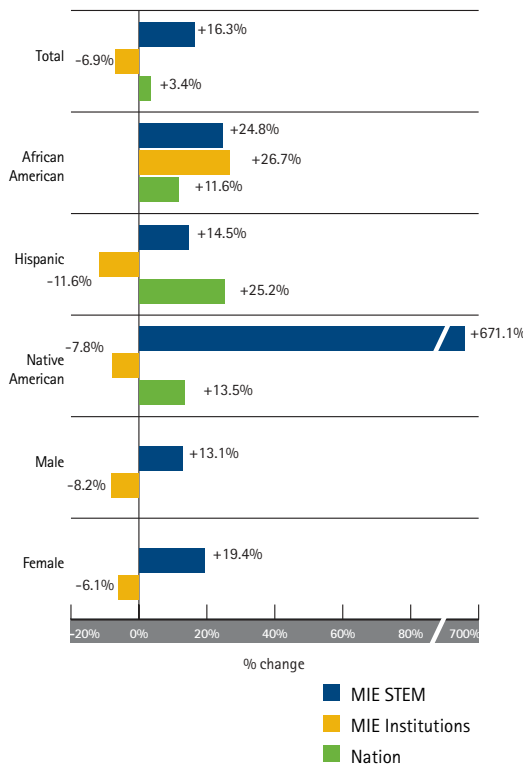
Change in undergraduate STEM full-time student enrollment from AY 1994-95 to AY 2001-02 by class:

- Freshman (from 2,051 to 2,546 students) +24%
- Sophomore (from 1,219 to 1,541 students) +26%
- Junior (from 1,053 to 1,206 students) +15%
- Senior (from 1,164 to 1,407 students) +21%



INDICATOR 1.G: Comparison of Undergraduate Fall Enrollment Trends: Nationwide Overall Enrollment Compared to MIE Institutions STEM Enrollment by Gender and Race/Ethnicity: AY 1992-93 to 2001-02

Figure 1g
Percentage Change in Student Enrollment:
AY 1994-95 to AY 1999-00



		AY 1994-95	AY 1999-00	AY 2001-02	% change from 1994-95 to 1999-00	% change from 1994-95 to 2001-02	
Undergraduate Fall Enrollment	Total	MIE STEM Majors	5,543	6,449	6,700	+16.3%	+20.9%
		MIE Institutions	29,779	27,731	29,707	-6.9%	-0.2%
		Nationwide ¹	12,262,600	12,681,200	m	+3.4%	n.a.
	African American	MIE STEM Majors	2,305	2,873	2,976	+24.8%	+29.2%
		MIE Institutions ²	6,392	8,100	8,400	+26.7%	+31.4%
		Nationwide	1,317,300	1,470,500	m	+11.6%	n.a.
	Hispanic	MIE STEM Majors	2,180	2,497	2,603	+14.5%	+19.4%
		MIE Institutions ²	16,363	14,468	15,795	-11.6%	-3.5%
		Nationwide	968,300	1,212,300	m	+25.2%	n.a.
	American Indian/Alaskan Native	MIE STEM Majors	15	116	131	+671.1%	+773.3%
		MIE Institutions ²	1,295	1,195	1,308	-7.8%	+1.0%
		Nationwide	117,400	133,300	m	+13.5%	n.a.
Male	MIE STEM Majors	2,636	2,980	3,211	+13.1%	+21.8%	
	MIE Institutions	11,191	10,277	10,869	-8.2%	-2.9%	
Female	MIE STEM Majors	2,907	3,469	3,489	+19.4%	+20.0%	
	MIE Institutions	18,588	17,454	18,838	-6.1%	+1.3%	

¹ Nationwide: Total undergraduate enrollment in Institutions of Higher Education located in the USA.
² Data imputed.
m: missing data

Notes:

Nationwide data source:

- U.S. Department of Education. National Center for Education Statistics. *Digest of Education Statistics 1996*, NCES 96-133, by Thomas D. Snyder. Production Manager, Charlene M. Hoffman. Program Analyst, Claire M. Geddes. Washington, D.C.: 2002, Table 203: Total fall enrollment in institutions of higher education, by level of study, sex, and race/ethnicity of student: 1976 to 1999.
- Digest of Education Statistics 2001*, NCES 2000-130 by Thomas D. Snyder. Production Manager Charlene M. Hoffman. Washington, D.C.: 2002. Table 208: Total fall enrollment in degree-granting institutions, by level of study, sex and race/ethnicity of student: 1976 to 1999.

Highlights

URM STEM Enrollment in the MIE institutions have increased proportionally more than in the Nation's colleges as a whole.





MIE Overall Progress Report

INDICATOR 2.A: STEM Departments/Majors in MIE Institutions: AY 2001-02

Bowie State University

College	Department	Degree
Arts & Sciences	Computer Science	BS, MS
Arts & Sciences	Mathematics	BS, MS
Arts & Sciences	Natural Sciences	BS

Spelman College

College	Department	Degree
	Biochemistry	BS
	Biology	BS
	Chemistry	BS
	Computer and Info. Science	BS
	Dual Degree Engineering	BS
	Environmental Science Concentration	BS
	Mathematics	BA, BS
	Natural Science	BS
	Physics	BS

Universidad Metropolitana

College	Department	Degree
Science	Applied Mathematics	BS
Science	Applied Physics	BS
Science	Biology	BS
Science	Chemistry	BS
Science	Computer Science	BS
Science	Environmental Science	BS
Science	Molecular and Cell Biology	BS
Science	Natural and Tropical Resources	BS

The University of Texas at El Paso

College	Department	Degree
Science	Biological/Life Science	BA, BS
Science	Chemistry	BA, BS
Engineering	Civil Engineering	BS
Engineering	Computer Science	BSCS
Engineering	Electrical/Computer Engineering	BSEE
Science	Environmental Science	BS
Science	Geological Science	BA, BS
Science	Mathematics	BA, BS
Eng.	Mechanical & Industrial Engineering	BSME, BSIE
Eng.	Metallurgical & Materials Engineering	BSME
Science	Natural Sciences	BS
Science	Physics	BA, BS
Engineering	Pre-Engineering	
Science	Pre-Science	

Xavier University of Louisiana

College	Department	Degree
College of Arts & Sci.	Biology	BS
College of Arts & Sci.	Chemistry	BS
College of Arts & Sci.	Computer Science	BS
College of Arts & Sci.	Mathematics	BS
College of Arts & Sci.	Physics/ Engineering	BA, BS

Oyate Consortium

College	Major	Degree
OLC	Interdisciplinary Environmental Science	BS
OLC	Life Science	AA
OLC	Science, Engineering, and Math	AA
SBC	Environmental Science	AS, BS
SBC	Information Technology	AS
SBC	Natural Resource Management	AS
SGU	Biological Science	AS
SGU	Computer Science	BS
SGU	Ecology	BS
SGU	Environmental Science	AS, BS
SGU	Physical Science	AS
SGU	Tribal Land Management	BS
SWC	Computer Systems Technology	AA
SWC	Environmental Science	AA
SWC	Natural Science	AA

MIE Overall Progress Report



INDICATOR 2.B: Undergraduate STEM Student Enrollment by Major: AY 1992-93 to 2001-02

(Data for BSU, SWC and XU available through AY 2002-03)

Figure 2b.1
Bowie State University

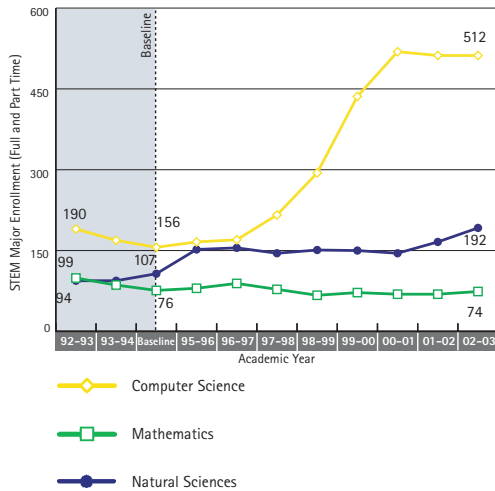


Figure 2b.2
Spelman College

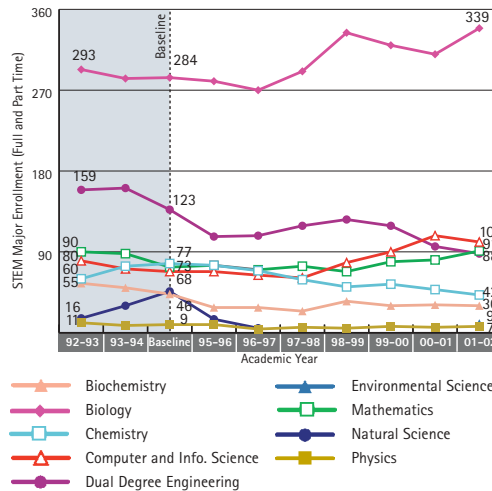
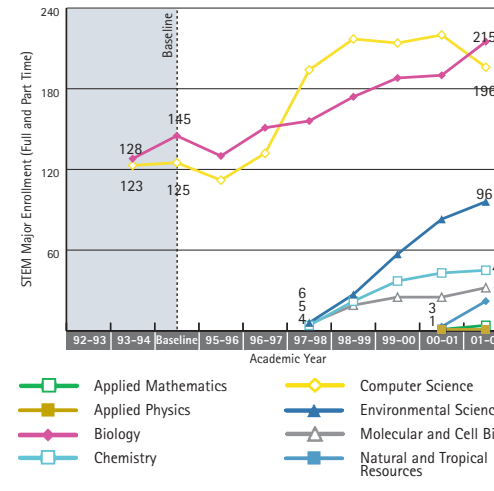


Figure 2b.3
Universidad Metropolitana



Highlights

Student enrollment % change from baseline to AY 2002-03

- Computer Science (from 156 to 512 students) +228%
- Mathematics (from 76 to 74 students) -2%
- Natural Sciences (from 107 to 192 students) +79%

Student enrollment has shown a marked improvement. There has been a 228% increase in Computer Science enrollment and a 79% increase in Natural Sciences student enrollment.

Highlights

Student enrollment % change from baseline to AY 2001-02

- Biochemistry (from 43 to 30) -30%
- Biology (from 284 to 339) +19%
- Chemistry (from 77 to 42) -45%
- Computer and Info. Sci. (from 68 to 101) +49%
- Dual Degree Engineering (from 137 to 88) -36%
- Environmental Science Concentration¹ n.a.
- Mathematics (from 73 to 91) +25%
- Natural Science¹ n.a.
- Physics (from 9 to 7) -22%

¹ The Natural Science major was discontinued after AY 1996-97. The Environmental Science Concentration started in AY 1998-99.

Highlights

Student enrollment % change from baseline to AY 2001-02

- Applied Mathematics (from 0 to 4 students)
- Applied Physics (from 0 to 4 students)
- Biology (from 145 to 215 students) +48%
- Chemistry (from 0 to 45 students)
- Computer Science (from 125 to 196 students) +57%
- Environmental Science (from 0 to 96 students)
- Molecular and Cell Biology (from 0 to 32 students)
- Natural and Tropical Resources (from 0 to 22 students)
- Chemistry, Molecular and Cell Biology, and Environmental Science programs started in AY 1997-98.
- Applied Physics and Tropical Resources started in AY 2000-01.





MIE Overall Progress Report

INDICATOR 2.B: Undergraduate STEM Student Enrollment by Major: AY 1992-93 to 2001-02 (continued)

(Data for BSU, SWC and XU available through AY 2002-03)

Figure 2b.4
The University of Texas at El Paso

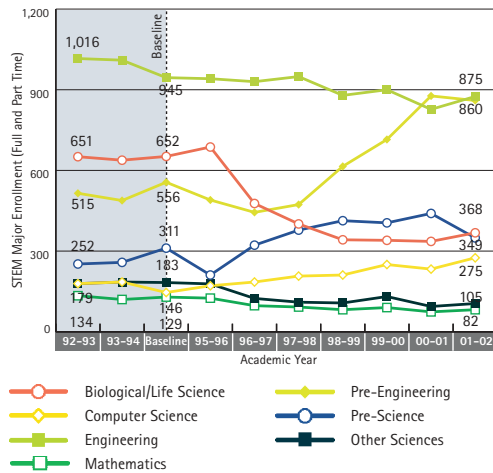
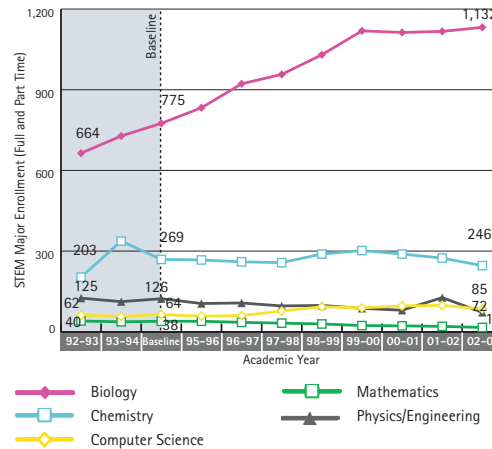


Figure 2b.5
Xavier University of Louisiana



Highlights

Student enrollment % change from baseline to AY 2001-02

- Biological/Life Science (from 652 to 368 students) -44%
- Computer Science (from 146 to 275 students) +88%
- Engineering (from 945 to 875 students) -7%
- Mathematics (from 129 to 82 students) -36%
- Pre-Engineering (from 556 to 860 students) +55%
- Pre-Science (from 311 to 349 students) +12%
- Other Sciences (from 183 to 105 students) -43%

Engineering includes: Civil Engineering, Electrical/Computer Engineering, Mechanical & Industrial Engineering, Metallurgical/Materials Engineering.

Other Sciences include: Chemistry, Environmental Science, Geological Science, Natural Sciences, Physics

Highlights

Student enrollment % change from baseline to AY 2002-03

- Biology (from 775 to 1,132 students) +46%
- Chemistry (from 269 to 246 students) -9%
- Computer Science (from 64 to 85 students) +33%
- Mathematics (from 38 to 16 students) -58%
- Physics/Engineering (from 126 to 72 students) -43%

The greatest enrollment gains by major was in Biology, which increased 46% from 775 in AY 1994-95 to 1,132 in AY 2002-03. Enrollment in Computer Science increased 33% from 64 in AY 1994-95 to 85 in AY 2002-03.



INDICATOR 2.B: Undergraduate STEM Student Enrollment by Major: AY 1992-93 to 2001-02 (continued)

(Data for BSU, SWC and XU available through AY 2002-03)

Figure 2b.6
Oglala Lakota College

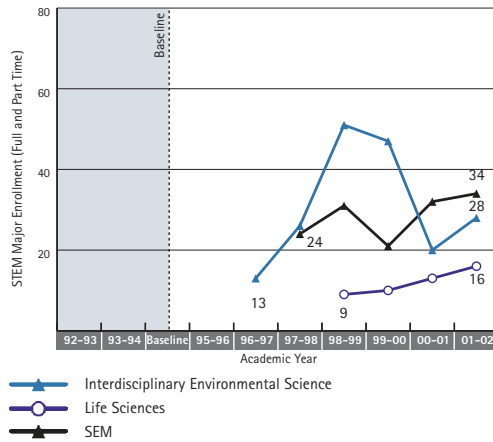


Figure 2b.7
Sisseton-Wahpeton College

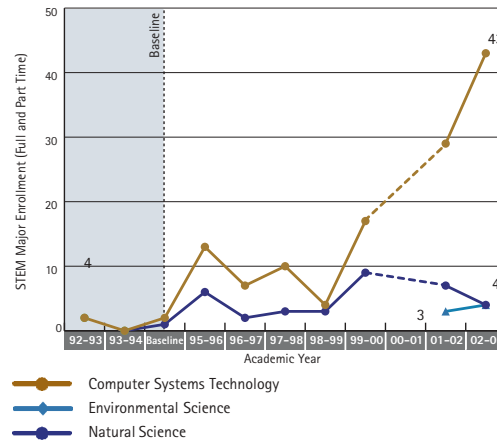
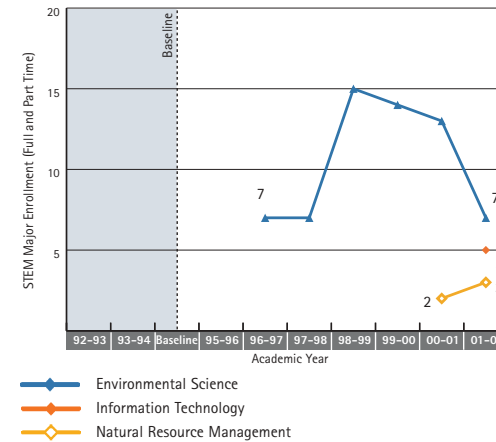


Figure 2b.8
Sitting Bull College



Highlights

Student enrollment % change from baseline to AY 2001-02

- Interdisciplinary Environmental Science (from 0 to 28 students)
- Information Technology (first year of program, data not available)
- Life Science (from 0 to 16 students)
- Science, Engineering and Math (SEM) (from 0 to 34 students)

Environmental Science was the most popular major through AY 99-00. SEM had the highest STEM enrollments in each of the succeeding years.

* In AY 01-02, Pre-Engineering became Science, Engineering and Mathematics (SEM).

Highlights

Student enrollment % change from baseline to AY 2002-03

- Computer Systems Technology (from 2 to 43 students) +2,050%
- Environmental Science (4 students)
- Natural Science (from 1 to 4 students) +300%

There was an increase in Natural Science (from 1 to 4 students) from baseline through AY 2002-03.

The Environmental Science major was initiated in AY 2001-02.

Highlights

Student enrollment % change from baseline to AY 2001-02

- Environmental Science (from 0 to 7 students)
- Natural Resource Management (from 0 to 3 students)

Environmental Science enrollment is currently 7 students.

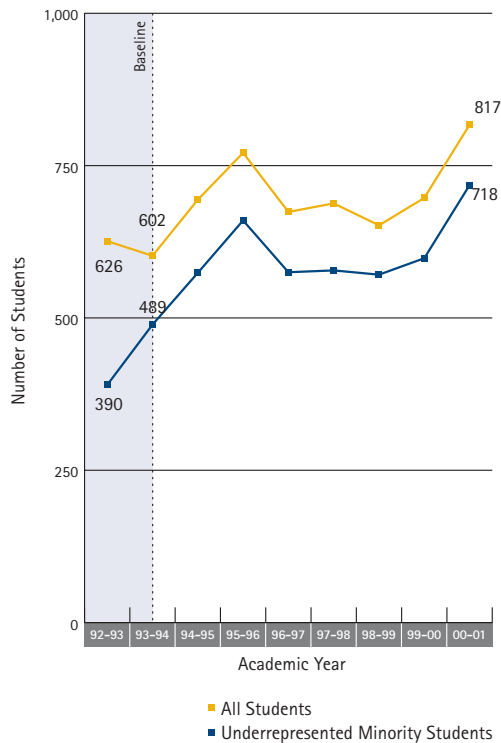




MIE Overall Progress Report

INDICATOR 3.A: Undergraduate STEM Degrees Conferred Trends: AY 1992–93 to 2000–01

Figure 3a
Undergraduate STEM Degrees Conferred:
All Students Compared to URM Students



Undergraduate STEM Degrees Conferred All Students Compared to URM Students^{1 2}

	92-93	Baseline 93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change from 93-94
All STEM Students	626	602	694	771	674	688	652	697	817	+36%
URM ³ STEM Students	390	489	574	660	575	578	571	598	718	+47%

Undergraduate STEM Degrees Conferred by Degree

	92-93	Baseline 93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change from 93-94
Bachelor Degree	620	589	688	744	653	650	639	669	794	+35%
Dual Degree	2	0	2	13	7	12	9	15	19	n.a.
Associate Degree	4	13	4	14	14	26	4	13	4	-69%
Total	626	602	694	771	674	688	652	697	817	+36%

Notes

- ¹ Data included from eight MIE institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU; OLC and SBC instituted their STEM program in AY 1996-97.
- ² UTEP data imputed.
- ³ URM: Underrepresented Minorities includes African American, Asian or Pacific Islander, Hispanic and Native American

n.a.: not applicable

Highlights

- Change in undergraduate STEM degrees conferred from AY 1993-94 to AY 2000-01:**
- Total (602 to 817 students) +36%
 - Bachelor Degree (589 to 794 students) +35%
 - Dual Degree (from 0 to 19 students)
 - Associate Degree (from 13 to 4 students) -69%



INDICATOR 3.B: Undergraduate STEM Bachelor's Degrees Conferred Trends by Race/Ethnicity and Gender: AY 1992-93 to 2000-01

Figure 3b.1

Undergraduate STEM Bachelor's Degrees Conferred by Race/Ethnicity

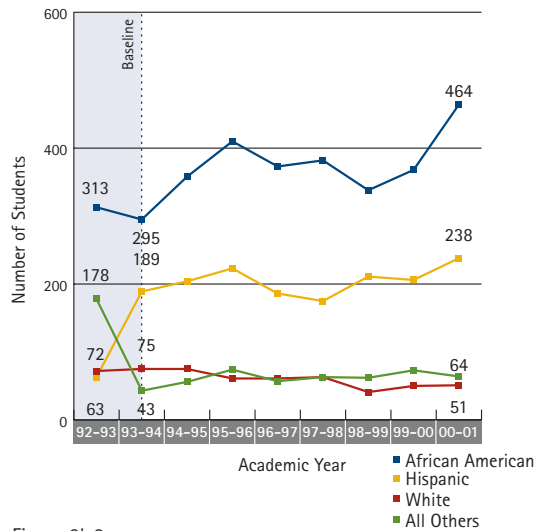
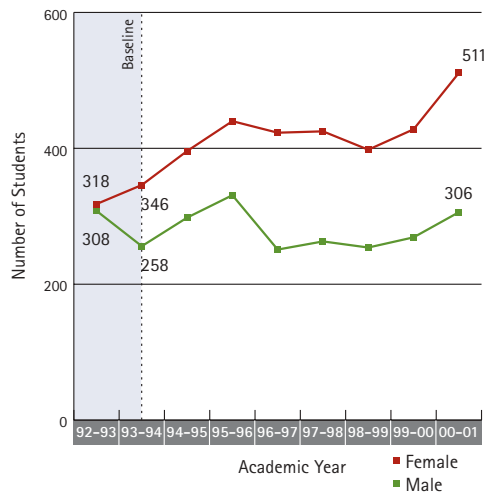


Figure 3b.2

Undergraduate STEM Bachelor's Degrees Conferred by Gender



Undergraduate STEM Bachelor's Degrees Conferred by Race/Ethnicity ¹

	92-93	Baseline 93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
African American	313	295	358	410	373	382	338	368	464	+57%
Asian or Pacific Islander	11	5	10	12	5	10	14	9	6	+20%
Hispanic	63	189	204	223	186	175	211	206	238	+26%
Native American	3	0	2	14	11	10	8	15	10	n.a.
White	72	75	75	61	61	63	41	50	51	-32%
Other	164	38	45	51	38	47	40	49	48	+26%
Total	626	602	694	771	674	688	652	697	817	+36%

Undergraduate STEM Bachelor's Degrees Conferred by Gender ¹

	92-93	Baseline 93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
Female	318	346	396	440	423	425	398	428	511	+48%
Male	308	256	298	331	251	263	254	269	306	+20%
Total	626	602	694	771	674	688	652	697	817	+36%

Notes

¹ Data included from eight MIE institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU: OLC and SBC instituted their STEM program in AY 1996-97.

Highlights

Change in undergraduate STEM degrees conferred from AY 1994-95 to AY 2000-01:

by Race/Ethnicity:

- African American (from 295 to 464 students) +57%
- Asian or Pacific Islander (from 5 to 6 students) +20%
- Hispanic (from 189 to 238 students) +26%
- Native American (from 0 to 10 students)
- White (from 75 to 51 students) -32%
- Other (from 38 to 48 students) +26%

by Gender:

- Female (from 346 to 511 students) +48%
- Male (from 256 to 306 students) +20%



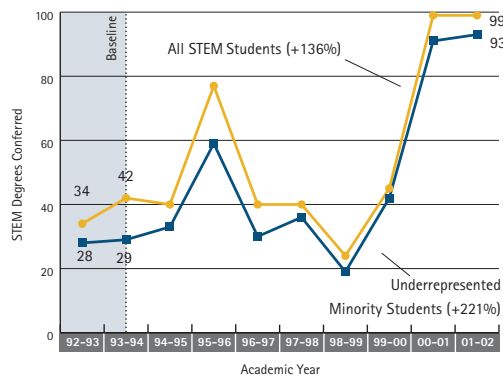


MIE Overall Progress Report

INDICATOR 3.C: Undergraduate STEM Degrees Conferred Trends by Institution: AY 1992-93 to 2000-01

(Data for BSU, SWC and XU available through AY 2001-02)

Figure 3c.1
Bowie State University



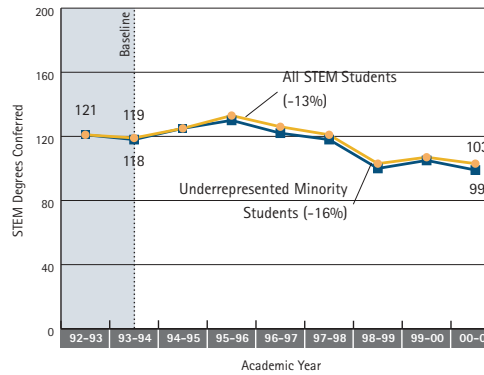
Highlights

STEM student degrees conferred % change from baseline to AY 2001-02

- All STEM (from 42 to 99 students) +136%
- Underrepresented Minority STEM (from 29 to 93 students) +221%

Almost 100% of graduates secure employment in their areas of career interest. Most go on to graduate school full or part-time especially those who served as MIE Fellows and Summer Interns during their undergraduate years. Biology graduates, in particular, are enrolling full-time in graduate schools immediately upon graduation. The sharp rise in numbers graduating last year and this year reflects a substantially improved retention rate among all STEM students.

Figure 3c.2
Spelman College



Highlights

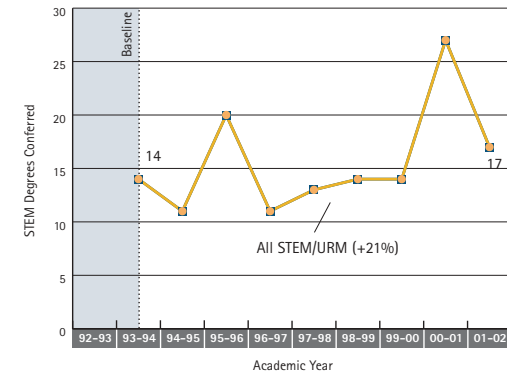
STEM student degrees conferred % change from baseline to AY 2000-01

- All STEM (from 119 to 103 students) -13%
- Underrepresented Minority STEM (from 118 to 99 students) -16%

Number of STEM degrees conferred to all students decreased 13%, from 119 students in the baseline year to 103 students in AY 2000-01.

Number of STEM degrees for underrepresented minority students decreased 16%, from 118 students in the baseline year to 99 in AY 2000-01.

Figure 3c.3
Universidad Metropolitana



Highlights

STEM student degrees conferred % change from baseline to AY 2001-02

- All STEM (from 14 to 17 students) +21%
- 100% of students are underrepresented minorities



INDICATOR 3.C: Undergraduate STEM Degrees Conferred Trends by Institution: AY 1992-93 to 2000-01 (continued) (Data for BSU, SWC and XU available through AY 2001-02)

Figure 3c.4
The University of Texas at El Paso

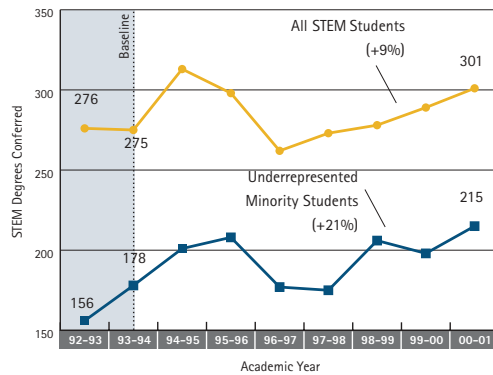
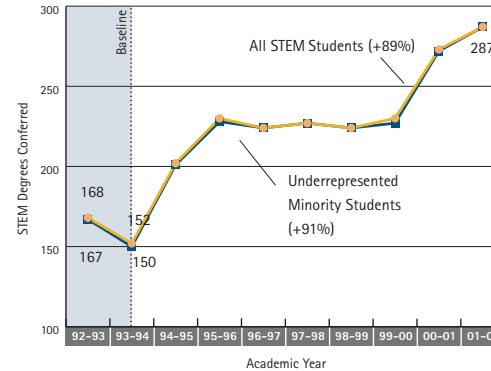


Figure 3c.5
Xavier University of Louisiana



Highlights

STEM student degrees conferred % change from baseline to AY 2000-01

- All STEM (from 275 to 301 students) +9%
- Underrepresented Minority STEM (from 178 to 215 students) +21%

While STEM undergraduate graduation rates have increased 9%, underrepresented minority graduation has increased 21% from 178 degrees conferred in the baseline year (1993-94) to 215 degrees conferred in AY 2000-01. Underrepresented minority students received 65% of STEM degrees in the baseline year, this number increased to 71% of STEM degrees in AY 2000-01.

Highlights

STEM student degrees conferred % change from baseline to AY 2000-01

- All STEM (from 152 to 287 students) +89%
- Underrepresented Minority STEM (from 150 to 287 students) +91%

The number of degrees conferred in STEM majors increased 89% from 152 in AY 1994-95 to 287 in AY 2001-02. In AY 2001-02, all graduates were underrepresented minority students.

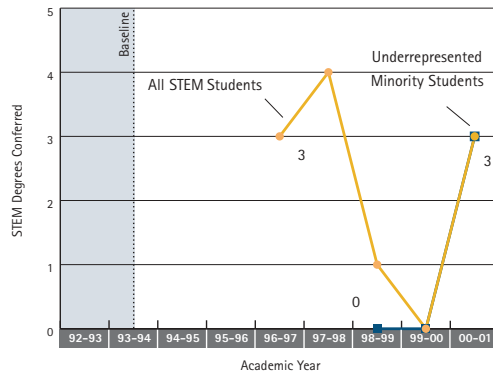




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INDICATOR 3.C: Undergraduate STEM Degrees Conferred Trends by Institution: AY 1992-93 to 2000-01 (continued) (Data for BSU, SWC and XU available through AY 2001-02)

Figure 3c.6
Oglala Lakota College



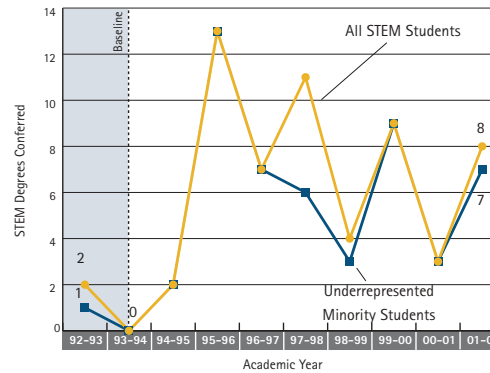
Highlights

STEM student degrees conferred % change from baseline to AY 2000-01

- All STEM (from 0 to 3 students)
- Underrepresented Minority STEM (from 0 to 3 students)

In AY 2000-01 problems with degree advising caused nine students that were supposed to graduate and transfer to 4-year colleges to be delayed by one year: most have completed the transfer process and will graduate in June 2002.

Figure 3c.7
Sisseton-Wahpeton College



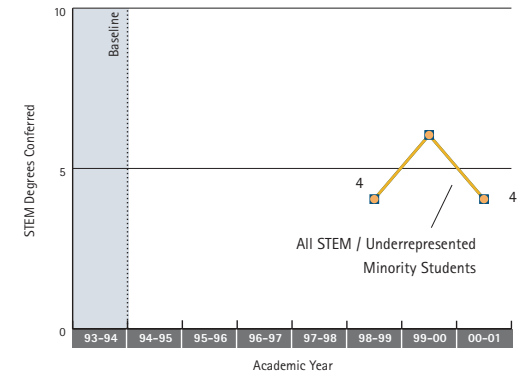
Highlights

STEM student degrees conferred % change from baseline to AY 2001-02

- All STEM (from 0 to 8 students)
- Underrepresented Minority STEM (from 0 to 7 students)

The number of STEM degrees conferred increased from zero to 8 for STEM students overall and from 0 to 7 for underrepresented minority students from baseline to AY 2001-02. Of the three STEM graduates in AY 2000-01, two were in the MIE program, one of whom was hired at SWC as the TRIO program student retention/recruitment specialist.

Figure 3c.8
Sitting Bull College



Highlights

STEM student degrees conferred % change from baseline to AY 2000-01

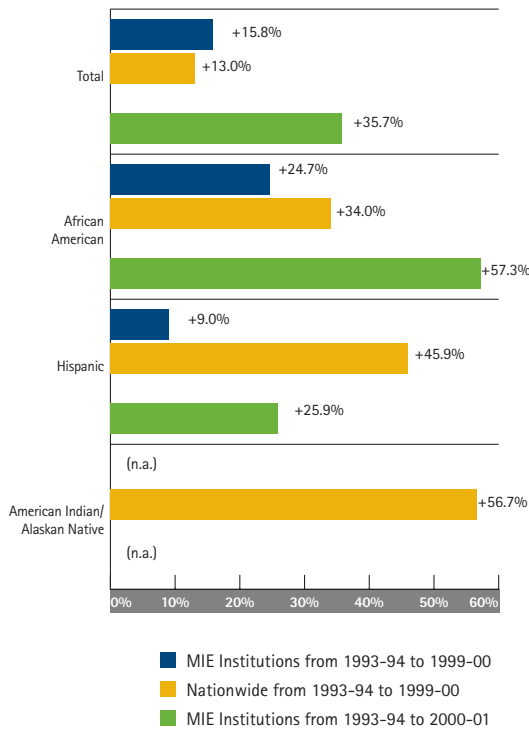
- All STEM (from 0 to 4 students)
- Underrepresented Minority STEM (from 0 to 4 students)

All students who graduated in AY 2000-01 are either employed in the field of environmental science or are attending a four-year institution.



INDICATOR 3.D: Earned STEM Bachelors' Degrees, MIE Compared to Nationwide Trends: AY 1992-93 to 2000-01

Figure 3d
Percent change in STEM Bachelors' Degrees Earned by Race/Ethnicity from Baseline Year



STEM Bachelors' Degrees Earned by Race/Ethnicity

		93-94	99-00	00-01	% change from 93-94 to 99-00	% change from 93-94 to 00-01	
Earned STEM Bachelor's Degrees	Total	MIE	602	697	817	+15.8%	+35.7%
		Nationwide	185,754	209,909	m	+13.0%	m
	African American	MIE	295	368	464	+24.7%	+57.3%
		Nationwide	10,218	13,696	m	+34.0%	m
	Hispanic	MIE	189	206	238	+9.0%	+25.9%
		Nationwide	8,791	12,830	m	+45.9%	m
	American Indian / Alaskan Native	MIE	0	15	10	n.a.	n.a.
		Nationwide	793	1,243	m	+56.7%	m

m: missing data
na: not applicable

Notes

Source for National Data: National Science Foundation, Division of Science Resources Studies, Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1991-2000, NSF 02-329, Author, Susan T. Hill (Arlington, VA 2002), Table 4.

American Indian data not applicable due to OLC initiating the STEM program in 1996-97. First Bachelor's degree (one student) conferred in 1998-99 and two Bachelor's degrees conferred in 1999-00.





MIE Overall Progress Report

INDICATOR 4.A: Undergraduate STEM Students' Retention Rate Trends from Baseline Year

Figure 4a.1
Bowie State University

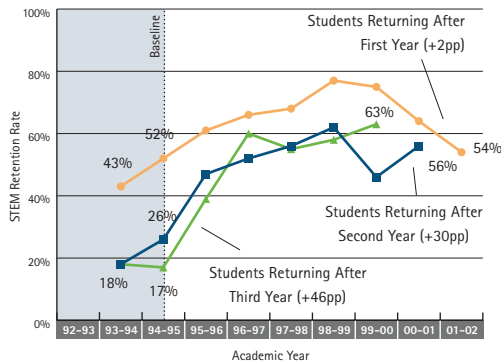


Figure 4a.2
Spelman College

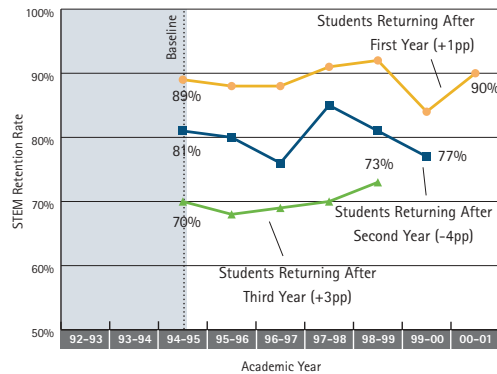
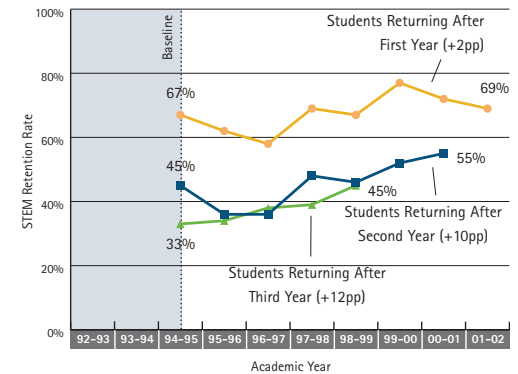


Figure 4a.3
Universidad Metropolitana



Highlights

STEM student retention rate percentage point change from baseline year

- Return after first year from Baseline to AY 2001-02 +2 pp
- Return after second year from Baseline to AY 2000-01 +30 pp
- Return after third year from Baseline to AY 1999-00 +46 pp

First year STEM student return rates continued to improve. In AY 1994-95, the return rate by freshmen was 52%, by AY 2001-02, retention rates rose to 54%. Retention rates of 2nd and 3rd year students have also increased from 26% and 17% to 56% and 63%, in AY 2000-01 and 1999-00 respectively. This strong performance was attributed largely to the effectiveness of implementing a comprehensive educational reform model that is student centered.

Highlights

STEM student retention rate percentage point change from baseline year

- Return after first year from Baseline to AY 2000-01 +1 pp
- Return after second year from Baseline to AY 1999-00 -4 pp
- Return after third year from Baseline to AY 1998-99 +3 pp

Highlights

STEM student retention rate percentage point change from baseline year

- Return after first year (from AY 1994-95 to AY 2001-02) +2pp
- Return after second year (from AY 1994-95 to AY 2000-01) +10pp
- Return after third year (from AY 1994-95 to AY 1998-99) +12pp



INDICATOR 4.A: Undergraduate STEM Students' Retention Rate Trends from Baseline Year (continued)

Figure 4a.4
The University of Texas at El Paso

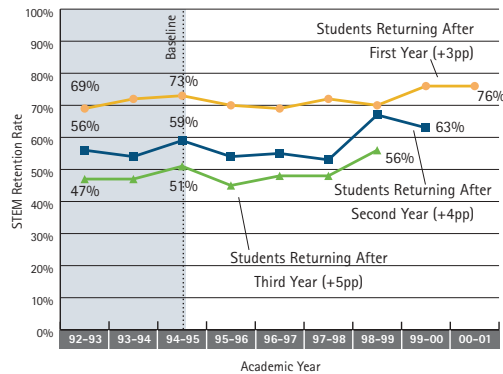
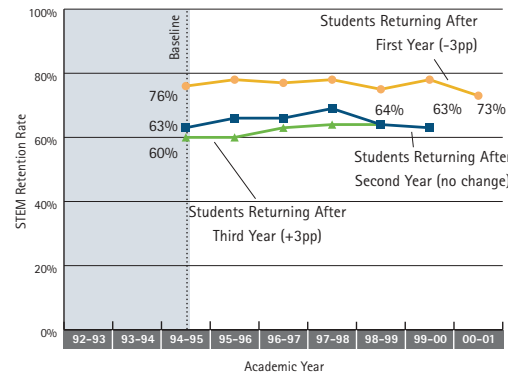


Figure 4a.2
Xavier University of Louisiana



Highlights

STEM student retention rate percentage point change from baseline year

- Return after first year
from Baseline to AY 2000-01 +3 pp
- Return after second year
from Baseline to AY 1999-00 +4 pp
- Return after third year
from Baseline to AY 1998-99 +5 pp

Retention rates for the institution have remained relatively stable. One-year retention rates for students in the fall 2000 cohort who participated in the CircLES program is approximately 80%. The one-year retention rate for students who did not participate in CircLES is approximately 74%. One-year retention rates for students in the CircLES program tend to be higher than those in comparable fields of study in comparable schools (University of Oklahoma study, 2000). 93% of the students who have received MIE/UTEP/REU stipends are either still in school, or have graduated and attending graduate programs at UTEP.

Highlights

STEM student retention rate percentage point change from baseline year

- Return after first year
from Baseline to AY 2000-01 -3 pp
- Return after second year
from Baseline to AY 1999-00 no change
- Return after third year
from Baseline to AY 1998-99 +4 pp

Third year retention rates improved 4pp from 60% to 64% between AY 1994-95 and 1998-99.

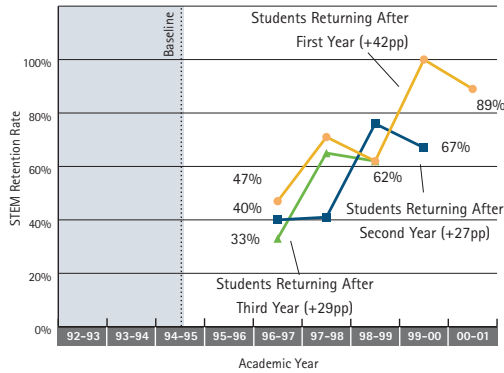




MIE Overall Progress Report

INDICATOR 4.A: Undergraduate STEM Students' Retention Rate Trends from AY 1996-97 (continued)

Figure 4a.6
Oglala Lakota College



Highlights

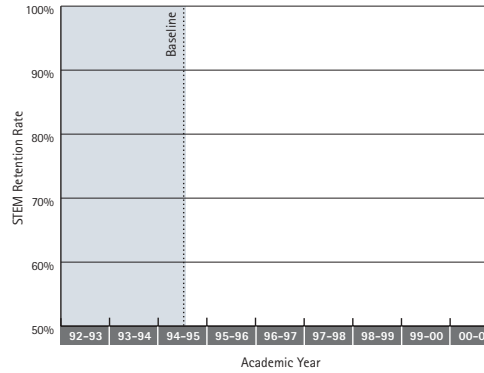
STEM student retention rate percentage point change from AY 1996-97

- Students returning after first year (AY 1996-97 to AY 2000-01) +42 pp
- Students returning after second year (AY 1996-97 to AY 1999-00) +27 pp
- Students returning after third year (AY 1996-97 to AY 1998-99) +29 pp

In AY 1999-00, the retention rate after first year reached 100%.

Third year retention improved 29 percentage points to 62% for AY 1998-99.

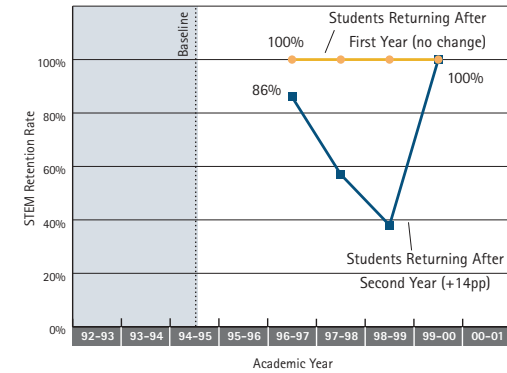
Figure 4a.7
Sisseton-Wahpeton College



Highlights

Data not available.

Figure 4a.8
Sitting Bull College



Highlights

STEM student retention rate percentage point change from AY 1996-97

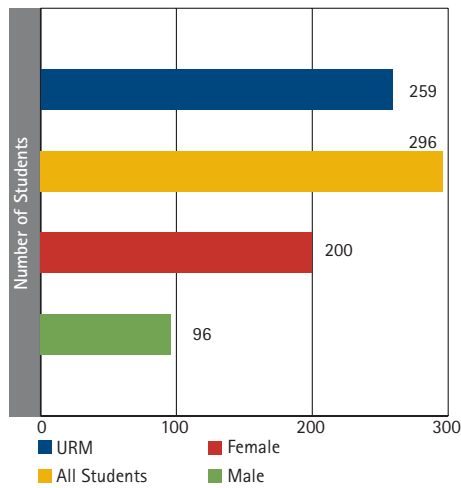
- Return after first year from AY 1996-97 to AY 2000-01 no change
- Return after second year from AY 1996-97 to AY 1999-00 +14pp

During the Spring 2001 semester SBC had an overall retention rate of 82%, with 72% of students making satisfactory progress, i.e., having grade point averages of 2.00 or better. The retention rates for STEM students is higher than that of the institution as a whole. The reasons for this higher rate are only speculative, but could include activities such as research, internships, or science club activities. A more in-depth study needs to be conducted to determine the reasons for the retention rates.



INDICATOR 5.A: Students Advanced to Graduate Programs or STEM Careers: AY 2000-01

Figure 5a.1
STEM Students Advancing to Graduate Programs



STEM Graduates Advanced to Graduate Programs

Number of Students who	Male	Female	African American	Asian/Pacific Islander	Hispanic	Native American	White	Others
Advanced to Graduate Program ¹	96	200	216	0	43	0	8	29

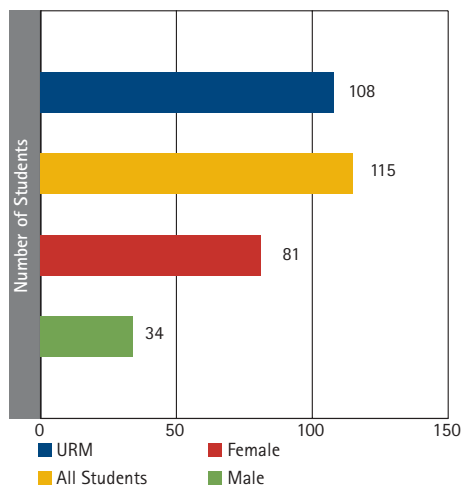
¹ Three Institutions: SC, UTEP and XU

STEM Graduates Advanced to STEM Careers

Number of Students who	Male	Female	African American	Asian/Pacific Islander	Hispanic	Native American	White	Others
Advanced to STEM Careers ²	34	81	106	1	1	0	7	0

² Two Institutions: BSU and SC

Figure 5a.2
STEM Students Advancing to STEM Careers



Notes

URM: Underrepresented Minorities includes African American, Asian or Pacific Islander, Hispanic and Native American

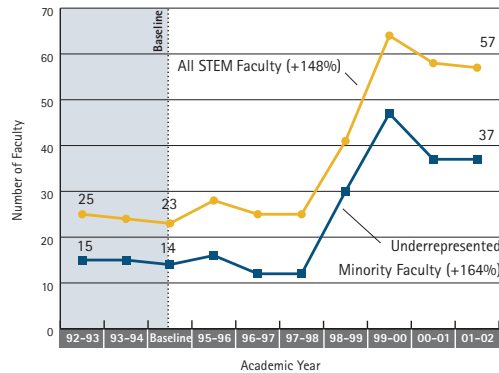




MIE Overall Progress Report

INDICATOR 6.A: STEM Faculty Demographic Trends by Institution: AY 1992-93 to 2001-02

Figure 6a.1
Bowie State University



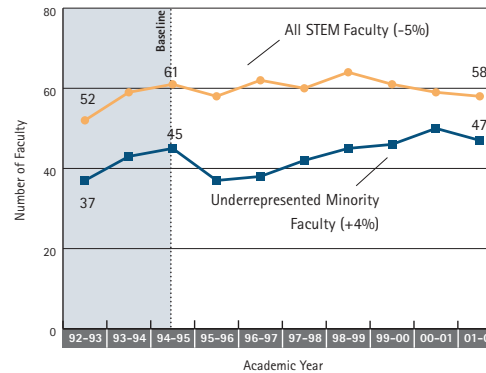
Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 23 to 57 faculty members) +148%
- Underrepresented Minority STEM +164% (from 14 to 37 faculty members)

- Increased research opportunities have favorably impacted the recruitment and retention of a higher caliber STEM faculty. Several new and continuation grants have been awarded to faculty in STEM for a total value of \$2.9M for AY 2001-02.
- Two new faculty members were hired in the Department of Computer Science in AY 2001-02.
- A senior professor in Natural Sciences went on terminal leave during AY 1999-00 with the expectation of retirement.
- A temporary hold on granting release time to faculty supported by grants was in place for AY 1999-00. The office of Academic Affairs imposed this "policy" in order to boost the faculty workload (as related to courses taught) as required by the University System of Maryland.

Figure 6a.2
Spelman College

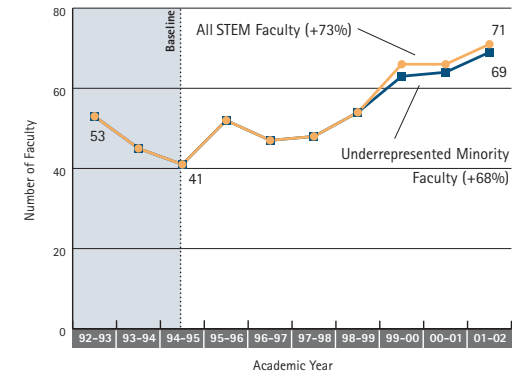


Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 61 to 58 faculty members) -5%
- Underrepresented Minority STEM +4% (from 45 to 47 faculty members)

Figure 6a.3
Universidad Metropolitana



Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 41 to 71 faculty members) +73%
- Underrepresented Minority STEM +68% (from 41 to 69 faculty members)

- Both STEM faculty and underrepresented minority faculty have shown increases of 73% and 68% respectively, from baseline year to AY 2001-02.



INDICATOR 6.A: STEM Faculty Demographic Trends by Institution: AY 1992-93 to 2001-02 (continued)

Figure 6a.4
The University of Texas at El Paso

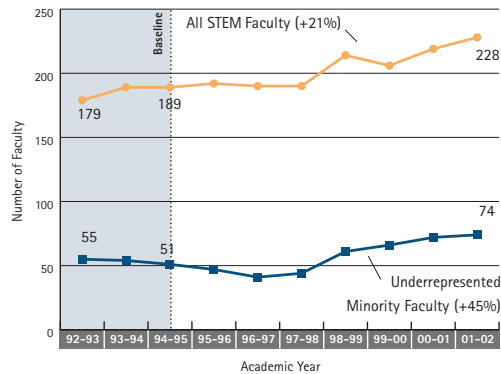
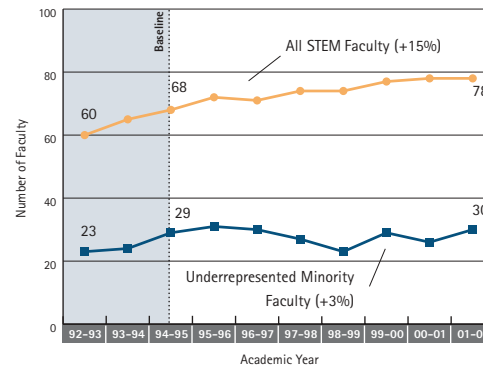


Figure 6a.5
Xavier University of Louisiana



Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 189 to 228 faculty members) +21%
- Underrepresented Minority STEM (from 51 to 74 faculty members) +45%

Networking with faculty at other institutions has proven to be particularly effective in recruiting and retaining new STEM faculty, as well as for sharing any lessons learned.

It was highly recommended that professors complete a teaching portfolio. Applicants for faculty positions were required to submit a teaching portfolio.

Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 68 to 78 faculty members) +15%
- Underrepresented Minority STEM (from 29 to 30 faculty members) +3%

The number of underrepresented minority STEM faculty increased by 1 from AY 1994-95 to AY 2001-02.

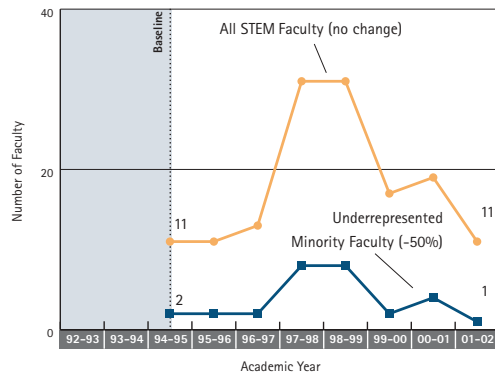




MIE Overall Progress Report

INDICATOR 6.A: STEM Faculty Demographic Trends by Institution: AY 1992-93 to 2001-02 (continued) (Data for SWC available through AY 2002-03)

Figure 6a.6
Oglala Lakota College

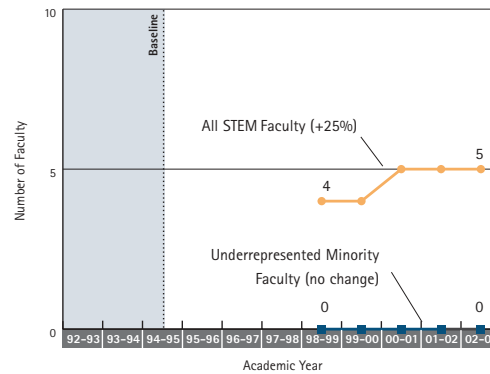


Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 11 to 11 faculty members) no change
- Underrepresented Minority STEM (from 2 to 1 faculty member) -50%

Figure 6a.7
Sisseton-Wahpeton College



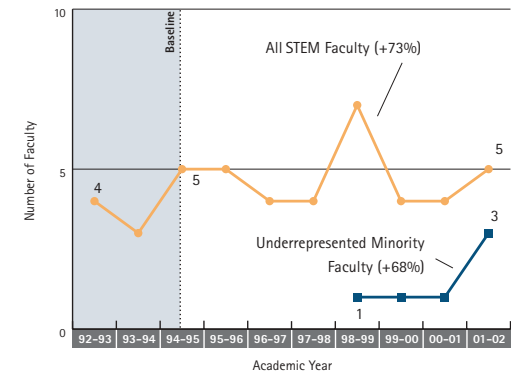
Highlights

STEM faculty % change from AY 1998-99 to AY 2001-02

- All STEM (from 4 to 5 faculty members) +25%
- Underrepresented Minority STEM (from 0 to 0 faculty members) no change

Data not available prior to AY 1998-99

Figure 6a.8
Sitting Bull College



Highlights

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 5 to 5 faculty members) no change
- Underrepresented Minority STEM (from 0 to 3 faculty members) +68%

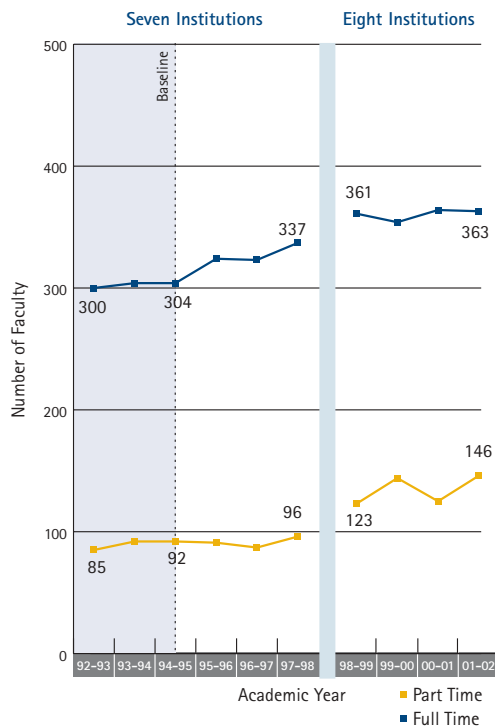
The number of Underrepresented Minority STEM faculty increased from 0 to 3 out of 5 (0% to 60%) from AY 1994-95 to 2001-02. Overall, the number of faculty was stable from AY 1994-95 to 2001-02 with a peak of 7 faculty members in AY 1998-99.



INDICATOR 6.B: Institution and STEM Faculty Trends by Full-Time and Part-Time: AY 1992-93 to 2001-02

Figure 6b

STEM Faculty Total by Full and Part-Time ¹



	Seven Institutions							Eight Institutions				
	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	% change 94-95 to 97-98	98-99	99-00	00-01 ²	01-02	% change 98-99 to 01-02
Full-Time	300	304	304	324	323	337	+11%	361	354	364	363	+0.6%
Part-Time	85	92	92	91	87	96	+4%	123	144	125	146	+19%
Total	385	396	396	415	410	433	+9%	484	498	488	509	+5%

Institution Faculty Total by Full and Part-Time ¹

	Seven Institutions							Eight Institutions				
	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	% change 94-95 to 97-98	98-99	99-00	00-01 ²	01-02	% change 98-99 to 01-02
Full-Time	1,142	1,129	1,123	1,171	1,133	1,162	+3%	1,189	1,216	1,224	1,248	+5%
Part-Time	660	725	773	746	753	788	+2%	840	978	1,083	1,119	+33%
Total	1,802	1,854	1,896	1,917	1,886	1,950	+3%	2,029	2,194	2,307	2,367	+17%

Notes

¹ AY 1992-93 to AY 1997-98 includes seven institutions: BSU, OLC, SBC, SC, UMET, UTEP and XU; AY 1998-99 to AY 2001-02 includes eight institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU.

² UTEP data imputed.

Highlights

Faculty % change from baseline to AY 1997-98

- STEM (from 396 to 433) +9%
- Total Faculty (from 1,854 to 1,950) +3%

The number of STEM faculty in seven institutions increased 9%, compared to a 3% increase in overall faculty.

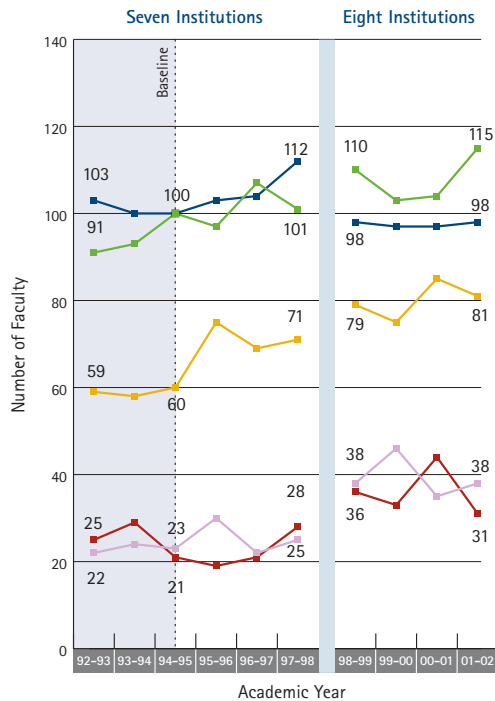




MIE Overall Progress Report

INDICATOR 6.C: Full-Time STEM Faculty Trends by Rank: AY 1992-93 to 2001-02

Figure 6c
Full-Time STEM Faculty Total by Rank



STEM Full-Time Faculty Total by Rank ¹

	Seven Institutions							Eight Institutions				
	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	% change 94-95 to 97-98	98-99	99-00	00-01	01-02	% change 98-99 to 01-02
Professor	103	100	100	103	104	112	+12%	98	97	97	98	no change
Assoc. Prof.	59	58	60	75	69	71	+18%	79	75	85	81	+3%
Assist. Prof.	91	93	100	97	107	101	+1%	110	103	104	115	+5%
Instructor	25	29	21	19	21	28	+33%	36	33	44	31	-14%
Lecturer	22	24	23	30	22	25	+9%	38	46	35	38	no change
Total	300	304	304	324	323	337	+11%	361	354	364	363	+1%

Institution Full-Time Faculty Total by Rank ¹

	Seven Institutions							Eight Institutions				
	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	% change 94-95 to 97-98	98-99	99-00	00-01	01-02	% change 98-99 to 01-02
Professor	322	306	318	316	307	330	+4%	301	234	236	237	-21%
Assoc. Prof.	233	228	238	242	252	260	+9%	279	295	319	321	+15%
Assist. Prof.	320	318	334	347	357	336	+1%	332	383	371	379	+14%
Instructor	131	145	100	111	93	107	+7%	129	133	134	118	-9%
Lecturer	136	132	133	155	124	129	-3%	148	171	164	193	+30%
Total	1,142	1,129	1,123	1,171	1,133	1,162	+3%	1,189	1,216	1,224	1,248	+5%

Notes

¹ AY 1992-93 to AY 1997-98 includes seven institutions: BSU, OLC, SBC, SC, UMET, UTEP and XU; AY 1998-99 to AY 2001-02 includes eight institutions: BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU.

Highlights

STEM Full-Time Faculty in Seven Institutions % change from Baseline to AY 1997-98

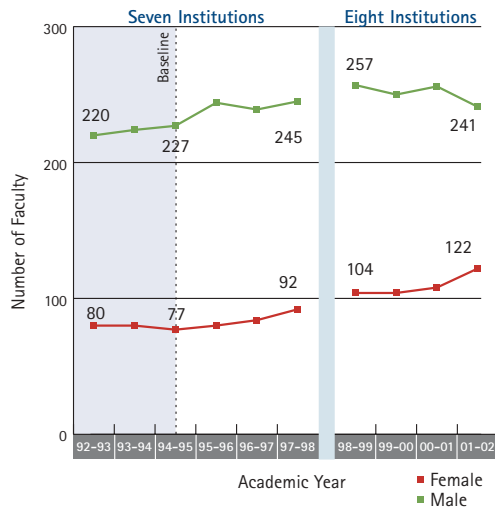
- Professor (from 100 to 112) +12%
- Assoc. Professor (from 60 to 71) +18%
- Assist. Professor (from 100 to 101) +1%
- Instructor (from 21 to 28) +33%
- Lecturer (from 23 to 25) +9%



INDICATOR 6.D: Full-Time STEM Faculty Trends by Gender and Race/Ethnicity: AY 1992-93 to 2001-02

Figure 6d.1

Full-Time STEM Faculty by Gender



STEM Faculty Total by Gender ¹

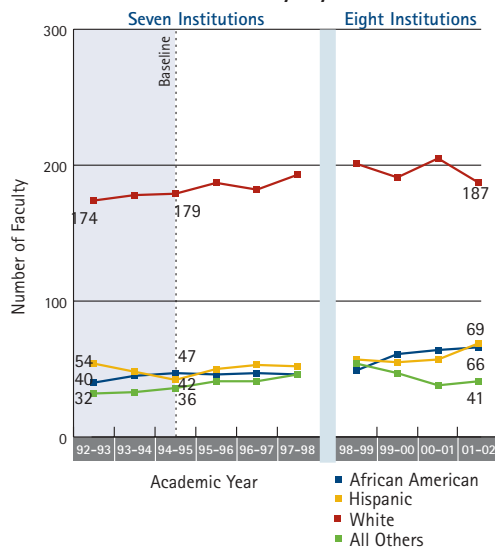
	Seven Institutions							Eight Institutions				
	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	% change 94-95 to 97-98	98-99	99-00	00-01	01-02 ²	% change 98-99 to 01-02
Female	80	80	77	80	84	92	+19%	104	104	108	122	+17%
Male	220	224	227	244	239	245	+8%	257	250	256	241	-6%
Total	300	304	304	324	323	337	+11%	361	354	364	363	+1%

STEM Faculty Total by Race/Ethnicity ¹

	Seven Institutions							Eight Institutions				
	92-93	93-94	Baseline 94-95	95-96	96-97	97-98	% change 94-95 to 97-98	98-99	99-00	00-01	01-02 ²	% change 98-99 to 01-02
African Amer.	40	45	47	46	47	46	-2%	49	61	64	66	+35%
Asian/Pac. Isl.	27	30	34	34	24	27	-21%	36	37	22	22	-39%
Hispanic	54	48	42	50	53	52	+24%	57	55	57	69	+21%
Native Amer.	2	1	1	1	2	4	+300%	4	5	4	4	no change
White	174	178	179	187	182	193	+8%	201	191	205	187	-7%
Other	3	2	1	6	15	15	+1,400%	14	5	12	15	+7%
Total	300	304	304	324	323	337	+11%	361	354	364	363	+1%

Figure 6d.2

Full-Time STEM Faculty by Race/Ethnicity



Notes

¹ AY 1992-93 to AY 1997-98 includes seven institutions: BSU, OLC, SBC, SC, UMET, UTEP and XU; AY 1998-99 to AY 2001-02 includes BSU, OLC, SBC, SC, SWC, UMET, UTEP and XU.

² UTEP data imputed.

Highlights

STEM Full-Time Faculty in Seven Institutions % change from Baseline to AY 1997-98

- Female (from 77 to 92) +19%
- Male (from 227 to 245) +8%
- African American (from 47 to 46) -2%
- Asian/Pacific Islander (from 34 to 27) -21%
- Hispanic (from 42 to 52) +24%
- Native American (from 1 to 4) +300%
- White (from 179 to 193) +8%
- Other (from 1 to 15) +1,400%

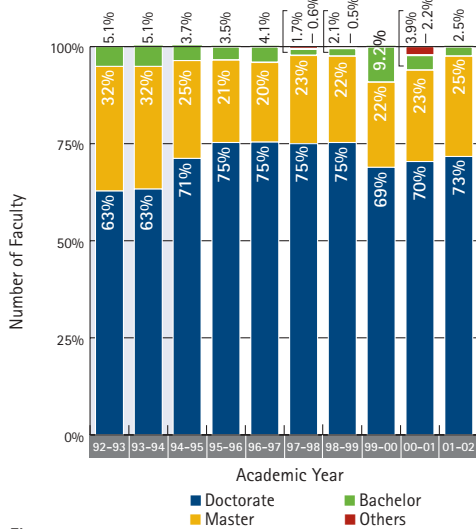




MIE Overall Progress Report

INDICATOR 6.E: Full-Time STEM Faculty Trends by Degrees Held and Tenure Status: AY 1992-93 to 2001-02

Figure 6.1
Full-Time STEM Faculty by Degrees Held



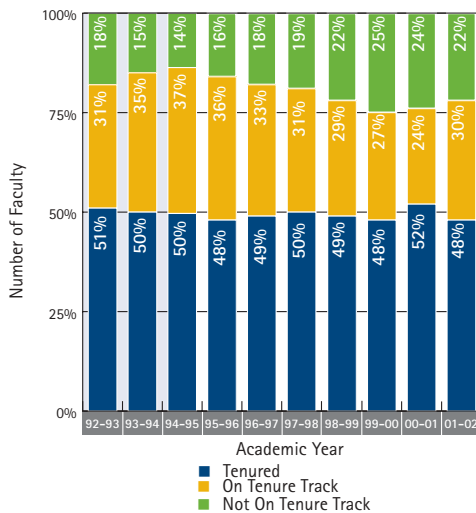
STEM Full-Time Faculty Total by Degree Held ¹

	92-93	93-94	Baseline 94-95 ¹	95-96	96-97	97-98	98-99	99-00	00-01	01-02 ²	% change
Bachelor	8	8	6	6	7	3	4	18	9	5	-17%
Master	50	50	41	36	35	40	43	43	54	50	+23%
Doctorate	98	100	116	128	129	132	146	135	162	149	+28%
Others	0	0	0	0	0	1	1	0	5	0	no change
Total	156	158	163	170	171	176	194	196	230	204	+2%

STEM Full-Time Faculty Total by Tenure Status ³

	92-93	93-94	Baseline 94-95 ¹	95-96	96-97 ⁵	97-98 ⁵	98-99	99-00	00-01 ⁶	01-02	% change
Tenured	153	152	149	154	157	166	174	165	182	172	+15%
On Tenure Track	91	104	111	117	105	102	102	95	85	106	-5%
Not On Tenure Track	54	45	41	51	59	64	80	86	84	80	+95%
Total	298	301	301	322	321	332	356	346	351	358	+19%

Figure 6.2
Full-Time STEM Faculty by Tenure Status



Notes

- ¹ Data for five institutions: BSU, OLC, SC, UMET and XU.
- ² XU data imputed.
- ³ Data for six institutions: BSU, OLC, SC, UMET, UTEP and XU.
- ⁴ BSU data imputed.
- ⁵ UTEP data imputed.
- ⁶ UMET data imputed; UTEP "Not On Tenure" imputed.

Highlights

STEM Full-Time Faculty in Seven Institutions % change from Baseline to AY 2001-02

- Bachelor (from 6 to 5) -17%
- Master (from 41 to 50) +23%
- Doctorate (from 116 to 149) +28%
- Other (from 0 to 0) no change
- Tenured (from 149 to 172) +17%
- On Tenure Track (from 111 to 106) -5%
- Not on Tenure Track (from 41 to 80) +95%



Model Institutions for Excellence



MIE FACT BOOK 2002

PART II: MIE Institutions' Key Indicator Reports

July 2003

MIE Program Funded by:
National Science Foundation and
National Aeronautics and Space Administration



Systemic Research, Inc.



Model Institutions for Excellence



BOWIE STATE UNIVERSITY

MIE Fact Book 2002

PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Aeronautics and Space Administration



Systemic Research, Inc.



Bowie State University was founded in the city of Baltimore in 1865, and it has evolved over the years into a four-year, coeducational, liberal arts institution. It is currently situated on a beautiful 312-acre campus in Prince Georges County, Maryland, and offers both graduate and undergraduate programs of study. Teacher education programs were established in 1925; in 1935, with state authorization, a four-year program for the training of elementary school teachers was begun and the school became the Maryland State Teachers College at Bowie. In 1951, with the approval of the State Board of Education, its governing body at the time, the college established a teacher-preparation curriculum for the training of teachers for the core program in the junior high schools. Ten years later, permission was granted to institute a teacher-training program for secondary education. A liberal arts program was established in 1963, and the institution's name was changed to Bowie State College. In 1988, Bowie State achieved university status and joined the University System of Maryland (USM).

Bowie State University received its first state funding of \$5000 in 1908. Its current enrollment is approximately 5,257 students, 1,584 of whom are in the Graduate School. The University has twenty-two buildings on campus with the addition of the new \$21-million state-of-the-art Center for Learning and Technology that opened in fall 2000, and the new \$11.8-million Computer Science Center that opened fall 2002.

Bowie State University considers the student activities program a vital part of the total educational program. Students have access to more

than forty different activities. These include student government, the student union, intercollegiate athletics, eight fraternities and sororities, numerous departmental clubs and pre-professional organizations, and music and drama organizations.

The University is accredited by the Middle States Association of Colleges and Schools and approved by the Maryland State Department of Education.

Reprinted from: <http://www.petersons.com>

Institution Profile in Brief

History and Background

Year Founded:	1865
Institution Control:	Public-State
Institution Type:	4-year and Graduate
Land-Granted:	Yes
Co-Ed:	Yes
Affiliation:	Affiliated
Academic Term:	Semester

Degree Programs Offered

- Business/Economics
- Computer Science and Technology
- Education/Social Science
- Liberal Arts
- Life Science
- Mathematics
- Natural Sciences
- Nursing/Health Science
- Others

President

Dr. Calvin Lowe

Website

<http://www.bowiestate.edu>

Student Enrollment / AY 2001-02

	FT	PT	Total
Undergraduate :	2,635	907	3,542
Gender:	Male: 38%	Female: 62%	
Race/Ethnicity:	African-American: 88%	White: 7%	

Degrees Conferred / AY 2000-01

Associate:	0
Baccalaureate:	533
Dual Degree:	0
Total:	533

Faculty / AY 2001-02

Full Time:	152
Part Time:	157
Total:	309
% Ph.D. Full Time Faculty	67%
Student/Faculty Ratio:	11:1



Bowie State University



MIE Profile

Bowie State University's MIE initiative is focused on giving its students access to faculty role models from similar ethnic backgrounds, peer mentors and learning teams, an exciting and high quality curriculum, and faculty mentors with whom they can work on research projects and get paid for doing so. Its goals are to dramatically improve enrollment, retention and graduation rates while infusing the institution with the latest information technology. Seven educational reform strategies are being pursued:

OUTREACH

There are several components of Bowie's outreach program, among them is its STEM Summer Academy. About 70 percent of Bowie's STEM entering freshmen needed to brush-up on their Pre-Calculus skills. Thus a six-week voluntary Summer Academy program was created and offered to incoming freshmen. It focuses on math and learning-to-learn skills. The impact has been impressive. Graduates of the Summer Academy have higher retention rates, higher grade point averages, greater levels of satisfaction, enhanced ability to work in teams, and overall higher levels of confidence.

Other parts of the MIE Outreach program involve focused recruitment efforts. Bowie staff visits high schools and community colleges, hosts in-service training days for school teachers in the region and offers free-of-charge SAT review courses on weekends for local area students.

At its annual MIE Showcase program, Bowie graduate

and undergraduate scholarly works are showcased via poster presentations. Middle and high school students from the area are also invited to present their own science posters. A panel of judges selects and award prizes. A corporate roundtable consisting of representatives from government and industry is convened to offer students insights into recruitment strategies and needed skills. In 2002, an audience of 150 students listened intently and asked searching questions for over an hour regarding employment opportunities that might lie ahead.

Outreach efforts have more than doubled the size of the STEM Freshman class since Fall 1994 – from 104 students to 211 students in Fall 2001. Enrollment in the Computer Sciences program has increased by 228% during this time.

STUDENT RETENTION

The student retention program relies on four key components: STEM Fellowships and Partial Assistantships, the Summer Internship Program, the STEM Tutoring and Resource Center, and the Safety-Net Program. The combined effect of these efforts has yielded very positive results. Second-year retention from undergraduate STEM students who entered in AY 2000-01 is 56%, an improvement of 30 percentage points (pp) from second-year STEM students who entered in AY 1994-95. Each of these components has made significant contributions financially and otherwise, resulting in enhanced STEM student performance and retention rates.

RESEARCH

Undergraduate research efforts on campus in the STEM domain are primarily conducted in three areas:

computer science, Earth science, and biotechnology. Students are able to apply their biology, math or computer skills on real-world problems and they do so with the guidance and counsel of faculty members. STEM Fellows, in particular, enjoy a close mentoring relationship with individual faculty members as they engage in directed research projects.

External funding of projects in these three domains has increased dramatically, due in part to an MIE Faculty Grant Program that awards \$10,000 grants annually to faculty to conduct research. Faculty members from all campus departments and disciplines are invited to submit proposals. An in-house panel of faculty and administrators review these proposals. Six to seven proposals are awarded each year. So far, a total of 47 grants have been made. Grant sponsorship has expanded beyond NASA/NSF to other federal and state agencies.

LINKAGES AND COLLABORATION

One critical element of the MIE program is Bowie's partnership effort. Deliberate steps have been taken to support students as interns at government and private industry locations off campus. Through MIE, students have participated in partnerships with NASA, the Argonne National Lab, Honeywell, Howard University, Johns Hopkins' Applied Physics Lab, the National Institutes of Health, and the Department of Defense, the Census Bureau as well as other public and private organizations. Strengthened collaborative ties have helped various departments within the university expand their own research efforts. The MIE model functions as a way of leveraging these additional grants and contracts.



A major component of its linkage effort involves maintaining connections with its alumni. Exit interviews are conducted with each STEM graduating class. Results indicate that most undergrads aspire to attend graduate school on either a full-time or part-time basis. Surveys show that before MIE only 65% of Bowie's STEM undergraduates aspired to graduate school, whereas in AY 2001-02 (Class of 2002), 84% do so. Similarly, 84% of recent MIE graduates are working in fields relevant to their training compared with 69% before the MIE program was launched.

INFRASTRUCTURE AND HUMAN RESOURCE COMPONENT

MIE funds have helped Bowie establish state-of-the-art facilities for its STEM students. Five computing labs have been opened. The STEM network interconnects over 500 computing devices providing faculty, staff and students with access to high-end servers and desktop computers. Bowie State University Satellite Operations and Control Center (BSOCC), working in conjunction with NASA's Goddard Space Flight Center and Honeywell, gives students operational control over two NASA research satellites. A direct benefit of the BSOCC project is the certification of Bowie's students as mission planners and command controllers. Sixty such certifications have been awarded since the program began.

Changes in the composition and size of the STEM faculty has helped accommodate an expanded student enrollment. Before MIE, Bowie was primarily a teaching institution. About 15 new STEM faculty have been added since 1994, bringing the total STEM full-time faculty to 57. Many of these new faculty

members are engaged in research. The addition of new faculty improved the student-teacher ratio from 20:1 to 14:1.

Because of the expanded enrollment and faculty research effort, a new Computer Science building on campus has just opened. It represents an \$11 million investment by the State of MD and is essentially an outgrowth of the MIE program.

EDUCATION REFORM

Bowie State has initiated, with the help of the MIE program, two key reform efforts: curriculum development and instructional reform. New programs in Computer Technology (undergraduate) and Applied and Computation Mathematics (graduate) as well as many new courses have been added.

At the instructional reform level, the goal is to adapt a laboratory-based learning paradigm at the lower division level and an inquiry-based learning paradigm at the upper division level while infusing and utilizing information technology where appropriate.

Faculty and staff development has not gone unnoticed. From 1996 to 1999 the MIE program sponsored six professional development workshops each year. The workshops focused on such topics as integrating research into undergraduate education; active learning strategies; student assessment; integrating technology into the curriculum; and grant proposal writing.

Because of the need for professional development and the success of the MIE sponsored workshops, the University took steps in AY 1999-00 to

institutionalize this effort. With State funds, it opened a new Center for Excellence in Teaching and Learning. The Center offers professional development services throughout the university.

SELF-ASSESSMENT AND EVALUATION

To track the results of the MIE program and to ensure the dissemination of promising strategies, Bowie has invested in a comprehensive self-assessment and evaluation process. Data is gathered, analyzed, and reported on all of the MIE model components by means of periodic student and faculty surveys, focus group interviews, performance measures, and stakeholder interviews. The information is used to plan, modify, and implement various aspects of the MIE program. Internal performance indicators reflecting progress in some 40 key areas are used to measure performance and guide the program's strategic direction.

CONCLUSION

Overall, the seven components of the MIE model have helped Bowie State's STEM program achieve several of its key goals: increased enrollment, improved retention, and the infusion of technology into all aspects of campus life. Surveys of the freshman class show that in the old days about half of the students aspired to earning a graduate degree. In AY 2001-02, 84% do so. Not only enrollment but retention rates are up significantly. More STEM students are graduating and the vast majority are entering careers and/or graduate school in their chosen fields of study. Exit interviews reveal that they truly value the individual support and attention they have received while pursuing their degrees. Success has bred further success and a growing sense of confidence that student needs are being met.



MIE Project and Grant

Funded by: NASA

Phase I Grant Period: 7/1/1995-9/30/2000
Amount: \$7,859,389

Phase II Grant Period: 10/1/2000-9/30/2003
Amount: \$4,800,000

Principal Investigator/Project Director

Dr. Elaine Davis, Principal Investigator

Data Managers/Evaluators

Arthur George, Program Research Analyst

David Bushnell, External Evaluator



Major Achievements based on Key Indicators:
A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 02-03	% change
STEM Enrollment	339	778	+129%
URM Enrollment	315	731	+132%
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 01-02	% change
Computer Science	156	512	+228%
Mathematics	76	74	-3%
Natural Sciences	107	192	+79%
3. Undergraduate STEM Degrees Conferred	AY 93-94	AY 01-02	% change
STEM Degrees Conferred	42	99	+136%
URM Degrees Conferred	29	93	+221%
4. Undergraduate Retention Rate	AY 94-95	AY 99-00	% change
Return Rate After First Year	52%	64%	+12pp
Return Rate After Second Year	26%	56%	+30pp
5. STEM Student Activities and Achievement	AY 97-98	AY 00-01	% change
Mentoring	55	71	29%
Tutoring	250	513	105%
Summer Programs	71	28	-61%
Orientation	50	96	92%
Workshops	70	254	263%
Seminars	800	328	-59%
Conferences	29	92	217%
	AY 95-96	AY 01-02	% change
Internships	26	65	150%
Lab Assistants	2	20	900%
Undergraduate Teaching Assistants	0	38	0 to 38
Undergraduate Research Assistants	5	46	820%
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 99-00	% change
Students Advancing to STEM Career	29	99	+241%
Students Advancing to Grad Programs	50	91	+82%
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	23	57	+148%
URM Faculty	14	37	+164%
8. Faculty Research and Activities	AY 95-96	AY 00-01	% change
Journal Papers	5	10	100%
Conference Proceedings	4	7	75%
Professional Presentations	6	18	200%
Conference	17	27	59%
Seminar	4	7	75%
Workshop	2	5	-83%
Proposals Submitted for External Funding	8	10	25%
Proposals Submitted for Internal Funding	8	6	-25%
External Proposals Funded	7	8	14%
Internal Proposals Funded	4	4	no change

STEM Undergraduate Enrollment and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2002-03	Degrees Conferred AY 2000-01 ¹
Computer Science	512	63
Mathematics	74	7
Natural Sciences	192	29
Total	778	99

¹ Most recent data available.

STEM Degrees

- Computer Science (BS, MS)
- Mathematics (MS, BS)
- Natural Sciences (BS)

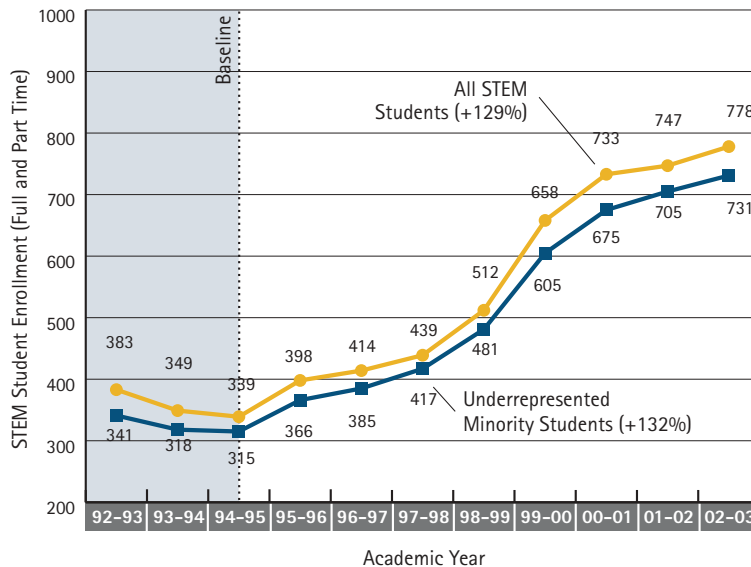




KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2002-03

Key Indicator No.1 presents trends in undergraduate STEM student enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to underrepresented minority students from AY 1992-93 to AY 2002-03. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1
Undergraduate STEM Students Enrolled
All STEM vs. Underrepresented Minority Students



Underrepresented Minorities Enrolled in STEM

	Baseline									
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	%change
All STEM Students (A)	339	398	414	439	512	658	733	747	778	+129%
Underrepresented Minority Students (B)	315	366 ¹	385 ¹	417 ¹	481	605	675	705	731 ¹	+132%
Percentage (B/A)	93%	92%	93%	95%	94%	92%	92%	94%	94%	+1pp

¹Data imputed

Institution Total Undergraduate Student Trends

	Baseline									
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	%change
Total	3,591	3,706	3,354	3,294	3,045	3,021	3,109	3,542	3,673	+2%

Highlights and Notes

STEM student enrollment % change from baseline to AY 2002-03

- All STEM (from 339 to 778 students) +129%
- Underrepresented Minority STEM (from 315 to 731 students) +132%

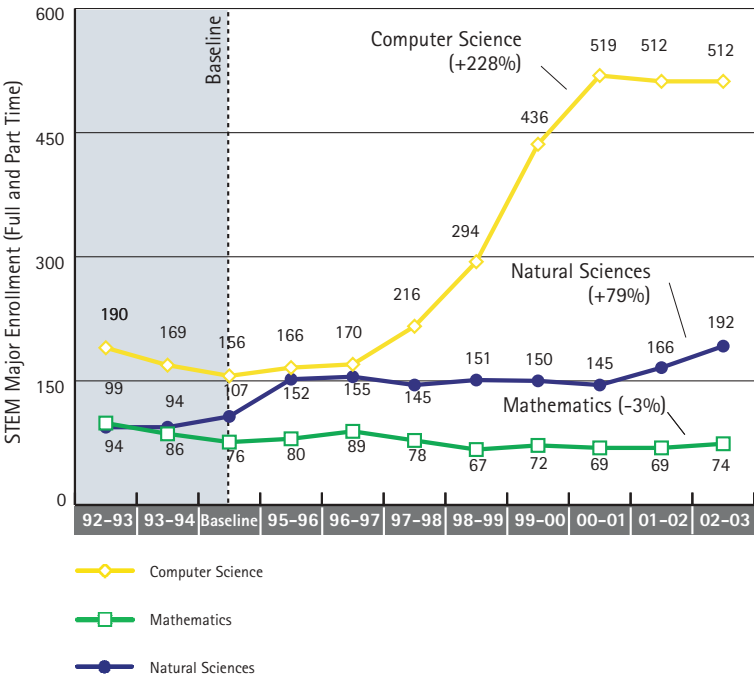
STEM enrollment grew by 129% from the baseline year of AY 1994-95 (339 students) to AY 2002-03 (778 students). Underrepresented minority students, representing about 94% of all STEM enrollees at Bowie State, grew by 132%. Much of the growth can be attributed to enrollments in the Computer Science program, which experienced a 228% increase (see Key Indicator #2). Growth in the Computer Science area is primarily due to the addition of the Computer Technology Program and improved visibility of the STEM domain at Bowie State University. A persistent yet focused recruitment effort at the secondary and community college levels has resulted in an increased enrollment in all of the STEM domain. In AY 2001-02, over twenty-five recruitment visits were made to high schools and community colleges as well as to college fairs locally and nationally.



KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2002-03

Key Indicator No. 2 presents undergraduate student enrollment trends by STEM major: Computer Science, Mathematics, and Natural Sciences. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2001-02.

Figure 2
STEM Enrollment by Major



STEM Major Enrollment

	Baseline									% change
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	
Computer Science	156	166	170	216	294	436	519	512	512	+228%
Mathematics	76	80	89	78	67	72	69	69	74	-3%
Natural Sciences	107	152	155	145	151	150	145	166	192	+79%
Total	339	398	414	439	512	658	733	747	778	+129%

Highlights and Notes

Student enrollment % change from baseline to AY 2002-03

- Computer Science (from 156 to 512 students) +228%
- Mathematics (from 76 to 74 students) -3%
- Natural Sciences (from 107 to 192 students) +79%

Student enrollment has shown a marked improvement. There has been a 228% increase in Computer Science enrollment and a 79% increase in Biology student enrollment.



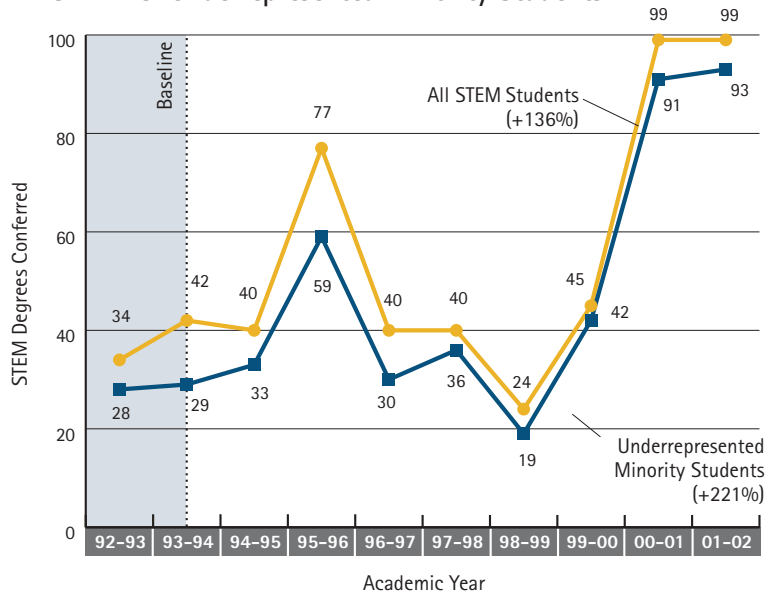


KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2001-02

Key Indicator No. 3 presents trends in total number of undergraduate STEM degrees conferred. Figure 3 shows degrees conferred trends for all STEM students compared to underrepresented minority students from AY 1992-93 to 2001-02.

Figure 3

Undergraduate STEM Degrees Conferred All STEM vs. Underrepresented Minority Students



Underrepresented Minority Students Conferred STEM Degrees

	Baseline									
	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	%change
All STEM Students (A)	42	40	77	40	40	24	45	99	99	+136%
Underrepresented Minority Students (B)	29	33	59	30	36	19	42	91	93	+221%
Percentage (B/A)	70%	82%	76%	74%	90%	79%	94%	92%	92%	+22pp

Institution Total Undergraduate Degrees Conferred

	Baseline									
	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	%change
Total	378	460	507	503	499	532	513	533	537	+17%

Highlights and Notes

STEM student degrees conferred % change from baseline to AY 2001-02

- All STEM (from 42 to 99 students) +136%
- Underrepresented Minority STEM (from 29 to 93 students) +221%

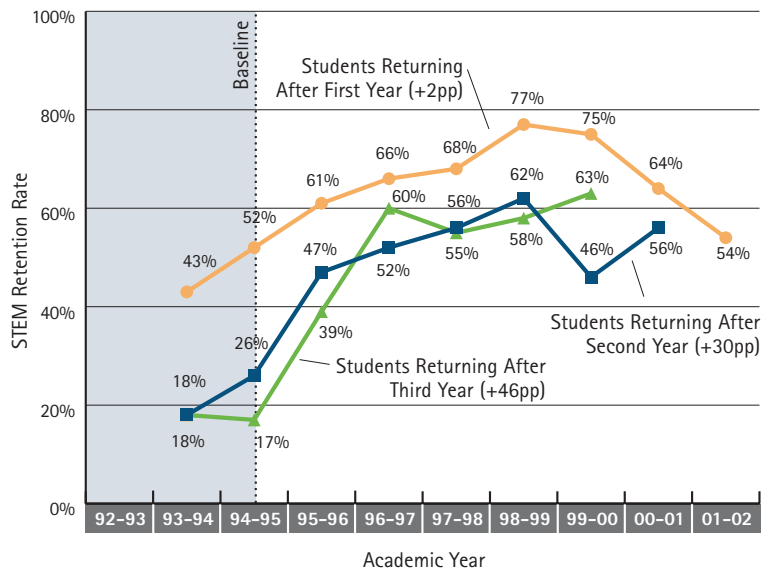
Almost 100% of our graduates secure employment in their areas of career interest. Most go on to graduate school full or part-time especially those who served as MIE Fellows and Summer Interns during their undergraduate years. Biology graduates, in particular, are enrolling full-time in graduate schools immediately upon graduation. The sharp rise in numbers graduating last year and this year reflects a substantially improved retention rate among all STEM students.



KEY INDICATOR 4: Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2001-02

Key Indicator No. 4 presents trends in undergraduate STEM student retention rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2001-02.

Figure 4
STEM Students Retention Rate



STEM Retention Rate

	Baseline							
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
Students Returning After First Year	52%	61%	66%	68%	77%	75%	64%	54%
Students Returning After Second Year	26%	47%	52%	56%	62%	46%	56%	
Students Returning After Third Year	17%	39%	60%	55%	58%	63%		

Highlights and Notes

- STEM student retention rate change** Percentage Point (pp) Change
- Return after first year from Baseline to AY 2001-02 +2 PP
 - Return after second year from Baseline to AY 2000-01 +30 PP
 - Return after third year from Baseline to AY 1999-00 +46 PP

First Year STEM student return rates continued to improve. In AY 1994-95, the return rate by freshmen was 52%, by AY 2001-02, retention rates rose to 54%. Retention rates of 2nd and 3rd year students have also increased from 26% and 17% to 56% and 63%, respectively. This strong performance was attributed largely to the effectiveness of implementing a comprehensive educational reform model that is student centered.





KEY INDICATOR 5: STEM Student Activities and Achievements

Indicator No. 5 presents trends in student activities supported by MIE as well as the University. Figure 5.1 shows STEM Student Achievement from AY 1995-96 to 2000-01. Figure 5.2 summarizes STEM Student assistantship activities from AY 1995-96 to AY 2001-02.

Figure 5.1
STEM Student Development Activities Supported by MIE
AY 1995-96 to AY 2000-01

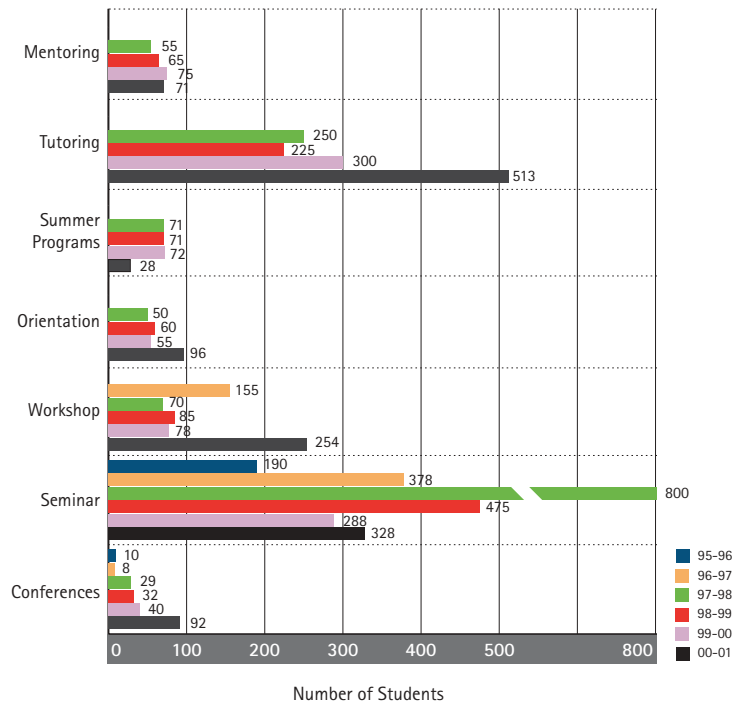
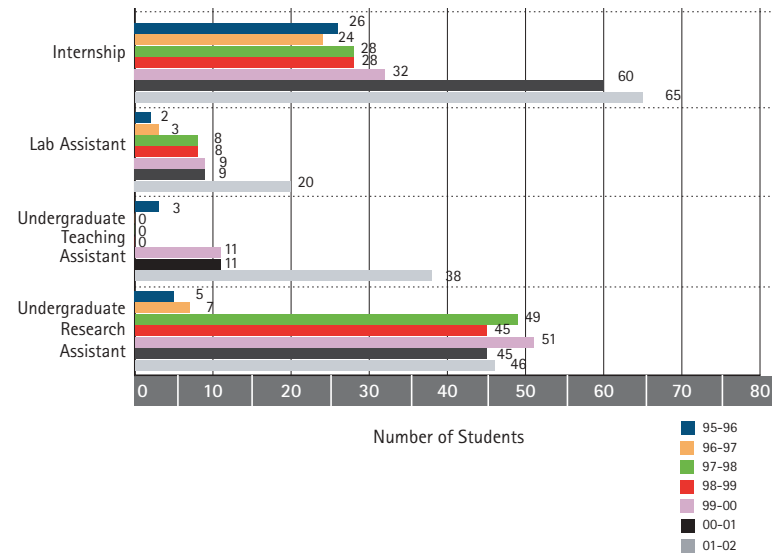


Figure 5.2
STEM Student Research Activities Supported by MIE
AY 1995-96 to AY 2001-02



Highlights and Notes

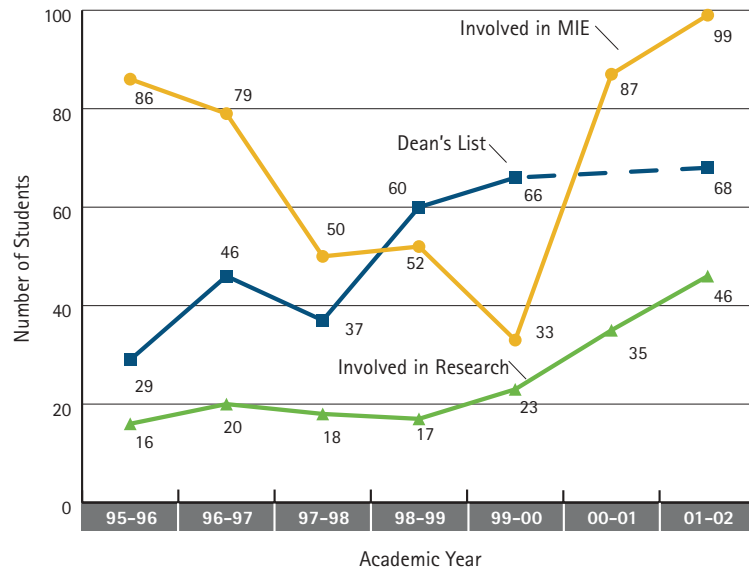
In AY 2000-01, the number of STEM students receiving tutoring reached 513; 328 attended seminars compared to 190 in AY 1995-96, an increase of 119%; and 92 attended conferences compared to 10 in AY 1995-96, an increase of 820%. In AY 2001-02, 68 were involved in internships, an increase of 162%; and 46 served as undergraduate research assistants, compared to five in AY 1995-96, an increase of 820%.



KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 5.3 shows STEM Student Achievement from AY 1995-96 to 2001-02

Figure 5.3
STEM Student Achievement



Student Perceptions

Bowie State's STEM Fellows and Part-time Assistants (PTAs) continue to show a strong interest in research and obtaining advanced degrees. When surveyed in 2001-02, 95% of the combined groups aspire to more than a BA or BS degree. Fifty-six percent (56%) expect to qualify for a PhD, MD, or equivalent degree (as contrasted with only 39% in '95-'96). Such a trend provides clear evidence that the STEM students at Bowie State University not only recognize the importance of a graduate or terminal degree in their chosen field of study, but that they feel

more confident about their ability to obtain such a degree. Both Fellows and PTAs feel challenged by their work assignments, value having access to up-to-date computer technology and taking courses that involved lab work.

Exit Interviews

Eighteen STEM Fellows graduated this academic year (AY 2001-02). Exit interviews were conducted with 11 of these students. Ten out of the 11 were planning to attend graduate school, eight full-time and two part-time. All planned to work in their major field of study, except for one math major who was slated to enroll at Cornell University as an MBA major. One of the Biology graduates was planning to pursue a PhD in biochemistry at Howard University with a full scholarship. Three of the other 5 Biology graduates expected to work at NIH during the summer as lab assistants or interns. A Computer Technology graduate had already accepted a full-time appointment at NASA's Goddard Space Flight Center. All of those interviewed anticipated earning in excess of \$40K per year once they went to work full-time.

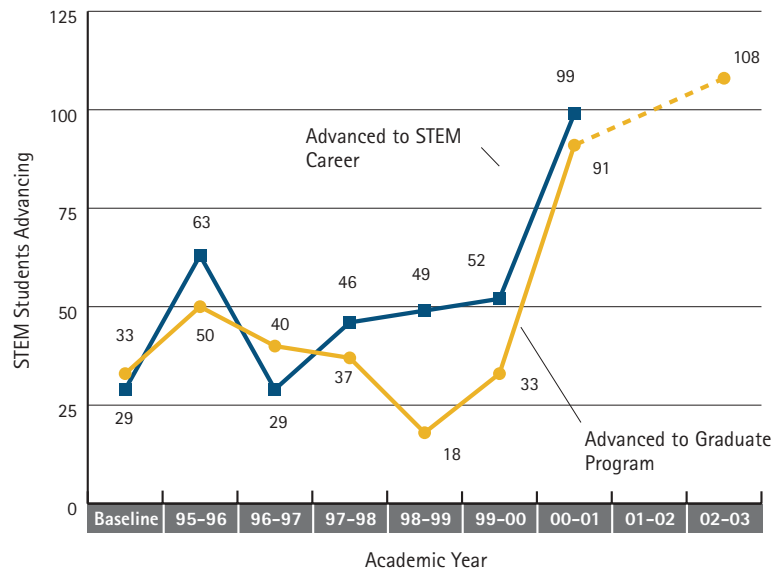
When asked what things they liked most about their years at Bowie State University, 6 out of the 11 interviewees specifically mentioned the advantage of the small class sizes, a salient feature of Bowie State University. Many liked the family atmosphere on campus and found the faculty, particularly their mentors, very helpful. Another student appreciated the development of self-discipline needed to prepare a bi-weekly report on his research activities. All found their faculty mentors demanding but helpful. And all valued the MIE sponsored workshops on such topics as how to make formal presentations, prepare resumes, and dress for success. One graduating senior commented that "as a result of the financial support I received, I was able to spend more time on campus studying and getting better grades." Another said: "the MIE program is the best thing going at Bowie State University."



KEY INDICATOR 6: Students Advanced to Graduate Programs or STEM Careers Trends: AY 1994-95 to AY 2002-03

Key Indicator No. 6 presents trends in STEM graduates who pursue advanced degrees or advance to STEM careers. Figure 6 shows trends for undergraduate STEM students by major from AY 1994-95 to AY 2002-03.

Figure 6
Advancing STEM Students



STEM Students Advancing to Graduate Programs from Baseline to AY 2002-03

	Baseline								
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03
Computer Science	16	21	17	13	12	16	63	m	89
Mathematics	9	17	9	9	2	14	7	m	8
Natural Sciences	8	12	14	15	4	3	21	m	11
Total	33	50	40	37	18	33	91	n.a.	108

STEM Students Advancing to STEM Careers from Baseline to AY 2000-01

	Baseline								
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03
Computer Science	20	45	18	35	37	38	63	m	m
Mathematics	9	14	8	8	9	12	7	m	m
Natural Sciences	m	4	3	3	3	2	29	m	m
Total	29	63	29	46	49	52	99	n.a.	n.a.

Highlights and Notes

Computer Science - 89 students advanced to graduate programs in AY 2002-03, and 63 students advanced to STEM careers in AY 2000-01, increasing from 16 students and 20 students respectively in the baseline year.

Natural Sciences - 11 students advanced to graduate programs in AY 2002-03, increasing from 8 students in the baseline year. Twenty-nine students advanced to STEM careers in AY 2000-01.

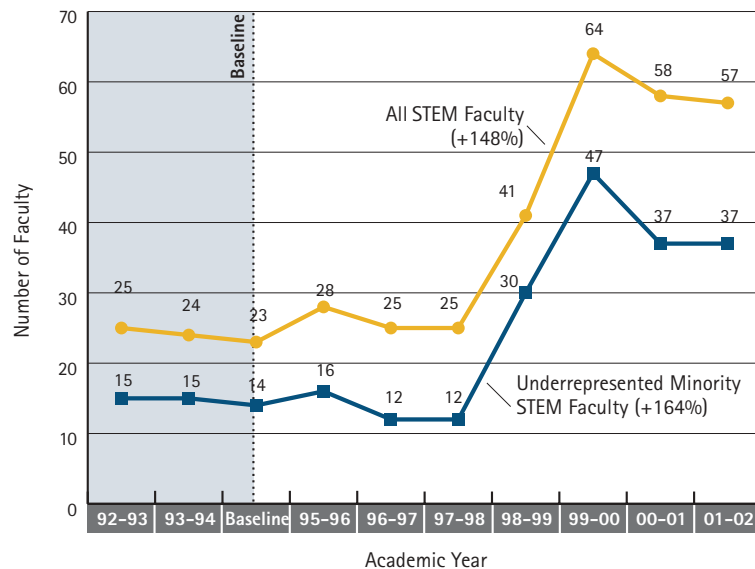


KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No. 7 presents STEM faculty demographic trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 1992-93 to AY 2001-02.

Figure 7

STEM Faculty Demographics All STEM vs. Underrepresented Minority Faculty



Underrepresented Minority Faculty in STEM

	Baseline								
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	%change
All (A)	23	28	25	25	41	64	58	57	+148%
Underrepresented Minority (B)	14	16	12	12	30	47	37	37	+164%
Percentage (B/A)	61%	57%	48%	48%	73%	73%	64%	65%	+4pp

Institution Total Faculty Trends

	Baseline								
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	%change
Total	225	265	262	262	295	379	286	309	37%

Highlights and Notes

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 23 to 57 faculty members) +148%
- Underrepresented Minority STEM (from 14 to 37 faculty members) +164%

- Increased research opportunities have favorably impacted the recruitment and retention of a higher caliber STEM faculty. Several new and continuation grants have been awarded to faculty in STEM for a total value of \$2.9M for AY 2001-02.
- Two new faculty members were hired in the Department of Computer Science. A senior professor in Natural Sciences went on terminal leave during AY 1999-00 with the expectation of retirement at the end of the academic year.
- A temporary hold on granting release time to faculty who do not appear as the Principal Investigator on a funded grant project but instead serve as 'key personnel' on a funded award was put in place by the Office of Academic Affairs. The action was taken so that faculty could maintain their Standard Teaching Load as required by the University System of Maryland.





KEY INDICATOR 8: Faculty Research and Activities

Faculty Research Outcome/Achievement

Faculty achievements vary from the acquisition of externally funded grants and contracts to journal publications, professional society conference presentations, and community service. Figures 8.1 and 8.2 summarize that information over the last 8 years.

Faculty Funding/Grants Submitted and Received

STEM faculty have begun the transition from only teaching to teaching and research. The MIE program, coupled with preliminary results from a number of its initiatives, has become a strong tool to use as leverage in bidding for and securing external funding. During the last academic year (2001-02), the annual value of externally sponsored programs in the STEM domain reached a level of almost \$3M, a six-fold increase over pre-MIE levels. In the Department of Natural Sciences, externally funded grants involve studies in the areas of remote sensing technology for assessing the quality of the world's environment, developing technologically sophisticated classroom facilities for lectures, labs, tutoring in the areas of science and mathematics, and biotechnology involving a study of immunological molecules and processes. The Department of Computer Science has acquired external funding to conduct projects involving networking, multimedia database systems, data mining, document ontology, and the digital divide. A number of these studies are being carried out in collaboration with the University of Maryland's Institute for Advanced Computer Studies.

Figure 8.1
Proposals

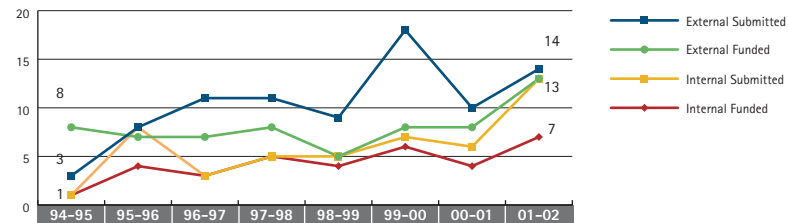


Figure 8.2
Publications and Presentations

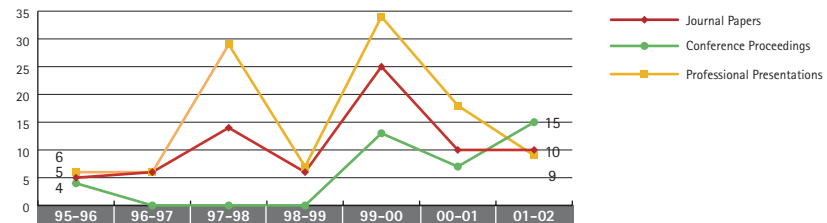
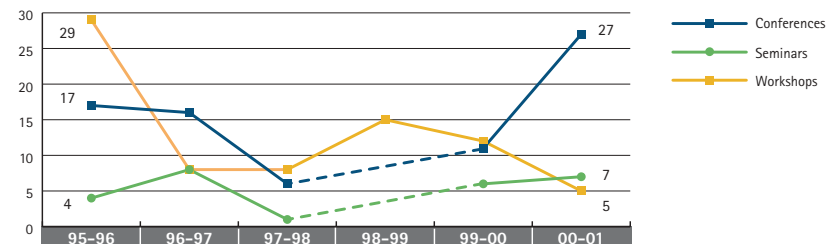


Figure 8.3
Professional Development Activities





KEY INDICATOR 8: Faculty Research and Activities (continued)

Faculty Activity Support

The Bowie State University MIE Initiative continues to provide mini-grants (pilot grants) with a maximum of \$10K to each faculty grantee. The University has provided additional funds together with other funds provided by two faculty-acquired external grants. Since the beginning of this program in 1995, 47 internal, peer reviewed, grants have been awarded. In a few instances, the pilot projects have expanded into larger studies with external support. A very positive step and an excellent teaching tool has been the joint attendance at meetings and conferences by both faculty and students. Those STEM Fellows and Part-time Assistants who are actively involved in research projects are the ones being invited to participate.

Outstanding MIE Scholar Awards

During the year a number of STEM faculty were awarded outstanding scholarship and teaching awards by their colleagues or by various professional societies. The number of publications and presentations continue to rise with 46 conferences attended and 10 papers presented during the last academic year (see Fig. 8.2).

Illustrative of the quality of faculty who have joined Bowie State in the last few years are the following profiles of two recent recipients of MIE's Exemplary Faculty Scholarship Award:

Dr. Bradford Braden is an outstanding teacher and dedicated researcher who jointed the Department of Natural Sciences at Bowie State in 1997. His work

on the treatment of respiratory diseases through the use of the viral neutralizing properties of anti-RSV antibodies is known nationally and internationally. He has published 22 professional papers since joining the Bowie State community and has received several research grants from such agencies as NIH, NASA, and the Md. Industrial Partnership program. His commitment to and interest in students is well known. He is currently collaborating with a Buenos Aires professor, backed with an NIH grant that supports international collaboration, on the affinity maturation of antibodies.

Dr. Manohar Mareboyana, an Associate Professor in the Dept. of Computer Sciences, is actively involved in both teaching and research. He has published extensively on such topics as parallel algorithms, neural networks, image processing and image compression. He has or is serving as the Principal Investigator on several research projects sponsored by NASA, NSF, and the Applied Physics Lab at John Hopkins University. He is also mentoring several graduate and undergraduate students, three of whom recently presented and published their research at the National Conference on Undergraduate Research.



KEY INDICATOR 9: Collaborative and Pre-College Activities

Pre-College Activities

- Information Technology Outreach Initiative--- since 1999, the MIE program at Bowie State University has sponsored or co-sponsored an IT Outreach Initiative involving public and private high schools and middle schools in Prince George's, Anne Arundel, and Montgomery Counties. Twenty-three Bowie State University students with advanced IT skills have been assigned to work with high school and middle school teachers on the use of computers in the classroom. An estimated 500 students and 25 teachers have benefited. Evaluation results indicated that students, teachers, and Bowie State's Technology Resource Assistants (TRAs) all benefited in a very positive way.
- STEM Summer Academy---launched in 1996, MIE's summer academy is geared to prepare science and math majors entering college as freshmen by strengthening their skills in mathematics, computer technology as well as study habits. This six-week "jump start" program is designed to help students better manage the transition from high school to college. Students live on campus. All expenses are covered. Graduates of the program have been found to have higher grade point averages, higher levels of confidence, and higher retention rates. To date, almost 300 students have participated.

Collaborative Activities

During the Academic Year '01-'02, Bowie State University and its three STEM Departments collaborated with:

- NASA (especially the Goddard Space Flight Center) on Earth Science research, the Bowie State Satellite Operations Control Center (BSOCC), and Goddard's Summer Institute in Engineering and Computer Applications (SIECA). Since its initial launch in 1996, through the collaborative effort of Bowie State University, NASA and Honeywell, 60 BSU STEM students have been certified as Command Controllers, Spacecraft Analyst and Mission Planners. Many of the graduates have gone on to work for NASA or its contractors.
- The K-12 community, especially area high schools and middle schools, by sponsoring open houses, science project awards, in-service-training for math and science teachers and coordinators, and STEM awareness programs. Several staff and faculty members have served as judges of school sponsored science projects.
- Maryland Applied Information Technology Initiative (MAITI), in collaboration with Bowie State University and other higher education institutions in MD, on solving the shortage of IT workers in the State.
- Government Laboratories, University Based Research Centers, and private industry on providing 65 STEM students with summer internships last summer. This brings the total number of summer interns to 300 since the inauguration of the MIE sponsored program in 1996.
- The University of Maryland-College Park and the University of Maryland- Baltimore County, on collaborative research and curriculum development projects. The University of Maryland-College Park's Institute for Advanced Computer Studies (UMIACS) has been collaborating with Bowie State's Computer Science Department faculty and students on a number of research projects.
- MedImmune Inc., a local bio-tech company, in collaboration with BSU and the state funded Maryland Industrial Partnership program, by supporting the research of one of our Natural Science faculty members (see profile that follows) on viral neutralizing antibodies.
- Local professionals as part of the annual MIE Showcase program. Six to 10 professionals, in a panel format, meet with BSU students to talk about job opportunities and how to qualify for careers in their organizations.



KEY INDICATOR 10: Research and Computing Resources: AY 1995–96 to AY 2000–01

New Building

The new Center for Learning and Technology (CLT) building “opened for business” in time for fall 2000. The state-of-the-art building houses primarily the departments of the School of Education and Professional Studies. STEM students have access to its high-tech classrooms and other common facilities. Planning for the New Science Building is almost complete. A groundbreaking ceremony was held in fall 2000. The new building, which will house MIE, BSOC, and Computer Science as well as instructional and research labs, is expected to be completed by June 2002.

Research Center, Lab, and Major Equipment

- A new computer lab for the Computer Technology program was set up.

Research Center/Lab	Year Built	Research Center/Lab	Year Built
Scientific Data Visualization Lab	1997	Biology Lab	1991
Distributed Computing Ctr.	1996	Physics Research Lab	1991
Open Lab - Windows NT	1992	Inorganic Chemistry Lab	1991
Open Lab II - Unix	1996	Biology Research	1991
Hughes Instructional Lab	1996	Botany Lab	1991

Computing Resources

- The university has acquired the Blackboard software for developing web-enhanced courses.

KEY INDICATOR 11: Major Academic Events

Major Academic Events

In AY 1999-00, additional personnel were hired and resources were allocated to the Office of Enrollment Management to broaden student recruitment activities, including out-of-state recruitment, and to enhance the financial aid operation. The recent settlement between the U.S. Office of Civil Rights and the State of Maryland is expected to enhance the university's funding effective July 2002.

Institution/MIE Leadership

Dr. Calvin Lowe was hired as the next President of Bowie State University in May 2000. Dr. Lowe was the VP for Research at Hampton University in Virginia. The new president has appointed a completely new executive administration, i.e., five new vice presidents—all, except the VP for Student Affairs, are new to Bowie State University. That includes dividing the position of VP for Administration and Finance into two different positions: VP for Administration and VP for Budget and Finance. The new administration has made some organizational changes such as (1) the MIE PI and Director, Dr. Nagi T. Wakim, now reports to the Provost instead of the President, (2) the Institutional Research Office was moved from the Office of the President to the Office of the Provost, (3) the Office of Sponsored Programs was moved from Academic Affairs to the Institutional Advancement division, and (4) the Registrar now reports to the VP for Administration instead of the Provost. Several new mid-level administrators were hired, such as, a Director of Facilities, a Chief Information Officer, and a Library Director.

Policy Changes

In AY 1999-00, several new operational policies in areas such as procurement, usage of purchasing card, and purchasing of equipment were introduced or radically changed.

Institutional Revenues and Expenditure

External revenue (e.g., from grants) has allowed for expansion of the MIE activities and programs. The Performance Peer and Aspirational Peer Funding Guidelines have been implemented and should result in enhanced funding from the State of Maryland. The Office of Civil Rights funding should increase the university's budget by 10% each year for 5 years effective FY 2003.

Bowie State University



KEY INDICATOR 12: Major MIE Activities

Institutionalized MIE Program Components

The MIE Model at Bowie State University, particularly those elements pertaining to retention, is in the process of being adopted throughout the university. The Summer Academy, the Tutoring and Resource Center, the Summer Internship Program, and other retention strategies are all being implemented as part of a university-wide expanded program. The responsibility for professional faculty and staff development has been delegated to the Center for Excellence for Teaching and Learning (CETL). The Office of Information Technology has assumed the responsibility of faculty and staff training in the area of information technology. The position of Assessment and Information System Coordinator has become the responsibility of the Office of Institutional Research (October, 2000).

Leveraged Funding

The STEM domain has leveraged several projects that have resulted in additional funding: NIH (Natural Sciences), NASA (Computer Science, Natural Sciences, Mathematics), NSF (Computer Science), Honeywell Technology Solutions, Inc. (BSOCC), National Security Agency (Computer Science), and the Department of Education (Natural Sciences). Since Ay 1994-95, the dollar value of annual, actively sponsored programs (grants and contracts) in the STEM domain has increased six fold to approximately \$3M/year.

In-Kind Contribution

In-kind contributions have been provided in several key areas: student tuition support, faculty release time, facilities, laboratories, equipment, and Staff/Human resource support.

Major Departmental Changes

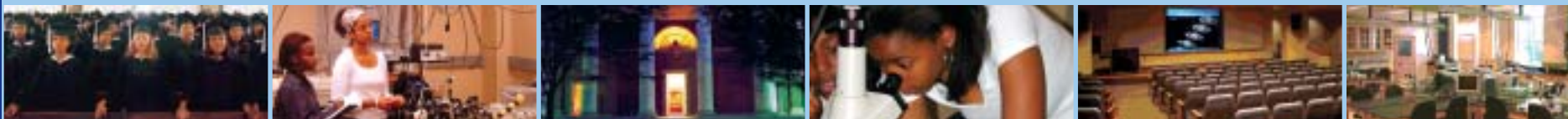
Dr. Elaine J. Davis will lead the MIE Initiative at Bowie State University. She assumed the directorship of the MIE Program, July 1, 2002 after Dr. Nagi Wakim stepped down to return to the professoriate.

Major MIE Activities and Achievements

- 2001-2002
 - Number of undergraduate STEM students graduating doubled (from 40 in AY 1994-95 to 99 in AY 2001-02)
 - Middle States Commission on Higher Ed reaffirms its accreditation of Bowie State University
 - 28,000 sq. foot new Computer Science Building opens
 - New Director of the MIE program appointed
 - 266 STEM students since 1996 have participated in summer research internships
- 2000-2001
 - Externally funded faculty research increases 6-fold from \$500K pre MIE to \$3M
 - Number of undergraduate STEM students doubles since baseline year
- 1999-2000
 - 71 STEM Fellowships awarded
 - Information Technology Outreach program launched involving a partnership between public schools and MIE student assistants
- 1998-1999
 - Student/teacher ratio in STEM classrooms reaches a low of 14 to 1
 - Master's degree program in Applied Mathematics offered
- 1997-1998
 - Bowie State's Satellite Operations and Control Center (BSOCC) initiated with the support and involvement of NASA and Honeywell Corporation spacecraft analysts
 - Computer Technology degree offered by the Department of Computer Science
- 1996-1997
 - Six-week Summer Academy Bridge Program for incoming STEM freshmen launched
 - Tutoring and Resource Center for all STEM students established
 - Faculty grant program initiated to provide pilot funds for research projects. Open computer lab, research labs and instructional labs provided to STEM students
- 1995-1996
 - MIE Fellowships and Part-time Assistantships initiated
 - MIE Experience Newsletter published and distributed to off and on-campus stakeholders
 - Periodic student assessment instruments initiated to track opinions and perceptions
 - Development workshops for students, faculty, and staff offered
- 1994-1995
 - Baseline year



Model Institutions for Excellence



SPELMAN COLLEGE

MIE Fact Book 2002

PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Aeronautics and Space Administration



Systemic Research, Inc.



Spelman College, one of the nation's most highly regarded colleges for women, was founded by Sophia B. Packard and Harriet E. Giles. Appalled by the lack of educational opportunity for Black women, the missionaries returned to Boston determined to affect change. On April 11, 1881, they opened a school in the basement of Atlanta's Friendship Baptist Church with \$100 provided by the the First Baptist Church of Medford, Massachusetts.

In 1884, John D. Rockefeller visited the school with Mrs. Rockefeller, her sister and her mother, Mrs. Lucy Henry Spelman. Mr. Rockefeller was enormously impressed with the seminary and settled the debt on the property. Later, the name of the school was changed to Spelman Seminary in honor of the Spelman family, longtime activists in the Anti-Slavery Movement.

Lucy Hale Tapley was elected to the presidency in 1910. She believed that training teachers constituted the most efficient use of the school's resources, and strengthened the elementary and secondary education programs. On June 1, 1924, the name of the school was officially changed to "Spelman College."

One of the most significant events in the College's history was the signing of the Agreement of Affiliation between Spelman College, Morehouse College and Atlanta University in April 1929. The agreement set up a university system in which Spelman and Morehouse served as undergraduate institutions and Atlanta University as the graduate school. The largest consortium of Black colleges was ultimately renamed the Atlanta University Center.

As opportunities for Black women increased, Spelman women were encouraged to enter the fields of medicine, law, international affairs, engineering, business and industry. They were prepared and encouraged to enter the best graduate and professional schools in the country.

Spelman College offers majors in 26 fields as well as special pre-law and pre-medical sequences. Counseling programs and placement services helped students to find graduate or professional schools or job opportunities best suited to their talents and training. In 1998, the College was awarded a chapter of Phi Beta Kappa, the nation's oldest and most prestigious honor society. Spelman is now one of only four HBCU's to have such a chapter.

Institution Profile in Brief

History and Background

Year Founded:	1881
Institution Control:	Private
Institution Type:	4-Year Bachelors
Land-Granted:	No
Co-Ed:	No
Affiliation:	Independent
Academic Term:	Semesters

Degree Programs Offered

- Education
- Fine Arts
- Humanities and Languages
- Mathematics
- Natural Sciences
- Social Sciences

President

Dr. Beverly Daniel Tatum

Website

<http://www.spelman.edu/mie>

Student Enrollment / AY 2001-02

	FT	PT	Total
Undergraduate :	2,069	70	2,139
Gender:	Male: 0%	Female: 100%	
Race/Ethnicity:	African American: 96.77%	Hispanic: 0.23%	Native American: 0.05%
	International: 2.95%		

Degrees Conferred / AY 2000-01

Baccalaureate Degree:	434
Dual Degree:	0
Total:	434

Faculty / AY 2001-02

Full Time:	156
Part Time:	48
Total:	204
% Ph.D. Full Time Faculty	82%
Student/Faculty Ratio:	12:1



The Albro Falconer Manley Science Center





MIE Project and Grant

Funded by: NASA

Phase I

Grant Period: 7/1/95 - 6/3/2000

Amount: \$9,126,682

Phase II

Grant Period: 6/25/2001 - 6/26/2006

Amount: \$7,546,083

Principal Investigator/Project Director

Dr. Albert Thompson, Jr., Principal Investigator

Data Managers/Evaluators

Mrs. Gwendolyn M. Johnson, Associate Director for Institutional Research



MIE Profile

Spelman has prepared more than six generations of African Americans to reach the highest levels of academic, community and professional achievement. Sponsored by the National Aeronautics and Space Administration (NASA), the MIE Program enhances Spelman's impressive record of preparing women for science, technology, engineering and mathematics (STEM) careers. The program provides students with research opportunities, strengthens Spelman's STEM infrastructure, supports curriculum and teaching reforms, and establishes early intervention activities for STEM students.

- Research Opportunities - The MIE Research Internship introduces sophomores and juniors to the exciting world of science, engineering and mathematics research. Interns work with Spelman faculty, individually or in teams, on selected projects during the academic year.
- Student Development Opportunities - MIE offers several opportunities for students to develop skills and gain research experience, while being exposed to a variety of career disciplines.
- Faculty Development - Offers opportunities for Spelman STEM faculty to attend professional meetings and workshops
- Curricular Enhancement - MIE supports several initiatives that promote excellence in undergraduate education at Spelman. For instance, the Dual Degree Engineering Program offers engineering courses, establishes cooperative relationships with schools of engineering and facilitates student transition to engineering schools.

MIE Objectives/Goals

1. Initiate and implement early intervention and other student support and academic enrichment activities.
2. Strengthen and update the STEM curriculum to incorporate new important or coherent content and ideas.
3. Initiate and infuse innovative teaching methods into the STEM program.
4. Strengthen and expand the information technology for STEM administration, research, and computing.
5. Improve the STEM physical facilities and acquire equipment and instrumentation.
6. Establish a tracking system for monitoring student progress and for making appropriate modifications to increase student success.
7. Increase by 30% the number of African American women students earning STEM baccalaureate degrees.
8. Increase by 100% the number of African American women entering STEM graduate programs and professional scientific careers.
9. Increase by 100% the number of students receiving undergraduate research and mentoring experiences.
10. Serve as a national resource for other institutions who seek to enhance their STEM baccalaureate output of minorities and women.



Major Achievements based on Key Indicators: A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 01-02	% change
STEM Enrollment	737	707	-4%
URM Enrollment	709	685	-3%
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 01-02	% change
Biochemistry	43	30	-30%
Biology	284	339	+19%
Chemistry	77	42	-45%
Computer and Information Science	68	101	+49%
Dual-Degree Engineering	137	88	-36%
Environmental Science Concentration	n.a.	9	n.a.
Mathematics	73	91	+25%
Natural Science ²	46	n.a.	n.a.
Physics	9	7	-22%
3. Undergraduate STEM Degrees Conferred	AY 94-95	AY 00-01	% change
STEM Degrees Conferred	119	103	-13%
URM Degrees Conferred	118	99	-16%
4. Undergraduate Retention Rate	AY 95-96	AY 99-00	% change
Return Rate After First Year	89%	84%	-5pp
Return Rate After Second Year	81%	77%	-4pp
5. STEM Student Activities and Achievement	AY 96-97	AY 00-01	% change
Conference	3	7	+133%
Seminar	n.a.	8	n.a.
Workshop	n.a.	4	n.a.
Orientation	n.a.	4	n.a.
Field Trip	n.a.	n.a.	n.a.
Lab Session	n.a.	n.a.	n.a.
Summer Programs	n.a.	2	n.a.
Tutoring	n.a.	92	n.a.
Advising	1	n.a.	n.a.
Mentoring	1	52	+5,100%
Others	n.a.	n.a.	n.a.
	AY 95-96	AY 00-01	% change
Research Assistant	32	n.a.	n.a.
Teaching Assistant	n.a.	42	n.a.
Internship	n.a.	23	n.a.
Others	n.a.	n.a.	n.a.
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 00-01	% change
Students Advancing to STEM Career	16	35	+119%
Students Advancing to Grad Programs	52	43	-17%
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	61	58	-5%
URM Faculty	45	47	+4%

8. Faculty Research and Activities	AY 95-96	AY 00-01	% change
Journal Papers	5	11	+120%
Conference Proceedings	0	18	n.a.
Professional Presentations	2	8	+300%
Peer Review	0	6	n.a.
Other	9	n.a.	n.a.
Conferences	7	10	+43%
Seminars	4	2	-50%
Workshops	5	3	-40%
	AY 99-00	AY 00-01	% change
Proposals Submitted for External Funding	8	7	-14%
Proposals Submitted for Internal Funding	1	0	-100%
External Proposals Funded	7	7	no change
Internal Proposals Funded	1	0	-100%

STEM Undergraduate Enrollment¹ and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2001-02	Degrees Conferred AY 2000-01
Biochemistry	30	4
Biology	339	43
Chemistry	42	9
Computer and Information Science	101	15
Dual-Degree Engineering	88	9
Environmental Science Concentration ²	9	1
Mathematics	91	22
Natural Science ²	n.a.	n.a.
Physics	7	0
Total	707	103

¹ Includes full and part-time enrollment

² The Natural Science major was discontinued after AY 1996-97. The Environmental Science Concentration started in AY 1998-99.

STEM Degrees

- Biochemistry
- Biology
- Chemistry
- Computer and Information Science
- Dual Degree Engineering
- Environmental Science Concentration
- Mathematics
- Natural Sciences
- Physics

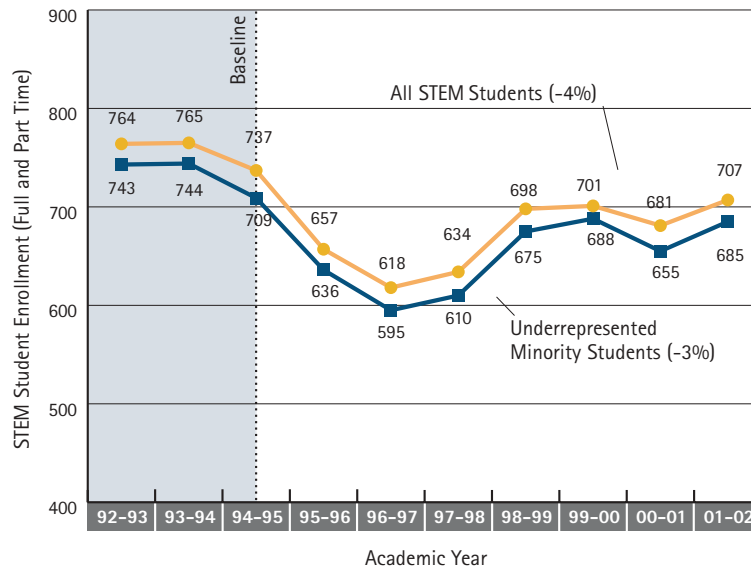




KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2001-02

Key Indicator No.1 presents trends in undergraduate STEM student enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to underrepresented minority students from AY 1992-93 to AY 2001-02. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1
Undergraduate STEM Students Enrolled
All STEM vs. Underrepresented Minority Students



Percentage of Underrepresented Minorities Enrolled in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All STEM Students	737	657	618	634	698	701	681	707	-4%
Underrepresented Minority Students	709	636	595	610	675	688	655	685	-3%
Percentage	96%	97%	96%	96%	97%	98%	96%	97%	+1pp

Institution Total Undergraduate Student Trends

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	1,976	1,961	1,899	1,937	1,897	2,065	2,092	2,139	+8%

Highlights and Notes

STEM student enrollment % change from baseline to AY 01-02

- All STEM (from 737 to 707 students) -4%
- Underrepresented Minority STEM (from 709 to 685 students) -3%

Overall institution enrollment dropped purposely to a low of 1,899 in AY 1996-97.

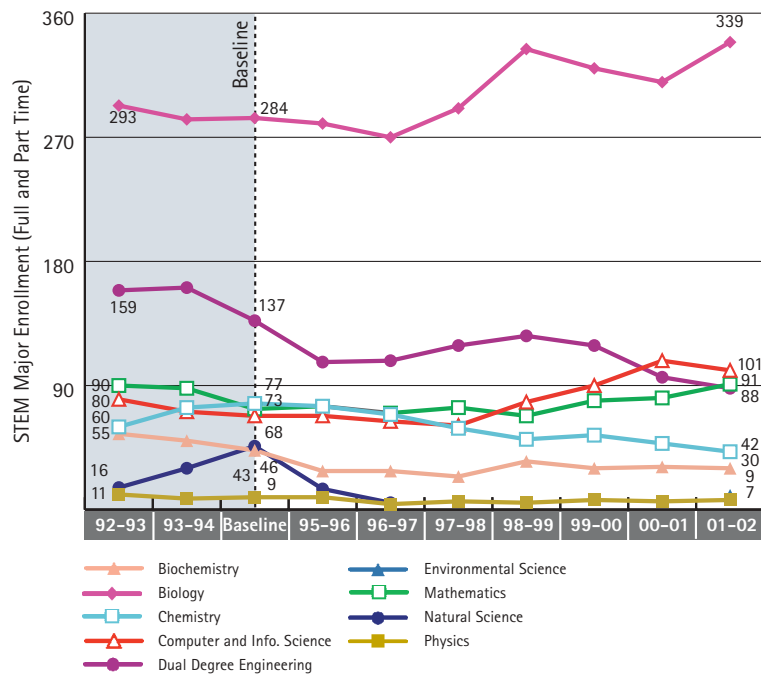




KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2001-02

Key Indicator No. 2 presents undergraduate student enrollment trends by STEM major: Biology, Chemistry, Computer and Information Science, Mathematics, Physics, Biochemistry, Natural Science, and Dual Degree Engineering. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2001-02.

Figure 2
STEM Enrollment by Major



STEM Course Enrollment

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Biochemistry	43	28	28	24	35	30	31	30	-30%
Biology	284	280	270	291	334	320	310	339	+19%
Chemistry	77	75	69	59	51	54	48	42	-45%
Comp and Info. Sci.	68	68	64	61	78	90	108	101	+49%
Dual Degree Engineering	137	107	108	119	126	119	96	88	-36%
Env. Sci. Concentration	na	na	na	na	1	2	1	9	na
Mathematics	73	75	70	74	68	79	81	91	+25%
Natural Science ¹	46	15	5	na	na	na	na	na	na
Physics	9	9	4	6	5	7	6	7	-22%
Total	737	657	618	634	698	701	681	707	-4%

Highlights and Notes

Student enrollment % change from baseline to AY 2001-02

- Biochemistry (from 43 to 30 students) -30%
- Biology (from 284 to 339 students) +19%
- Chemistry (from 77 to 42 students) -45%
- Computer and Info. Sci. (from 68 to 101 students) +49%
- Dual Degree Engineering (from 137 to 88 students) -36%
- Environmental Science Concentration na
- Mathematics (from 73 to 91 students) +25%
- Natural Science (from 46 to 9 students)¹ na
- Physics (from 9 to 7 students) -22%

¹ The Natural Science major was discontinued after AY 1996-97. The Environmental Science Concentration started in AY 1998-99.

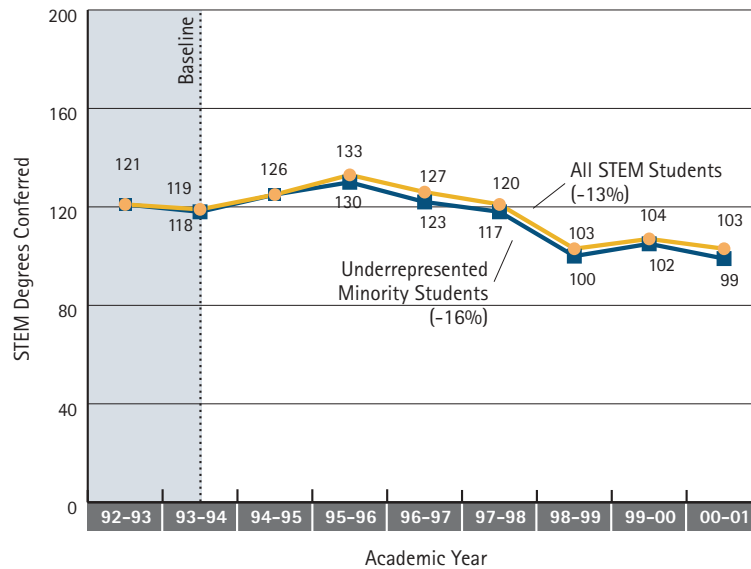




KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2000-01

Key Indicator No. 3 presents trends in total number of undergraduate STEM degrees conferred. Figure 3 shows degrees conferred trends for all STEM students compared to underrepresented minority students from AY 1992-93 to 2000-01.

Figure 3
Undergraduate STEM Degrees Conferred
All STEM vs. Underrepresented Minority Students



Underrepresented Minority Students Conferred STEM Degrees

	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
All STEM Students	119	126	133	127	120	103	104	103	-13%
Underrepresented Minority Students	118	126 ¹	130	123 ¹	117 ¹	100	102 ¹	99	-16%
Percentage	99%	100%	98%	97%	98%	97%	98%	96%	-3pp

¹ Data Imputed

Institution Total Undergraduate Degrees Conferred

	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
Total	409	421	469	400	440	362	422	434	+6%

Highlights and Notes

STEM student degrees conferred % change from baseline to AY 00-01

- All STEM (from 119 to 103 students) -13%
- Underrepresented Minority STEM (from 118 to 99 students) -16%

Number of STEM degrees conferred to all students decreased 13%, from 119 students in the baseline year to 103 students in AY 00-01.

Number of STEM degrees for underrepresented minority students decreased 16%, from 118 students in the baseline year to 99 in AY 00-01.





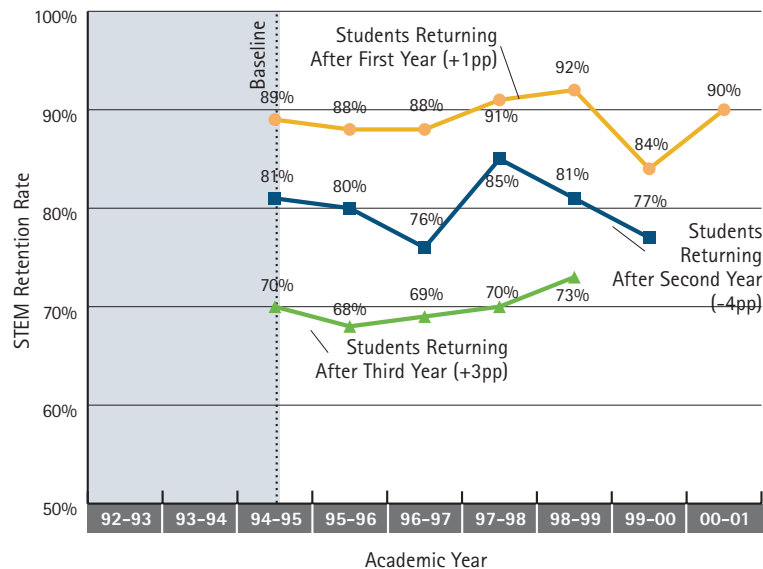
KEY INDICATOR 4:

Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2000-01

Key Indicator No. 4 presents trends in undergraduate STEM student retention rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2000-01.

Figure 4

STEM Students Retention Rate



STEM Retention Rate

	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Return After First Year	89%	88%	88%	91%	92%	84%	90%
Return After Second Year	81%	80%	76%	85%	81%	77%	
Return After Third Year	70%	68%	69%	70%	73%		

Highlights and Notes

- | STEM student retention rate change | Percentage Point (pp) Change |
|--|------------------------------|
| • Return after first year from Baseline to AY 00-01 | +1 PP |
| • Return after second year from Baseline to AY 99-00 | -4 PP |
| • Return after third year from Baseline to AY 98-99 | +3 PP |





KEY INDICATOR 5: STEM Student Activities and Achievements

I am a Ph.D. candidate in the Applied Physics program at the University of Michigan, Ann Arbor. My educational background includes a M.S.E. in electrical engineering from the University of Michigan, Ann Arbor in December 2001, a B.E.E. in electrical engineering from the Georgia Institute of Technology in June 1999, and a B.S. in physics from Spelman College in May 1999.

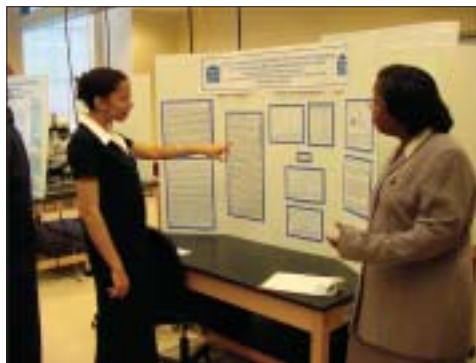


*Adrienne
Diarra
Stiff-Roberts*

My dissertation research involves the study of optoelectronic properties of infrared photodetectors comprised of nano-scale semiconductor material. The most enjoyable aspect of my work is its multi-disciplinary nature, as it combines physics, electrical engineering, optics, and material science. The appeal of such a combination is one of many ideas instilled in me during my undergraduate studies at Spelman College. My experience at Spelman has guided me throughout my graduate career, and much of what I learned was made possible by the Model Institutions for Excellence (MIE) program, specifically the Summer Science and Engineering Program (SSEP), Science Day, and undergraduate research through an MIE research team.

First and foremost, Spelman College developed my confidence, as well as my work ethic, imparting a sense that I can succeed in any situation, an attitude that has served me well. Perhaps the most important experience establishing my positive attitude towards higher education in general was

SSEP, a preparatory program occurring during the summer before the freshman year. During this time I was able to become acclimated to campus life, meet other people with similar interests, and experience a college-level workload in a nurturing environment. The program was very challenging, including classes in chemistry, calculus, computer programming, and statics. However, my involvement in SSEP set the pace for the rest of my time at Spelman and made the transition from high school a very smooth process.



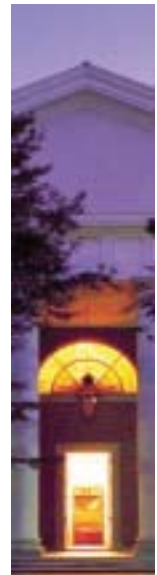
MIE Science Day

Upon my arrival at Spelman, I intended to major in physics since it had been my favorite subject in high school. However, unlike many underclassmen, I never had the desire to change my major, due in large part to the support and encouragement from the Physics Department. At that time, the Spelman Physics Department only offered three semesters of physics classes, thus I completed most of my curriculum at Morehouse College. This arrangement could have caused a sense of isolation; however, the

MIE program provided opportunities for me to remain involved with physics activities at Spelman, supplementing my courses at Morehouse. Specifically, Science Day was very important and provided an opportunity for me to learn about research both on and off campus. In addition, I served as a tutor for the Spelman Physics Department for two years, receiving monetary compensation from MIE funds. This tutoring experience was very significant for me in that it convinced me I would enjoy teaching and should obtain a Ph.D. and reinforced my general physics understanding as I tried to help others. Finally, I was also an MIE intern conducting research with Dr. Derrick Hylton, chair of the Physics Department. While I had worked as a summer research intern before in government labs, this was my first glimpse of what I could expect from graduate-level research. My work was very independent and open-ended, and the success of my research project had a direct correlation to the amount of effort I put forth. In addition, I had to balance my research with coursework. This experience prepared me more than I could have known for the rigors of graduate school.

To conclude, I thank you for this opportunity to reflect upon my experience at Spelman College and how the MIE program has been a benefit to me.

Sincerely,
Adrienne Diarra Stiff-Roberts
Ph.D. Candidate, Applied Physics
University of Michigan, Ann Arbor



KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Mentor Relationships

Mentors come in just as many flavors as ice cream. Choosing the right one that best suits your goals is very important. The first year of graduate school is devoted to finding a mentor that suits your goal to become a scientist. NSF/NASA Model Institutions for Excellence (MIE) gave me my first experience with a mentor, and gave me a foundation of what to expect in order to succeed.

Research

Undergraduate laboratory research experiences assisted me in deciding which career to pursue and gave me graduate school confidence. In addition, my research experiences have sharpened my analytical skills. Doing research in the field of Breast Cancer has also given me the opportunity to feel connected to the medical world and people. Knowing that my work impacts the quality of life makes it worth while.

Support

When I needed support, I have always felt as though it was readily available. My undergraduate mentor, the late Dr. Jann P. Primus, was one of the best supporters of my career as a scientist. Working with an educated, successful, Black woman scientist who took an interest in me and my life was truly a blessings. In addition to the support of my mentors, the MIE program contributed financial support which included assisting with my tuition. This financial support allowed me to remain in school. MIE also opened doors of opportunities throughout

my undergraduate academic years to participate in NIH/UMARC Minority Access to Research Careers, AMGEN internship, summer intern at NYU, and ultimately enter graduate school at Baylor College of Medicine, Department of Molecular and Cellular Biology.



JoyAnn Phillips Rohan

I thank the MIE Program for opening these doors.

JoyAnn Phillips Rohan
Graduate Student, Baylor College of Medicine
Department of Molecular and Cellular Biology



KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 5.1
STEM Student Development Activities Supported by MIE:
AY 1996-97 to AY 2000-01

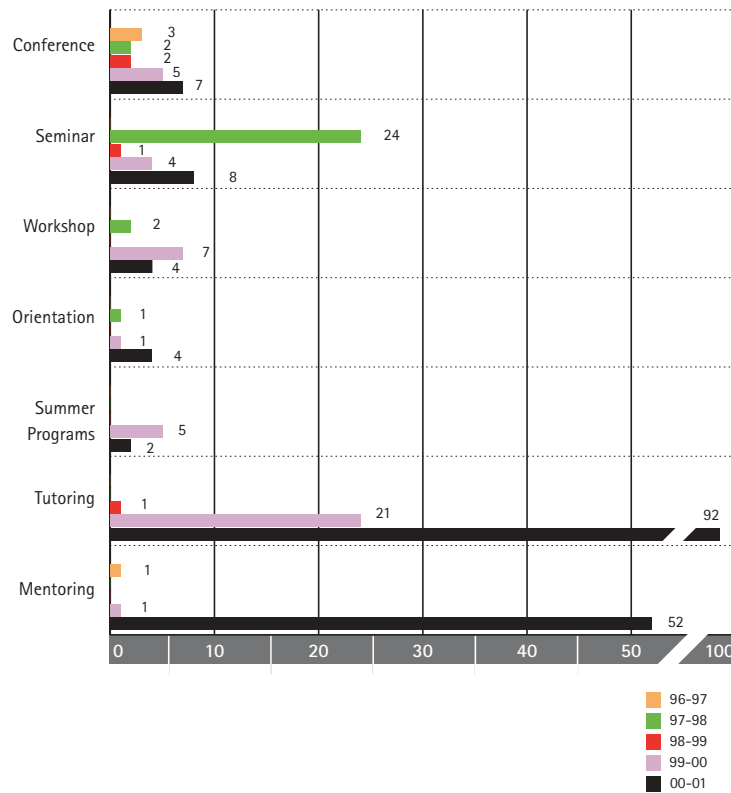
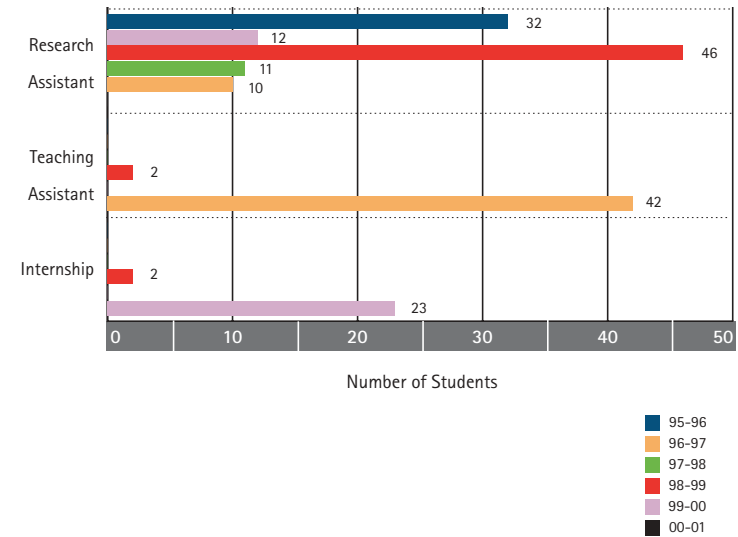


Figure 5.2
STEM Student Research Activities Supported by MIE:
AY 1995-96 to AY 2000-01

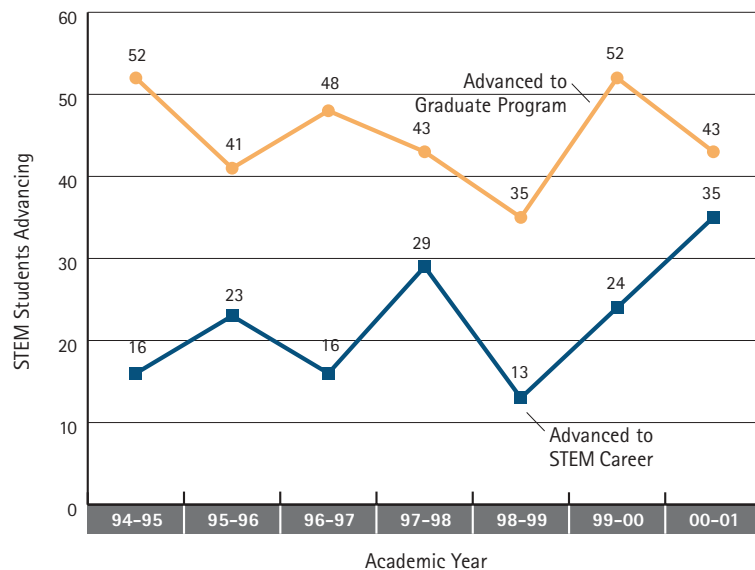




KEY INDICATOR 6: Students Advanced to Graduate Programs or STEM Careers Trends: AY 1994-95 to AY 2000-01

Key Indicator No. 6 presents trends in STEM graduates who pursue advanced degrees or advance to STEM careers. Figure 6 shows trends for undergraduate STEM students by major from AY 1994-95 to AY 2000-01.

Figure 6
Advancing STEM Students



STEM Students Advancing to Graduate Programs from Baseline to AY 2000-01

	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Biochemistry	3	3	1	1	0	1	4
Biology	15	18	20	24	17	28	27
Chemistry	13	3	11	6	4	6	3
Computer Science	3	3	2	2	5	2	0
Dual Degree Engineering	1	4	5	3	2	4	1
Environmental Science	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mathematics	4	7	8	6	6	11	8
Natural Science	12	2	1	n.a.	n.a.	n.a.	n.a.
Physics	1	1	0	1	1	0	0
Total	52	41	48	43	35	52	43

STEM Students Advancing to STEM Careers from Baseline to AY 2000-01

	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Biochemistry	0	0	0	0	0	0	0
Biology	2	3	4	4	6	4	3
Chemistry	1	2	2	2	1	2	2
Computer Science	2	8	5	9	1	5	11
Dual Degree Engineering	2	4	4	6	4	8	5
Environmental Science	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	11
Mathematics	6	3	1	7	1	5	3
Natural Science	3	2	0	0	0	0	0
Physics	0	1	0	1	0	0	0
Total	16	23	16	29	13	24	35

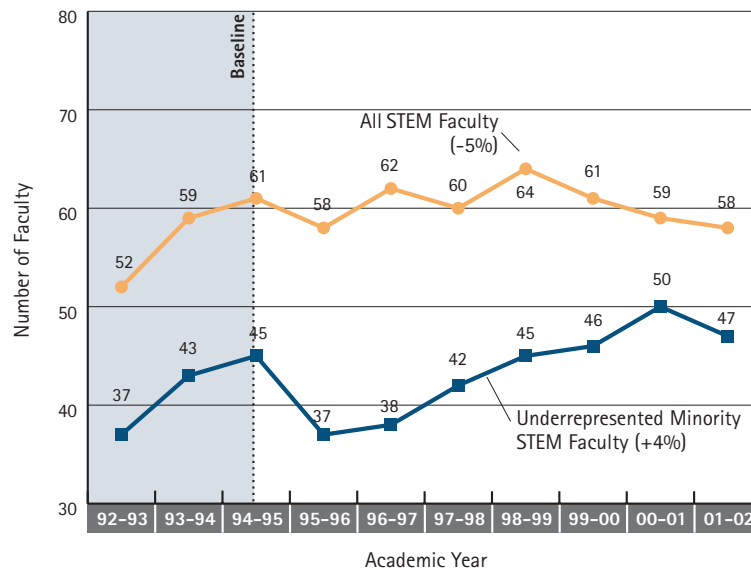




KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No. 7 presents STEM faculty demographic trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 1992-93 to AY 2001-02.

Figure 7
STEM Faculty Demographics
All STEM vs. Underrepresented Minority Faculty



Percentage of Underrepresented Minority Faculty in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All Faculty	61	58	62	60	64	61	59	58	-5%
Underrepresented Minority Faculty	45	37	38	42	45	46	50	47	+4%
Percentage	74%	64%	61%	70%	70%	75%	85%	81%	+7pp

Institution Total Underrepresented Minority Faculty in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	209	192	203	200	205	197	195	204	-2%

Highlights and Notes

STEM faculty % change from baseline to AY 01-02

- All STEM (from 61 to 58 faculty members) -5%
- Underrepresented Minority STEM (from 45 to 47 faculty members) +4%





KEY INDICATOR 8: Faculty Research and Activities

Dr. Sonya McCall joined the Chemistry Department as a Scholar Teacher this academic year. She holds the Ph.D. in Materials Science and Engineering from North Carolina State University. Dr. McCall taught General Chemistry 111 Lecture and Laboratory this year.

Dr. McCall's research involves the modeling and simulating of a High Pressure Organometallic Chemical Vapor Deposition (HPOMCVD) reactor. She is testing a physico-chemical model



Dr. Sonya McCall

of the HPOMCVD process using Computational Fluid Dynamics and data from a HPOMCVD reactor at Georgia State University. Dr. McCall presented her research at the 2001 fall meeting of the Materials Research Society in Boston and it will be published in the MRS Symposium Proceedings. She chaired the Polymers and Materials Science Session at the 39th Annual Conference of the National Organization of Black Chemists and Chemical Engineers (NOBCChE). In the summer of 2002 she participated in the Summer Institute in Material Science and Material Culture at MIT.

Dr. McCall's research is funded by the National Science Foundation (Grant No. CHE-0213467) for a research project entitled "Chemical Approaches to the Fabrication of Photonic Crystals of Non-Linear Optical Materials." The main goal of this research is the education of undergraduate students, including

experimental work under faculty guidance. Recent evaluations of photonic bandgap (PBG) crystals have predicted, and in selected cases experimentally demonstrated, significant advantages in the operation of non-linear optical (NLO) devices under quasi-phase-matching conditions not available with conventional structures. The focus of the NSF funded research is the fabrication of PBG crystals of ZnGeP_2 . The motivation for investigating ZnGeP_2 PBG crystals is their utility for comparative studies of the performance of novel PBG structures to conventionally phase matched bulk devices.

While she is most interested in research, she has a growing love for teaching, having been raised in a family of teachers. For the past year and a half (2001-2002) she has taught, General Chemistry 111 and 112 Lectures and General Chemistry 111 Lab, to the undergraduate students at Spelman College, Atlanta, Georgia.

Dr. Monica Stephens joined Spelman College in 2001-02 as the Scholar Teacher in Mathematics. She earned the Ph.D. in applied mathematics from Brown University in 1998 and the completed post doctoral appointments at the University of Wisconsin-Madison and Florida State University. Dr. Stephens taught Differential Equations, Linear Algebra and Precalculus Mathematics, utilizing mathematics



Dr. Monica Stephens

software and WebCT in her teaching. She is supervising the undergraduate research of two students, Kristen Douglas and Evelyn Thomas.

Dr. Stephens is currently working on two research projects, one on climate simulation using a one-dimensional, mixed-layer ocean model and the second on the currents in the Sea of Japan using a computer numerical model of ocean circulation to investigate the structure of Tsushima Warm Current (TWC). She presented a poster, The Formation of the Utteung Eddy and the Secondary Branching of the Tsushima Current in the Sea of Japan at the American Geophysical Union Ocean Sciences Meeting in Hawaii in February 2002. She also attended a workshop on teaching Differential Equations from a Dynamical Systems perspective and plans to restructure Spelman's Differential Equations course for the fall of 2003. This past 2002 summer, she conducted research at Florida State University in the department of Oceanography and submitted two papers for publication to the Journal of Climate.

Dr. Peter Chen completed his undergraduate education in 1986 as a chemistry major at Cornell University. He then entered graduate school at the University of Wisconsin – Madison, where he studied laser spectroscopy under John C. Wright in the analytical division of the Chemistry Department. In the Fall Semester of 1992, Peter joined the faculty at Spelman College as a lecturer and completed the writing of his Ph. D. dissertation on "Infrared Four Wave Mixing: A New Spectroscopic Technique Used to Probe the Interaction Between





KEY INDICATOR 8: Faculty Research and Activities (continued)

Vibrational Levels in Chlorobenzene.” In 1993, he was promoted to Assistant Professor of Chemistry, and in 1998, he was promoted to Associate Professor.

Dr. Chen has authored or co-authored 20 scholarly publications, given more than 30 scholarly presentations, and has mentored over 20 undergraduate research students. He has served as the author and principal investigator for seven Federally funded research grants on laser spectroscopy, including a National Science Foundation CAREER award grant. His current research group includes 4 undergraduate research students and two technicians, and is funded by grants from the National Science Foundation and NASA. The College is currently applying for a patent for his group's work on a new multiplex coherent Raman spectroscopy detector and method. He is a recipient of a 1992 Reilley-Upjohn Award for Outstanding Research Ability and Accomplishments in Analytical Chemistry and the 2001 Spelman College Presidential Award for Research. In 2002, he was inducted into Phi Beta Kappa as an honorary member.

Dr. Chen recently served as the Interim Director for the Spelman College Research Infrastructure in Minority Institutions (RIMI) program, and helped secure a \$4.2 million grant from the National Institutes of Health (NIH). He has also served as a co-leader of the Project Kaleidoscope Diversity Task Force is currently a member of the Project Kaleidoscope Faculty for the 21st Century network.



Figure 8.1

Proposals

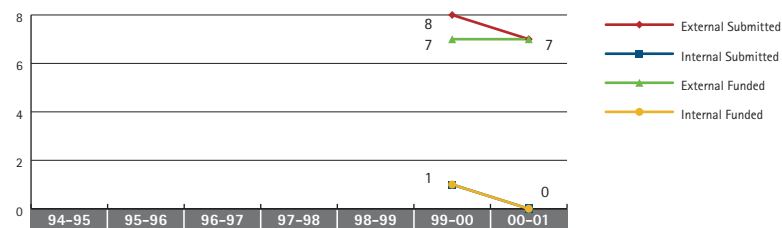


Figure 8.2

Publications and Presentations

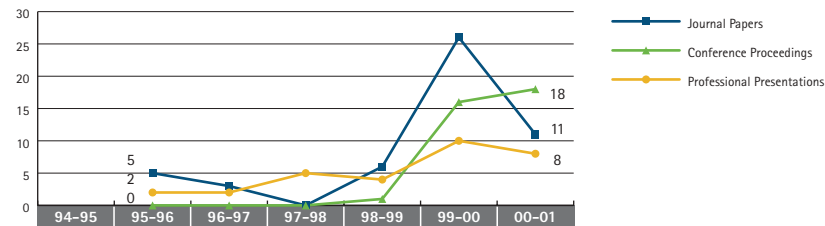
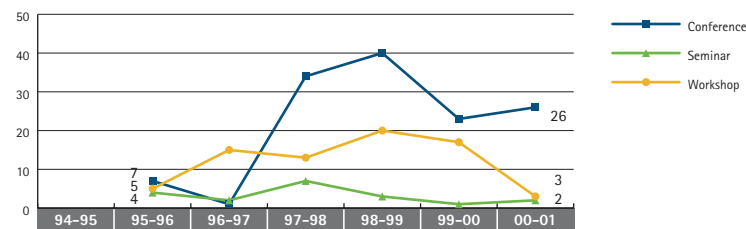


Figure 8.3

Professional Development Activities





KEY INDICATOR 9: Collaborative and Pre-College Activities

Summer Academic Enrichment

Each year, the MIE program offers pre-college and undergraduate SEM majors the chance to build personal and academic skills, explore careers in science and engineering, and cultivate relationships with faculty, students and staff.

Summer Science and Engineering Program

MIE offers the Summer Science and Engineering Program, a six-week residential summer program, for prefreshmen who intend to pursue a major in chemistry, computer science, engineering, mathematics, or physics. The program is designed to build skills in science, mathematics and engineering that will strengthen performance in the freshman year. Students get a preview of a demanding academic environment and cultivate relationships with Spelman faculty, students and staff.



Summer Science and Engineering Program

Program Highlights

The program provides an intensive, academically challenging curriculum with classes in Computer Science, Chemistry, Mathematics (Calculus, Precalculus), and Introduction to Engineering or Statistics. Program participants may receive up to 10 semester hours of college credit. Faculty members who teach the courses in SSEP also teach the courses during the academic year. Upper level students in the various science majors serve as academic tutors and residence hall assistants.

Academic enrichment experiences include workshops and weekly seminars featuring distinguished scientists and engineers. Educational excursions include tours of local industries, a NASA site, a museum, and other activities. Participants are encouraged to consider graduate school in their long-term career plans.

KEY INDICATOR 10: Research and Computing Resources: AY 1995-96 to AY 2000-01

New Building

The new Science Center is completely designed to support the full integration of technology to enhance teaching, as well as to develop satellite links with research centers and to engage community outreach through local and distance education. The College is successfully offering a few SEM courses that integrate technology into the teaching and learning processes. Examples include the use of video-microscopy in biology laboratories and a web-based course in freshman mathematics. In Phase II this effort was significantly moved forward by utilizing computers and other technology in 50 percent of the SEM courses. Laboratories and faculty offices are equipped with up-to-date computers that are capable of executing state-of-the art software. The percentage of students who have computers have increased to 100 percent within five years. Due to the massiveness of this task, an Educational Technology Specialist has been added to the staff who can assist faculty in technology-based course design; keep faculty abreast of emerging and new techniques for possible educational applications; and ensure correct functioning of machinery and software. We plan to implement distance learning through the use of remote sites through collaborations with other institutions and organizations an through faculty team-teaching in different locations, allowing for global conversations.

Research Center, Lab and Major Equipment

MIE funding was used to purchase the software used in my Engineering Graphics course (ERG 102). This has allowed Spelman students to take the course on our own campus as opposed to the struggle that they previously endured trying to get added to the courses taught at Morehouse College or Clark Atlanta University. MIE funding is also being used to supply computers and equipment for student research on fuel cells. This area of research is at the forefront of our national interest because fuel cells will reduce our country's dependence on foreign oil. This also gives our engineering students a chance to investigate problems that are of importance to society as a whole.



Spelman Laser Optics Lab





KEY INDICATOR 11: Major Academic Events

MIE Scholars Program

The goal of the MIE Scholars Program is to recruit high-achieving freshmen and transfer students who have an interest in pursuing doctoral study in SEM fields. MIE Scholars receive a \$9,500 scholarship, which is renewable provided students meet program requirements. Scholars take an enhanced curriculum, including Introduction to Research Methods and attend seminars. They receive special academic support, cultural enrichment and attend career oriented workshops. Each Scholar is assigned a faculty mentor who will serve as a research advisor during the sophomore through senior years.

Scholar Responsibilities

Each MIE Scholar must meet the following requirements:

- Maintain a major in science, engineering or mathematics.
- Take Introduction to Research Methods in the sophomore year.
- Take a research course for credit during the junior or senior year.
- Take at least one extra course in preparation for graduate study.
- Conduct research during the sophomore through senior years under the guidance of a faculty mentor.
- Give an oral or poster research presentation in Science Day in the sophomore to senior years.
- Attend seminars and enrichment activities specified by MIE.
- Apply for summer enrichment opportunities as a

sophomore and junior.

- Apply to graduate school.
- Respond to MIE surveys.
- Promote educational opportunities in SEM by volunteering as a mentor or tutor.
- Keep MIE informed of your progress after graduation.

MIE Research Internship

The MIE Research Internship introduces sophomores and juniors to the exciting world of science, engineering and mathematics research. Interns work with Spelman faculty, individually or in teams, on selected projects during the academic year. Sophomores receive \$2,500 and juniors receive \$3,000 in scholarship funds for the academic year. In some cases, students receive travel expenses to present their research at professional meetings.

Program Highlights

- Seminars on emerging research in science, mathematics and engineering
- Travel to professional conferences to present research
- Participation in the Spelman SEM Day symposium
- Summer research and internship opportunities

Student Exchanges

Opportunities exist for one or two students to spend a summer conducting undergraduate research at another MIE institution (Bowie State University, Oglala Lakota College, Universidad Metropolitana, University of Texas at El Paso, Xavier University)

while students from these institutions conduct research during the summer at Spelman.

MIE also helps to sponsor a student to spend the fall or spring semester at Columbia University Biosphere2 in Oracle, Arizona by awarding a \$6,000 scholarship for the semester. Spelman is a partner institution in Biosphere 2. Biosphere 2 offers innovative and interdisciplinary courses and is a sophisticated center for ecological studies. The campus is located in the high Sonoran Desert, 30 miles north of Tucson, Arizona.

Post Freshman Summer Science Program

MIE offers rising sophomores majoring in science, engineering and mathematics a special opportunity to strengthen their SEM skills and earn college credit at no cost. By participating in the six-week, residential Post Freshman Summer Science Program (PFSSP), students can have an experience that provides a strong academic, career development, and personal foundation for future years.

Program Highlights

Students experience an intensive academic program in a small group setting. Participants attend class and lab sessions during a large portion of each day, and tutors lead evening study sessions. Small classes provide access to Spelman's faculty, tutors and the program director. PFSSP offers enrichment activities, including field trips, seminars, and social gatherings with students in other summer programs. The program also covers meal and lodging expenses.





KEY INDICATOR 12: Major MIE Activities

Chemistry

Research Advisor: Albert Thompson, Jr., Ph.D.

Students: Amanda Collier

Bethany Embry

Kimberly Mayfield

Erica McKinney

Natasha Plumb

Topic: Synthesis of tetraarylporphyrins using conventional methods and the microwave oven

The first simplified concerted synthesis of tetraphenylporphyrin (TPP) was published by Adler et al. in 1968. This synthesis involves refluxing pyrrole and benzaldehyde in acetic acid, or preferably, propionic acid to produce TPP in a 20 - 25% yield. Later, the Semeiken method, published in 1986, used chloroacetic acid in mixed xylenes as the solvent. The method improves yields to 30 - 35 %. Recently, microwave preparative methods show promise in increasing yields of TPP and its derivatives as well as decreasing reaction times.

Computer Science

Research Advisor: Jamika Burge

Students: Dionne Brisco

Kayatana Campbell

Toni LaGon

Candance Sebro

Charita Williams

Topic: Investigation of protocols that involve communication across different networks

Our team's first research focus is on the construction of an 'optimal' website that exploits the most sophisticated features of the html programming

language. We then analyze the networked structures supporting such sites by optimizing the offered level of security where our software and platform of choice are Java/Dhtml (and Oracle) and Sun's Unix Microsystems, respectively. Secondly, our research focus is to determine and understand the specific and practical applications for genetic algorithms.

Mathematics

Research Advisor: Teresa Edwards, Ph.D.

Students: Desiree' Jordan

Tanisha Saunders

Topic: Operations research, optimization
Operations research (OR), also known as Management Science, involves formulating mathematical models of decision making problems and developing or applying mathematical tools to obtain solutions. Mathematical programming is a way of looking at a real life situation and formulating it as a mathematical model. We are investigating how the following mathematical programming models might be applied to solve several Spelman College problems: The Traveling Salesman Problem; Knapsack Problem; Scheduling Problem; Transportation Problem; Linear Programming Problems; and Non-Linear Programming Problems.

Physics

Research Advisor: Marta Dark, Ph.D.

Students: Quiana Bent

Lydia Kwateng

Jolawn Richardson

Topic: Liquid crystals and their potential as optical fiber modulators

Recent experiments have shown some advantages in

containing liquid crystal (LC) materials within a polymer network. Our work investigates how to optimize a polymer-liquid crystal material for optical fiber modulation. The research project consists of four major steps. Initially, our team will measure the optical properties of selected nematic liquid crystals (cyanobiphenyls) in order to determine which LC's will give the optimum response as an optical modulator. The next step will involve incorporating the liquid into a polymer network. The third step will involve building the polymer-liquid crystal material into a fiber-optic device. The fourth step involves synthesis of new liquid crystal materials in order to optimize the device.

MIE Scholar Teachers

The Scholar Teacher program is an innovative approach to expanding the pool of underrepresented minority research mentors and teachers, especially those who bring in new expertise. It is designed to provide research and teaching opportunities for individuals who have recently received a doctorate and have no more than 3 years of relevant postdoctoral research experience. Applicants for this training pathway must have a graduate doctoral degree in biology, chemistry, or mathematics. This short-term appointment offers an opportunity to acquire training in a research specialty, supervise student research, and generate innovative curricular ideas.



Model Institutions for Excellence



UNIVERSIDAD METROPOLITANA

MIE Fact Book 2002

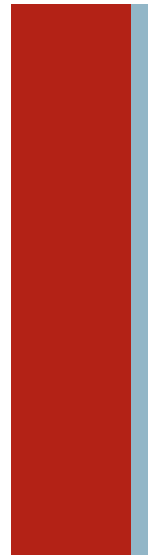
PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Science Foundation





Universidad Metropolitana (UMET) is home to approximately 5,761 undergraduate and graduate students who are mainly underrepresented low-income minority students from the Metropolitan San Juan area in Puerto Rico. UMET is a private, non-profit institution, and member of the Ana G. Méndez University System (AGMUS), with two other sister institutions: Universidad del Este (UNE) and Turabo University (TU).

UMET has been a teaching institution since its establishment in 1949 as a junior college. Today, however, its philosophy is changing to address both student needs and societal demands. The President of the institution, Mr. José F. Méndez, has set the agenda for becoming the best undergraduate research institution in Puerto Rico by the year 2005.

UMET offers diverse programs leading to certificates, associate, baccalaureate and master degrees. It is a non-profit, non-sectarian, non-partisan, secular institution. UMET's educational policies are based on the belief that higher education should be available to every individual. It is strongly committed to a democratic way of life, human equality and respect for human dignity.

UMET is committed to the development of professionals who possess both the necessary knowledge and skills to function competently in different fields and who also embrace strong cultural, ethical and aesthetic values. UMET's commitment is to provide students, within an atmosphere of academic freedom, the necessary resources to develop mental flexibility, intellectual curiosity and linguistic ability. One of the University's basic tenets is to offer academic programs reflecting changes in technology, economic trends, population fluctuations and job market tendencies that will help its graduates obtain employment and foster productive contributions to society

in general.

Innovations in the teaching process allow the Institution to diagnose student needs, prescribe specific remedial techniques and evaluate learning achievements. In addition, it uses the AGMUS television station to broadcast distance education courses and innovative continuing education programs for adults.

In 1995, UMET was selected by the National Science Foundation (NSF) as a Model Institution for Excellence (MIE) school. The MIE Project was then created and established on UMET's campus in San Juan. The Project has transformed UMET into a national teaching undergraduate research institution where faculty research mentors are helping both high school and undergraduate science students acquire scientific knowledge and skills, while disseminating their research results among members of the wider university community.

Moreover, the National Science Foundation is sponsoring the Pre-College and Undergraduate Research Programs. Both programs are paving the way for research-oriented activities for the benefit of students and the nation as a whole.

Information provided by Universidad Metropolitana.



Institution Profile in Brief

History and Background

Year Founded:	1980
Institution Control:	Private
Institution Type:	4-Year and Graduate
Land-Granted:	No
Co-Ed:	Yes
Affiliation:	Independent
Academic Term:	Semesters

Chancellor Dr. Frederico Matheu

Web Page <http://www.suagm.edu>

Student Enrollment / Fall AY 2001-02

	FT	PT	Total
Undergraduate :	4,394	1,367	5,761
Gender:	Male: 35%	Female: 65%	
Race/Ethnicity:	Hispanic: 100%		

Degrees Conferred / AY 2000-01

Associate:	0	Dual Degree:	0
Baccalaureate:	453	Total:	453

Faculty / AY 2001-02

Full Time:	89		
Part Time:	238	Total:	327
% Ph.D. Full Time Faculty	18.3%		
AY 2000-01 FTE Student/FTE Faculty Ratio:	1:155		



MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I Grant Period: 10/1/1995 - 9/30/2001
Amount: \$11,789,661

Phase II Grant Period: 10/1/2002 - 9/30/2003
Amount: \$7,500,000

Principal Investigator/Project Director

Dr. Juan F. Arratia, Principal Investigator

Universidad Metropolitana

PO Box 21150

San Juan, PR 00928-1150

phone: (787) 766-1717 x6001

fax: (787) 7515286

email: um_jarratia@mail.suagm.edu

Universidad Metropolitana (UMET) was a teaching institution serving low-income young Puerto Ricans from the San Juan Metropolitan Area when it was selected by the National Science Foundation (NSF) as a Model Institution for Excellence (MIE) in 1995. The major goal of the cooperative agreement with the NSF was to lay out the foundation for the transformation of UMET into a major producer of BS degrees in Puerto Rico. During Phase I of the Cooperative Agreement with the NSF (from 1995-2000), several major accomplishments were achieved. The institution was equipped with state-of-the-art undergraduate teaching and research facilities. Hiring ten new faculty in the areas of Chemistry, Environmental Science, Cellular and Molecular Biology and Applied Mathematics enhanced the faculty of the Department of Science and Technology. The faculty and administration of the Department of Science and Technology, along with the MIE Project, started offering six new BS degrees: Chemistry, Environmental Science, Cellular and Molecular Biology, Applied Mathematics, Applied Physics, and

Tropical and Natural Resources, in addition to a transfer program in engineering. Modified policies for the teaching/research load, contracts and external funding incentives were implemented for new faculty with a Ph.D. A scholarship program for twenty-five science, engineering and mathematics (SEM) majors was initiated in August 1996. At the end of Phase I, the number of MIE scholars reached 120 students.

The Science Support Center (SSC), created for student retention purposes, was inaugurated during Phase I. This center is the main structure within the MIE Project. Here, MIE Scholars and SEM majors interested in increasing their academic performance are given a full array of services and follow-up. Also, during Phase I, several programs for high school students interested in SEM fields were initiated: a Pre-College Program, including a Saturday Academy Program during the academic year; a Summer Adventure Research Training (SART), and a Summer Bridge Program. A summer internship program for SEM students at the National Laboratories, mainly at Los Alamos, Sandia, Lawrence Berkeley, and Oak Ridge was also initiated at the beginning of Phase I.

Phase II was initiated on October 1, 2002. The consolidation of the improvements attained during Phase I is one of the major accomplishments of this phase, along with new strategies to further enhance the opportunities for MIE scholars and SEM students in general. Three new research laboratories were created for Computational Chemistry, Marine Mammals and Computer Science/Applied Mathematics. An undergraduate research program, with research mentors from the Department of Science and Technology, was initiated during this phase.

A major summer undergraduate research internship

program at selective universities on the U.S. mainland, with mentors like Dr. Carlos Castillo from Cornell University, Dr. Richard Weiss from UCLA and Dr. Ken Sargent from Furman University among others, was set in place. During the 2002 summer, 62 MIE scholars and SEM majors traveled to more than forty research institutions to conduct research. These MIE scholars have been presenting their research results in record numbers at national conferences like SACNAS (Society for Advancement of Chicanos and Native Americans in Science - 28 students), NCUR (National Conferences on Undergraduate Research - 8), NIS - 5, UTMB - 3, AAS (American Astronomical Society - 3), AAAS (American Association for the Advancement of Science - 8), and local symposia like the annual Undergraduate Research Symposium - 55 at UMET. The MIE Project organizes this annual symposium, bringing together more than one hundred undergraduate presentations from colleges and universities from Puerto Rico and the U.S. mainland.

A Bridge to Graduate School Program is also being implemented at the SSC for MIE scholars; workshops on the GRE and TOEFL exams, as well as in English, are underway. MIE scholars and UMET graduates are provided with support for the selection, application and scholarship process to graduate school. We have a record number of MIE scholars and UMET graduates enrolled in schools such as: Cornell University, Purdue University, University of Indiana, University of Texas at El Paso, University of Georgia, University of Puerto Rico, UMET, Polytechnic University and Turabo University. An international undergraduate internship program is also underway for UMET students. During the summer of 2002, three SEM majors spent ten weeks at Universidad de Santiago de Chile working in astronomy and astrophysics. For 2003, summer undergraduate research opportunities will be available for our MIE scholars



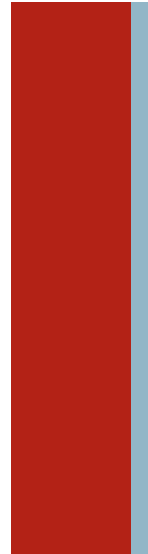
in China, Japan, Spain, the Netherlands, Germany, Italy, Canada and South Africa.

In the spring semester of 2000, a MIE Excellence List was established consisting of students having a GPA of 3.5 or higher in a single semester. More than fifty SEM students are honors MIE scholars and potential graduate school candidates. In the fall semester of 2002, the number of MIE scholars reached a high of 172 students. Special programs in Critical Thinking and Problem Solving, as well as On Learning Strategies, are being implemented for MIE scholars with a GPA of less than 3.3, along with a Peer Teaching and Placement Program for SEM students as part of the retention strategies at UMET.

Furthermore, as part of Phase II, the process of MIE institutionalization was initiated with the integration of 33% of the administration budget of the MIE Project into the operational budget of the Department of Science and Technology. A well-documented model of all major MIE activities and programs is being developed by the administration of the MIE Project for model dissemination to other Hispanic American institutions in Puerto Rico and on the U.S. mainland.

MIE Objectives and Goals

1. Increase the number of students in science, technology, engineering and mathematics (STEM) at UMET beyond 774 at the end of Phase III.
2. Increase the number of BS graduates from the Department of Science and Technology from a range of 10-12 in 1995, to 50-55 at the end of Phase II.
3. Increase the retention of first year STEM students from 69% to 80%.
4. Increase the number of UMET graduates transferring to graduate school, from almost none in 1995 to 25% of the graduates at the end of Phase II.
5. Increase undergraduate research opportunities for STEM students from UMET at colleges and universities in Puerto Rico, the U.S. mainland research institutions and foreign universities, from thirty-two (32) at the beginning of Phase I to one hundred (100) at the end of Phase II.
6. Increase the number of MIE scholars from one hundred (100), at the beginning of Phase I, to two hundred (200) at the end of Phase II.
7. Increase the number of high school participants presenting at the Pre-College Research Symposia from an average of five to twelve by the end of Phase III.
8. Increase the number of participants from UMET and colleges and universities in Puerto Rico and the U.S. mainland institutions presenting at the Undergraduate Research Symposia from 150 to 200.
9. Implement a state-of-the-art model monitoring, evaluation and tracking system to constantly follow student progress for feedback, remedial improvement activities and support, monitoring of program progress, ascertaining management and cost efficiency, and determining short and long-term quantitative and qualitative outcomes.
10. Develop and implement a comprehensive data gathering and reporting system of MIE demographics, activities and statistical information to facilitate MSET preparation and submission to NSF.
11. Expand research, mentoring and internship opportunities, seminars and off campus experiences to enhance STEM student learning process.
12. Expand physical and human infrastructure to provide additional and extended services to STEM enrolled students and facilitate the expansion of MIE programs to other potential areas.
13. Reinforce the pathway created for UMET students from pre-college through the undergraduate-to-graduate transition after the end of Phase III.
14. Disseminate the model activities and programs developed at UMET to Hispanic American institutions in Puerto Rico and on the U.S. mainland.
15. Continue with the institutionalization plan for MIE activities and programs beyond the end of Phase III of the MIE Program.





Major Achievements based on Key Indicators:

1. Undergraduate STEM Enrollment	AY 94-95	AY 01-02	% change
STEM Enrollment	270	613	+127%
URM Enrollment	270	613	+127%
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 01-02	% change
Applied Math	0	3	0 to 3
Applied Physics	0	4	0 to 4
Biology	145	215	+48%
Chemistry	0	45	0 to 45
Computer Science	125	196	+45%
Environmental Science	0	96	0 to 96
Molecular and Cellular Biology	0	32	0 to 32
Natural & Tropical Resources	0	22	0 to 22
3. Undergraduate STEM Degrees Conferred	AY 94-95	AY 00-01	% change
STEM Degrees Conferred	11	17	+54%
URM Degrees Conferred	11	17	+54%
4. Undergraduate Retention Rate	AY 94-95	AY 00-01	% change
Return Rate After First Year	67%	72%	+5pp
Return Rate After Second Year	45%	55%	+10pp
5. STEM Student Activities and Achievement	AY 94-95	AY 01-02	% change
Summer Internships	15	62	+313%
UMET Research Laboratories	0	70	0 to 70
UMET Symposium (Research Presentations)	0	120	0 to 120
National Conferences	0	40	0 to 40
MIE Excellence List	0	52	0 to 52
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 99-00	% change
Students Advancing to STEM Career	0	3	0 to 3
Students Advancing to Grad Programs	0	4	0 to 4
MIE Scholars	0	140	0 to 140
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	41	71	+73%
URM Faculty	41	69	+68%
8. Faculty Research and Activities	AY 94-95	AY 01-02	% change
Journal Papers	1	3	200%
Conference Proceedings	3	m	n.a.
Professional Presentations	7	m	n.a.
Conferences	8	14	75%
Seminars	4	6	50%
Workshops	5	8	60%
Proposals Submitted for External Funding	2	6	200%
Proposals Submitted for Internal Funding	1	0	-100%
External Proposals Funded	1	4	300%
Internal Proposals Funded	0	0	no change
9. Pre-College Program	AY 94-95	AY 01-02	% change
High School Participants	0	140	0 to 140
Symposia (Research Presentations)	0	60	0 to 60

STEM Undergraduate Enrollment and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2001-02	Degrees Conferred AY 2000-01
Applied Mathematics	3	0
Applied Physics	4	0
Biology	215	5
Chemistry	45	4
Computer Science	196	5
Environmental Science	96	8
Molecular and Cell Bio.	32	5
Nat. & Tropical Resources	22	0
Total	613	27

STEM Degrees

- Applied Mathematics
- Applied Physics
- Biology
- Chemistry
- Computer Science
- Environmental Science
- Molecular and Cell Biology
- Natural & Tropical Resources

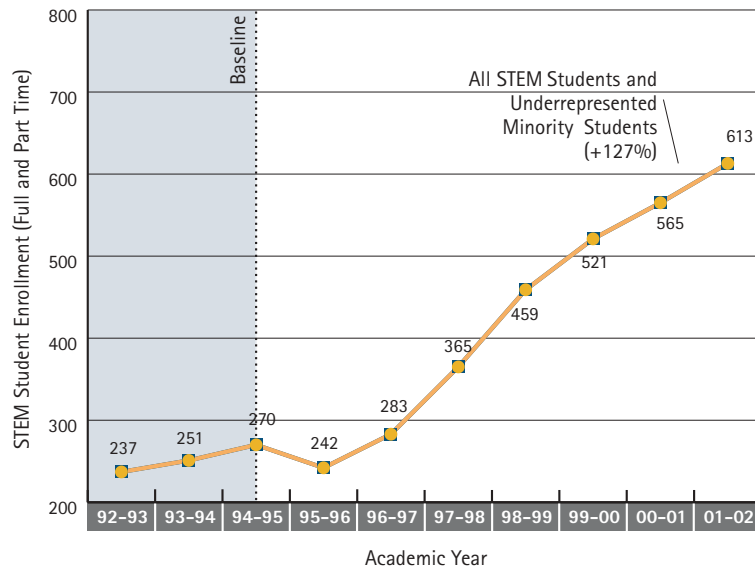


KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2001-02

Key Indicator No.1 presents trends in undergraduate STEM student enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to underrepresented minority students from AY 92-93 to AY 01-02. The baseline year (AY 94-95) is highlighted with a dotted line.

Figure 1

Undergraduate STEM Students Enrolled All STEM Compared to Underrepresented Minority Students



Underrepresented Minorities Enrolled in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All STEM Students	270	242	283	365	459	521	565	613	+127%
Underrepresented Minority Students	270	242	283	365	459	521	565	613	+127%
Percentage	100%	100%	100%	100%	100%	100%	100%	100%	no change

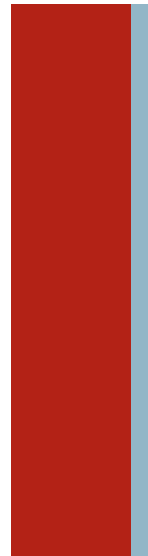
Total Institution Undergraduate Student Enrollment

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	4,527	4,224	3,900	3,294	4,969	5,330	5,777	5,761	+27%

Highlights and Notes

STEM students enrollment % change from baseline to AY 01-02

- All STEM (from 270 to 613 students) +127%
- STEM enrollment is 100% URM

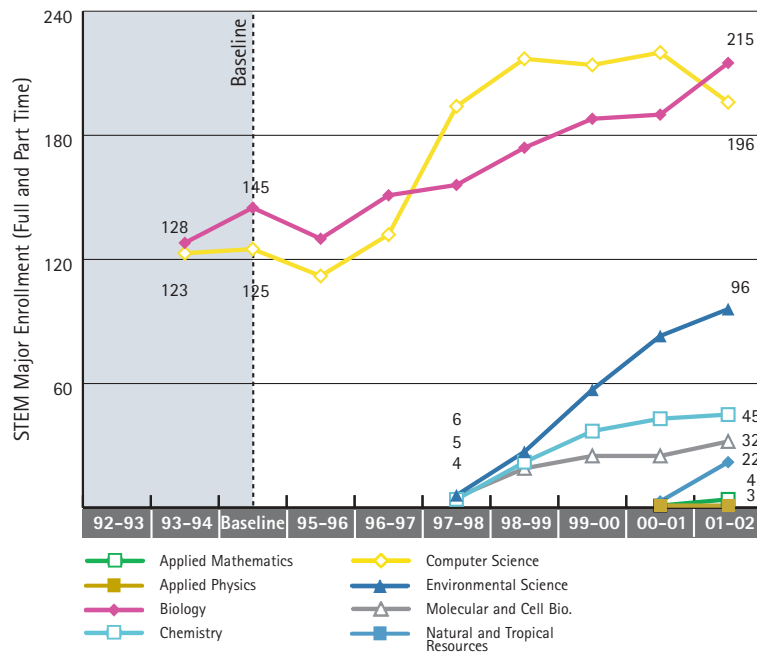




KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2001-02

Key Indicator No. 2 presents undergraduate student enrollment trends by STEM major: Biology, Computer Science, Chemistry, Molecular and Cell Biology, Environmental Science, Natural and Tropical Resources, Applied Physics, and Applied Mathematics. Figure 2 shows trends for undergraduate STEM by major from AY 92-93 to AY 01-02.

Figure 2
STEM Enrollment by Major



STEM Major Enrollment

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Applied Mathematics	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3	na
Applied Physics	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1	na
Biology	145	130	151	156	174	188	190	215	+48%
Chemistry	n.a.	n.a.	n.a.	4	22	37	43	45	na
Computer Science	125	112	132	194	217	214	220	196	+57%
Environmental Science	n.a.	n.a.	n.a.	6	27	57	83	96	na
Molecular and Cell Bio.	n.a.	n.a.	n.a.	5	19	25	25	32	na
Nat. & Tropical Resources	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3	22	na
Total	270	242	283	365	459	521	565	613	+127%

Highlights and Notes

Students enrollment % change from baseline to AY 2001-02

- Applied Mathematics (from 0 to 4 students)
 - Applied Physics (from 0 to 4 students)
 - Biology (from 145 to 215 students) +48%
 - Chemistry from (0 to 45 students)
 - Computer Science (from 125 to 196 students) +57%
 - Environmental Science (from 0 to 96 students)
 - Molecular and Cell Biology (from 0 to 32 students)
 - Natural and Tropical Resources (from 0 to 22 students)
- Chemistry, Molecular and Cell Biology, and Environmental Science programs started in AY 1997-98.
 - Applied Physics and Tropical Resources started in AY 2000-01.

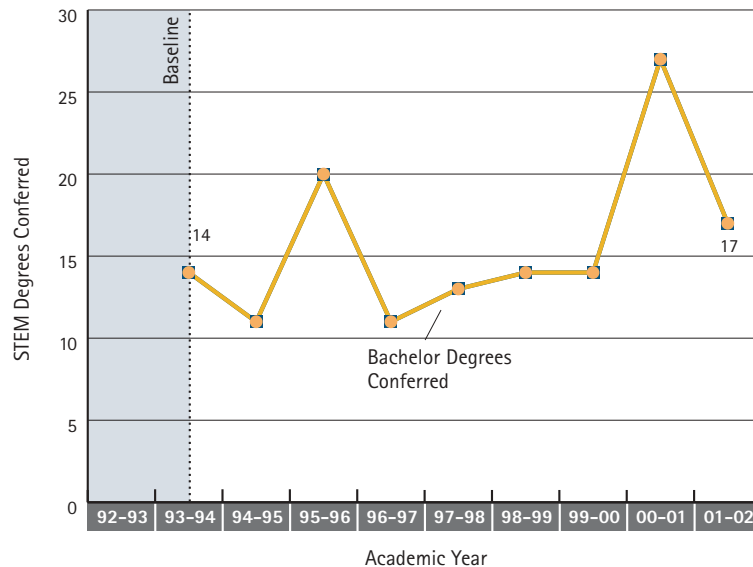


KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2000-01

Key Indicator No. 3 presents trends in total number of undergraduate STEM degrees conferred. Figure 3 shows degrees conferred trends for all STEM students compared to underrepresented minority students from AY 92-93 to AY 00-01.

Figure 3

Undergraduate STEM Degrees Conferred All STEM Compared to Underrepresented Minority Students



Underrepresented Minority Students Conferred STEM Degrees

	94-95	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All Students	14	11	20	11	13	14	14	27	17	+21%
Underrepresented Minority Students	14	11	20	11	13	14	14	27	17	+21%
Percentage	100%	100%	100%	100%	100%	100%	100%	100%	100%	no change

Total Institution STEM Degrees Conferred

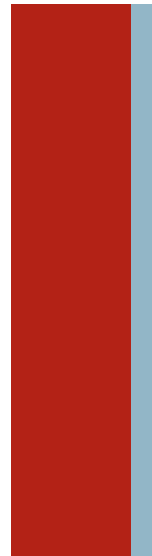
	94-95	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	541	470	476	493	496	478	400	453	m	-13%

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Highlights and Notes

STEM student degrees conferred % change from baseline to AY 01-02

- All STEM (from 14 to 17 students) +21%
- 100% of students are underrepresented minorities





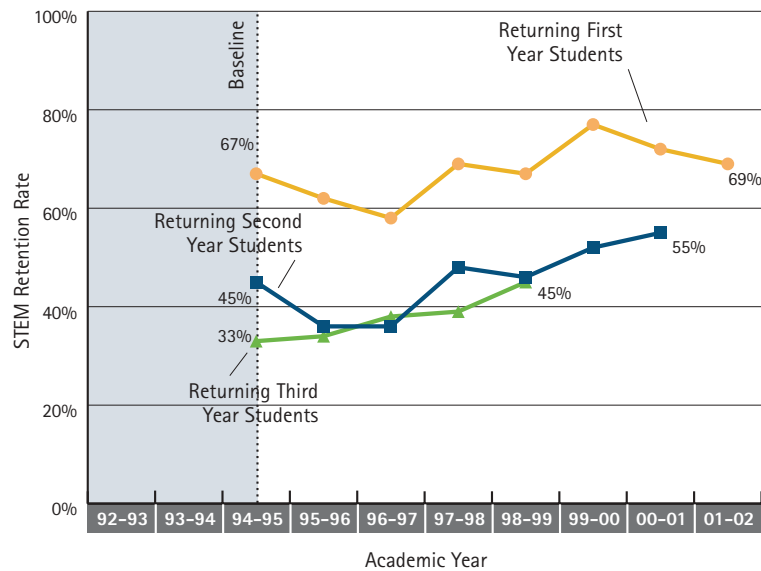
KEY INDICATOR 4:

Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2000-01

Key Indicator No. 4 presents trends in undergraduate STEM student retention rate. Figure 4 shows trends for STEM student retention rate from AY 92-93 to AY 00-01.

Figure 4

STEM Student Retention Rate



STEM Student Retention Rate

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02
Return After First Year	67%	62%	58%	69%	67%	77%	72%	69%
Return After Second Year	45%	39%	36%	48%	46%	52%	55%	
Return After Third Year	33%	34%	38%	39%	45%	m		

Highlights and Notes

STEM Retention Rate

- Return after first year (from AY 1994-95 to AY 2001-02) +2pp
- Return after second year (from AY 1994-95 to AY 2000-01) +10pp
- Return after third year (from AY 1994-95 to AY 1998-99) +12pp

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KEY INDICATOR 5: STEM Student Activities and Achievements

Indicator No.5 presents trends in Undergraduate student activities supported by MIE. Figure 5.1 shows total Undergraduate Student Development Activities Supported by MIE. Figure 5.2 shows STEM Student Research Activities from AY 1995-96 to AY 2000-02.

Figure 5.1

STEM Undergraduate Student Development Activities Supported by MIE

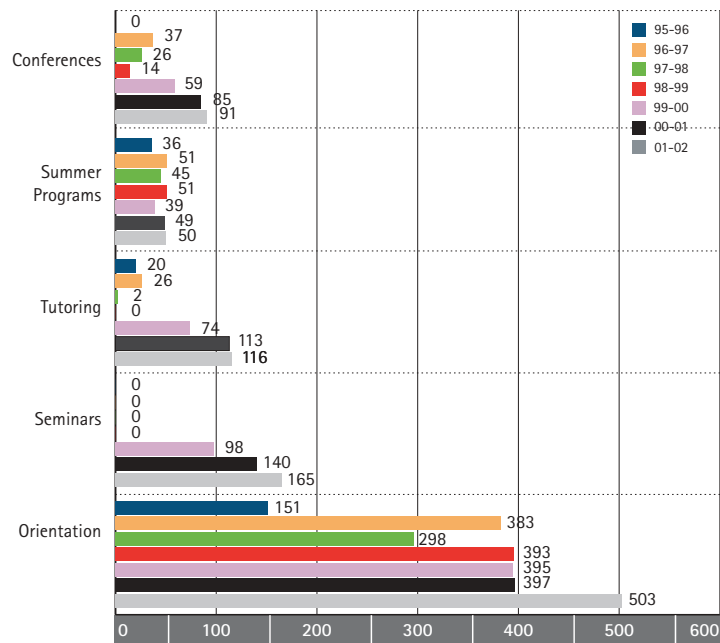
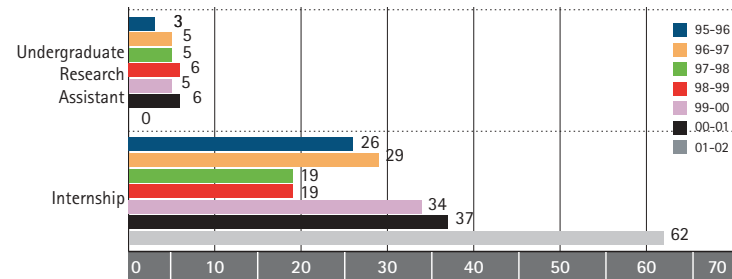


Figure 5.2

STEM Undergraduate Student Research Activities Supported by MIE



Highlights and Notes

STEM student attendance change from AY 1996-97 to AY 2001-02

- Seminars (from 0 to 155 students)
- Conferences (from 0 to 91 students)

Undergraduate STEM student attendance for all activities from AY 1995-96 to AY 2001-02

- Orientation (from 151 to 503 students) +224%
- Tutoring (from 20 to 116 students) +480%
- Summer Programs (from 36 to 50 students) +38%
- Internships (from 26 to 62 students) +138%





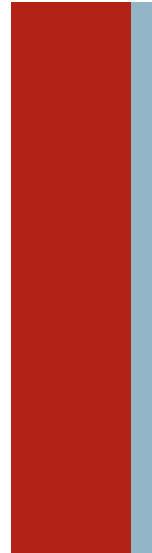
KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

An undergraduate research program at UMET Research Laboratories started in the fall of 1998 with new faculty with research experience mentoring a select group of MIE scholars in Chemistry, Computational Chemistry, Biology, Applied Physics and Environmental Science. As a result of this program, MIE Scholars at a Hispanic institution were able to acquire knowledge on how to conduct actual research. A result of this process was a series of research presentations at local, national and international conferences.

On a local level, the Spring Undergraduate Research Symposium was organized by the MIE Project to showcase the research work of MIE scholars during their academic semesters at UMET. Several of these research projects are being presented at national meetings of the American Chemical Society (ACS) and the National Conference of Undergraduate Research (NCUR), among others.

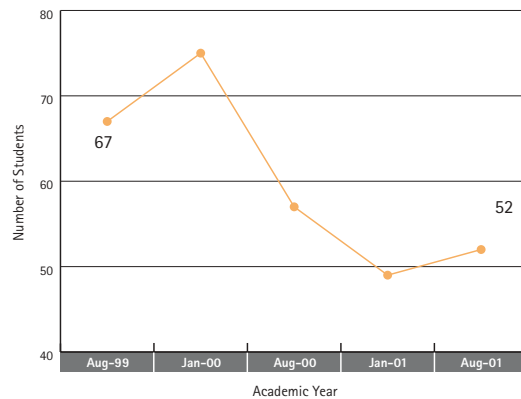
At the international level, our MIE scholars are making presentations in Russia, the Netherlands, India, Canada and Spain. A notable achievement was the first prize obtained with the research project Molecular Isolation of Denitrifying Bacteria from Different Puerto Rico Environmental Samples at the 2002 Annual Biomedical Research Conference for Minority Students in New Orleans by one of our MIE scholars.

An extended network of research mentors at selective institutions on the U.S. mainland is giving us the opportunity to consolidate an undergraduate research summer program where a record number of sixty-two SEM majors spent the 2002 summer working on research projects with mentors such as Dr. Carlos Castillo at Cornell University, Dr. Richard Weiss at UCLA and Dr. Kenneth Sargent at Furman University, among others.



KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 5.3
MIE Excellence List



Our MIE scholars have been enrolled in record numbers in research-related activities at UMET Research Laboratories during the semester and at prestigious universities on the U.S. mainland. Selective universities where our MIE scholars spend their summers are: Cornell University, UCLA, Purdue University, the University of Maryland-Baltimore County, Howard University and Furman University, among others.

The MIE Project established its Excellence List during the fall semester of 1999 with the purpose of giving recognition and promoting the academic success of SEM students with a GPA of 3.5 or higher in any given semester. The MIE Excellence List represents academically competitive minority students who are potential candidates for graduate school. Figure 5.3 illustrates the dynamics of the MIE Excellence List population at the Department of Science and Technology since the fall semester of 1999.

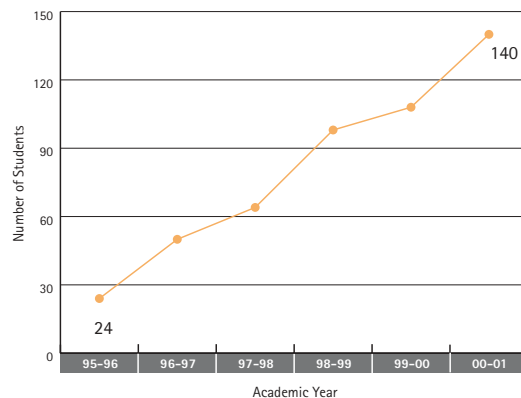
The Scholarship program, funded mainly by the NSF, is one of the key foundations of the success of the MIE Project at UMET. The Ana G. Méndez University System (AGMUS) and the Pell Grant share the funding of the MIE scholarship program with the purpose of offering economic support to young low-income Puerto Rican students who demonstrate a high potential and achievement to complete their studies at the bachelor's degree level in science, engineering and mathematics (SEM) fields and continue graduate studies at the Ph.D level.

The first group of MIE scholars included twenty-four students from the Department of Science and Technology. This number has grown through the years to reach the significant number of 140 students at UMET during the fall 2001 semester. The MIE Scholar Program is the cornerstone for the production of the graduates with BS degrees at UMET and their transfer into graduate programs at institutions of higher education in Puerto Rico and on the U.S. mainland.

Our goal with this program is to reach 200 MIE scholars for the Fall 2003 semester at the end of Phase II of the MIE Project at UMET. Figure 5.4 illustrates the MIE scholar population since August 1996.

The scientific productivity of our MIE scholars is strong. Research presentations are being accepted in major local, national and international undergraduate research conferences such as ACS, NCUR, NIS, CAMP, etc.

Figure 5.4
MIE Scholar Population (since August 1996)





KEY INDICATOR 6: Students Advanced to Graduate Programs or STEM Careers Trends

MIE Scholars

The first MIE graduating class of the NSF -sponsored program at UMET started with four MIE scholars in May 2002. These graduates were a product of the new BS programs in Environmental Science and Cellular and Molecular Biology implemented in Phase I of the Project. Three of these graduates transferred into graduate programs at local universities in Puerto Rico. The second MIE graduating class in May 2001 increased dramatically to 21 MIE scholars. The BS in Chemistry, another new program developed under the MIE Project, produced four graduates. The other programs also produced graduates: Biology, one; Computer Science, two; Environmental Science, seven; and Cellular Molecular Biology, five graduates. Fourteen of the MIE graduates transferred to graduate programs at universities in Puerto Rico and the U.S. mainland, while others were absorbed by the local academia and industry as chemists, biologists, teachers and specialized professionals.

The May 2001 MIE graduating class produced one of our most important groups of MIE scholars to be admitted to prestigious universities on the U.S. mainland. Some selective cases are: Ydilka Maldonado, Purdue University; Yahaira Naaldijk, Indiana University; Waleska Rivera, University of Texas, El Paso; Fabio Sánchez, Cornell University. To correlate the success histories of these MIE alumni, we are including the profile of Fabio Sánchez. This highlights the impact of the MIE Program at a minority institution like UMET, capable of educating such a remarkable individual.

Fabio Sánchez was born in a low-income environment in the Dominican Republic and emigrated to Puerto Rico, where he attended the public school system. He started his undergraduate

education at UMET. He joined the MIE scholar group in 1998. In 1999, he conducted research at the University of Colorado at Boulder and presented his findings at the Tenth Undergraduate Research Symposium at UMET in San Juan. In the summer of 2000, he worked with the team led by Dr. Carlos Castillo, director of the Mathematical and Theoretical Biology Institute (MTBI) at Cornell University in New York, and presented his research on "Large-scale Antibiotic Misuse" at the Joint Mathematics Meeting of the American Mathematics Society held in New Orleans, Louisiana, which earned him an award at the Eleventh Undergraduate Research Symposium at UMET, and at SACNAS 2000 in New Mexico. In the summer of 2001, he again conducted research. Fabio graduated in 2001 with a bachelor's degree in Computer Science from UMET. His experience at Cornell motivated him into entering this prestigious university in August of 2001 as a graduate student. At the end of his third semester of his doctorate at Cornell, he is already a candidate for the PhD degree in Applied Mathematics. Fabio Sánchez is an example of the impact that the participation in research internships has on science students.



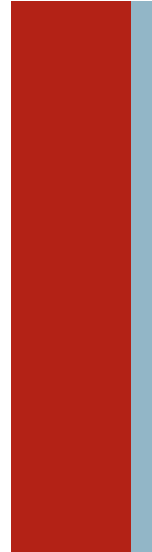
Fabio Sánchez

Yadilka Maldonado was born in a low-income environment and was educated in the public school system in Puerto Rico. While in high school, she was part of the pre-college Summer Bridge Program of the

Model Institutions for Excellence (MIE) Project. Since she started her university life in 1998, Ydilka became part of the student and academic environment at Universidad Metropolitana and a MIE scholar. In the summer of 1999, she conducted research at the Argonne National Laboratory in Chicago, and presented her research results at the Tenth Undergraduate Research Symposium at UMET in San Juan. In the summer of 2000, she conducted research at Purdue University in Indiana, and presented her research results at several local and national undergraduate research conferences. She was awarded first place at the Fifteenth Undergraduate Research Symposium at the School of Medicine of the University of Texas in Galveston, and also presented her research at the Eleventh Undergraduate Research Symposium at UMET in the year 2000. She was awarded the Bill Gates Scholarship and was also part of the MIE Excellence List from 2000 to 2001. She graduated with a bachelor's degree in Cellular and Molecular Biology in June of 2001 and at the Graduation Ceremony she was distinguished with the Dr. Joseph Kerter Medal awarded to graduates with the highest academic achievement from the Department of



Yadilka Maldonado



KEY INDICATOR 6: Students Advanced to Graduate Programs or STEM Careers Trends (continued)

Science and Technology at UMET. In the year 2001, she was accepted in graduate school at Purdue University, and has now completed her third semester in Food Microbiology with an excellent academic performance.

Yahaira Naaldijk attended the public school system in Puerto Rico. While a student at Universidad Metropolitana (UMET), she conducted research in Cellular and Molecular Biology, which she presented at the Tenth and Eleventh Undergraduate Research Symposia held at UMET in 1999 and 2000. She also conducted research that was presented at the 221st American Chemical Society Meeting held in San Diego, California. In the summer of 2000, she researched at Colorado



Yahaira Naaldijk

State University, she presented her findings at the 6th Annual MIE Conference at the University of Texas at El Paso. She graduated with a bachelor's degree in Cellular and Molecular Biology in 2001 and was given recognition for her scholarship with the Dr. Joseph Kerter Medal that is awarded to graduates with the highest academic performance from the Department of Science and Technology at UMET. She was also outstanding as a tutor in the Organic Chemistry course. Yahaira is enrolled in graduate school at the University of Indiana and has successfully completed her third semester in the graduate program in Microbiology.

Waleska Rivera studied in the public school system in Puerto Rico. As a student at (UMET), she distinguished herself with her leadership. In 1999, she conducted research at UMET and presented it at the 4th Annual MIE Conference



Waleska Rivera

held in South Dakota and at the Eleventh Undergraduate Research Symposium at UMET. She participated in a SOARS research internship in 1999 and presented her research at SACNAS 1999 in Oregon and at the 5th Annual MIE Conference in Atlanta. In the summer of 2000, she went back to Boulder and worked on research in atmospheric science that she presented at the 6th Annual MIE Conference at the University of Texas at El Paso. Waleska was awarded the Bill Gates scholarship in the year 2000. She has always been multifaceted; as a poet she was awarded first place in the Spanish Literary Contest at UMET. She graduated with a bachelor's degree at UMET in June of 2001 and is conducting graduate studies in Environmental Science at the University of Texas at El Paso.

At the beginning of the MIE Project, the transfer of graduates from UMET into graduate programs was almost non-existent. Only after the MIE Project started to recruit new students in 1996 did the option of going to graduate school become an objective and goal of the community of MIE scholars and academic administrators at UMET.

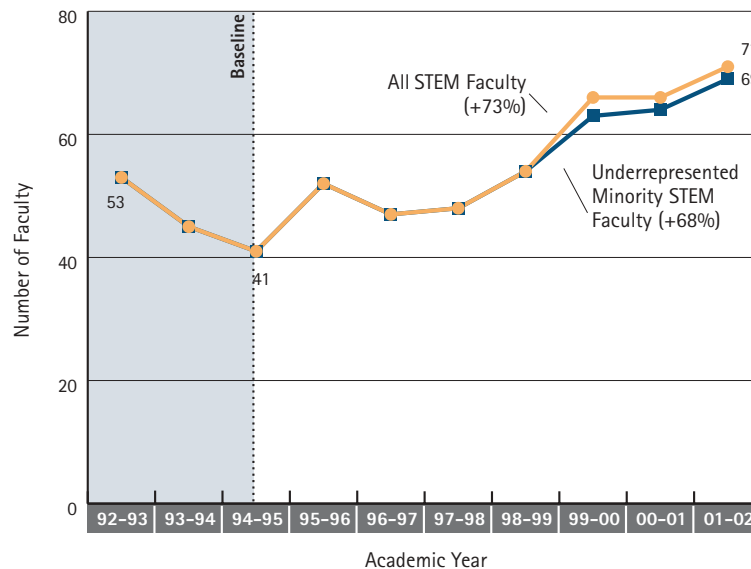


KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No. 6 presents STEM faculty demographic trends including both full and part time faculty. Figure 6 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 92-93 to AY 01-02.

Figure 7

STEM Faculty Demographics All STEM Compared to Underrepresented Minority Faculty



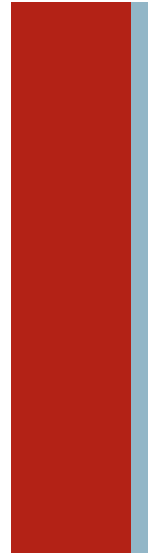
Percentage of Underrepresented Minority Faculty in STEM

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All	41	52	47	48	54	66	66	71	+73%
Underrepresented Minority Faculty	41	52	47	48	54	63	64	69	+68%
Percentage	100%	100%	100%	100%	100%	95%	97%	97%	-3 pp

Highlights and Notes

STEM faculty % change from baseline to AY 01-02

- All STEM (from 41 to 71 faculty members) +73%
- Underrepresented Minority STEM (from 41 to 69 faculty members) +68%
- Both STEM faculty and underrepresented minority faculty have shown increases of 73% and 68% respectively, from baseline year to AY 2001-02.



KEY INDICATOR 8: Faculty Research and Activities

The UMET faculty has a unique and central role in making the UMET-MIE vision become a reality. During UMET-MIE Phase I, the number of faculty with a Ph.D. more than tripled by implementing an aggressive hiring strategy, offering competitive salaries, reducing STEM faculty teaching loads to increase faculty involvement in mentoring, developing undergraduate research and academic program, and increasing research capabilities by enhancing the research laboratories.

During UMET-MIE Phase II, the faculty's commitment to research is corroborated by their publications and presentations in a diversity of research topics and areas of research interest. A selected list of presentations follows by subject area:

Biology:

- Eva Dávila "Natural History of *Zamia portoricensis* Urban (Cycadophyta:Zamiaceae)" International Conference on Tropical Ecosystems, Bangalore, India, July 2001.
- Karen González "Protein kinase C isoforms in marine mammals", National Conference for Undergraduate Research (NCUR), University of Wisconsin, Whitewater, April 25-27 2002.
- Lycely del C. Sepúlveda-Torres, Maritza López, Yahira Baez, Gisel Rodríguez, Jennifer Esquilin & Deliana Soler. "Searching for permafrost bacteria relatives in tropical soils" NASA Astrobiology Institute Meeting, February 2003.

Chemistry:

- Bacelo, D; Legault, M.: "A Density Functional Theory Study of the Adsorption of Bisulfate on Small Gold Clusters", 6th WORLD CONGRESS OF THEORETICALLY ORIENTED CHEMISTS, Lugano, Suiza. August 5-9. 2002.

- Bacelo, D; Legault, M.: "A Theoretical Study of the Adsorption of Bisulfate on Small Gold Clusters", 223th American Chemical Society national meeting, Orlando, April 5- 11 2002.
- Daniel E. Bacelo. "Theoretical Study of Structure and Stability of HNO_3 -Water Clusters: $\text{HNO}_3(\text{H}_2\text{O})_n$, $n=1-3$ ". Pacificchem 2000 International Congress, Hawaii, USA. December 14-19,2000.
- Cox, O., M. Cordero, B. Castillo, K. Dokken, "Study of the Cyclization of (E)-1-Alkyl-2-(chloro-5-nitrostyryl) benzimidazole by Uncatalyzed Thermal, Photochemical, and Electron Impact Methods," 222nd National ACS Meeting, Chicago, Illinois, August 26-30, 2001
- Feliú, L., D. L. Perry, "Synthesis and Chemical Modification and Reactions: Chemistry, and Materials Science for Industry Applications, and Technology." 221st ACS Meeting, San Diego, CA, April 1-5, 2001

Environmental Science:

- Acevedo-González, M.J. "Puerto Rican Landscapes", River Basin Research Initiative – Summer 2001, Furman University, Greenville, South Carolina, June 28, 2001.
- Erickson, H., S. Johnson, P. Soto and C. Hunsaker. "Soil nutrient pools and fluxes within a mixed-conifer forest: Implications for ecological restoration". Sierra Nevada Science Symposium, Lake Tahoe, California, October 7-10, 2002.
- Erickson, H., E. and J.E. Compton. "Leaf litter nitrogen (N), soil N availability and decomposition dynamics in two Puerto Rican forests." Soil Science Society of America Meetings, Indianapolis, Indiana, November 10-14, 2002.
- Mignucci-Giannoni AA, Martínez-Díaz K, Pérez-Lewis M. 2002. "Caribbean monk seals or hooded seals in our waters." In Resúmenes, XXV Simposio de los

- Recursos Naturales, Departamento de Recursos Naturales y Ambientales de Puerto Rico, November 2002, San Juan, Puerto Rico, p. 4.

- Mignucci-Giannoni AA, Cardona-Maldonado MA, Ortiz-Rivera MC, Rodríguez-Lopez MA, Toyos-Gonzalez GM 2001. "Marine mammal population assessment off Isla de Vieques, Puerto Rico." In Abstracts of the Fourteenth Biennial Conference on the Biology of Marine Mammals, November 2001, Vancouver, Canada, p. 144.

Mathematics:

- Engman, Martin. "The Spectrum and Isometric Embeddings of Surfaces of Revolutions" L² Methods in Geometry Conference, Sarasota, Florida, January 12-16 2000.

Physics:

- Avalos, J., L. Pérez, M. Flores, M. Vázquez, T. LeBlanc, "Luminescent Nanometric Particles of Silicon as a Bacteriological Probe", International Symposium on Optical Science and Technology – SPIE 47th Annual Meeting, Seattle, WA, July 7-11 2002.
- Pérez, L., M. Flores, J. Avalos, San Miguel, L., Resto, O., Fonseca, L., "Comparative Study of the Growth Curves of *B. Subtilis*, *K pneumoniae*, *C. xerosis* and *E. coli* Bacteria in Medium Containing Nanometric Silicon Particles", Materials Research Society Conference, Boston, MA, December 2002.

A selected list of publications follows by area:

Biology:

- Brown S., DeCamillis M., González-Charneco K., Denell M., Beeman R., Nie W., Denell R. Implications of the *Tribolium* Deformed mutant phenotype for the evolution of Hox gene function. Proc Natl Acad Sci USA. 2000 Apr 25;97(9):4510-4.



KEY INDICATOR 8: Faculty Research and Activities (continued)

Lycely del C. Sepúlveda-Torres, Allison Huang, Heenam Kim & Craig S. Criddle. Analysis of regulatory elements and genes required for carbon tetrachloride degradation in *Pseudomonas stutzeri* strain KC. *Journal of Molecular Microbiology and Biotechnology* 4, 151-161 (2002)

Lycely del C. Sepúlveda-Torres, Jizhong Zhou, Caterina Guasp, Jorge Lalucat, David Knaebel, Jody L. Plank & Craig S. Criddle. *Pseudomonas* sp strain KC represents a new genomovar within *Pseudomonas stutzeri*. *International Journal of Systematic and Evolutionary Microbiology* 51, 2013-2019 (2001).

Chemistry:

Legault, M.; Bacelo, D. E. Theoretical study of a bisulfate ion adsorbed on a gold cluster; *J. Phys. Chem. A* 106, 9059, 2002

Bacelo, D. E. Theoretical study of microscopic solvation of ammonia in water cluster: $\text{NH}_3(\text{H}_2\text{O})_n$, $n=3,4$; *J. Phys. Chem. A* 106, 11190, 2002

Bacelo, D. E.; Ishikawa, Y. Theoretical study of microscopic solvation of LiCl in water cluster: $\text{LiCl}(\text{H}_2\text{O})_n$, $n=1-4$; *Chem. Phys. Lett.* 319, 679, 2000

Environmental Science:

Erickson, H. E., E. Davidson, and M. Keller, 2002. Former land-use and tree species affect nitrogen oxide emissions from a tropical dry forest. *Oecología* 130:297-308.

Erickson, H. E., M. Keller, and E. Davidson, 2001. Nitrogen oxide fluxes and nitrogen cycling during secondary succession and forest fertilization in the humid tropics. *Ecosystems* 4:67-84.

Williams EH, Mignucci-Giannoni AA, Bunkley-

Williams L, Bonde RK, Self-Sullivan C, Preen A, Cockcroft VG. 2003 (in press). Echineid-sirenian associations with information on remora diet. *Journal of Fish Biology*.

Mignucci-Giannoni AA, Montoya-Ospina RA, Velasco-Escudero M. 2003 (in press). Status of semicaptive manatees in Jamaica. *The Latin American Journal of Aquatic Mammals*.

Morales-Vela B, Padilla-Saldívar J, Mignucci-Giannoni AA. 2003 (in press). Status of the manatee (*Trichechus manatus*) along the northern and western coasts of the Yucatán Peninsula, México. *Caribbean Journal of Science* 39(1).

Mignucci-Giannoni AA, Haddow P. 2002. Wandering hooded seals. *Science* 295(5555):627-628.

Mathematics:

Castañera M. B., Aparicio J.P., Gurtler 2003. A stage-structured stochastic model of the population dynamics of *Triatoma infestans*, the main vector of Chagas disease. *Ecological Modelling* 162 (2003) 33-53.

M. Engman, 2003 (in press). A Note on Isometric Embedding of Surfaces of Revolution, *American Mathematical Monthly*.

The faculty's pledge to undergraduate research (UR), acknowledging it as an invaluable learning strategy to discover science, is evident in the amount of STEM students involved in UR. Fourteen faculty members are research mentors for over 150 undergraduate students participating in UR. The following list of the various areas of ongoing undergraduate research projects at UMET shows the diversity of interests: Botany (*Zamia portoricensis*), microbiology; biotechnology (gene/DNA sequence); Study of the enantioselectivity of enzymes in

different solvents; Solvation of species of atmospheric importance; organic compounds; mathematical modeling; for ecological interactions and social implications; soil science; Teakettle Experimental Forest; meteorology; biodiversity; cartography; paleontology; Caribbean marine mammals; pathobiology; bacteriological sensors; fractals; robotics; astronomy; and biophysics.

We also recognize the valuable experience that our students achieve by participating in summer internships abroad, and the faculty is strengthening collaborations with other researchers to open opportunities for our students. Two students of the Cellular Molecular Biology program, currently performing UR with Dr Lycely Sepúlveda, were invited by Dr. James Tiedje for a 10-week summer internship at Michigan State University for Summer 2003. Also, four students doing UR with Dr. Osvaldo Cox, have been invited for a 10-week summer internship at the Summer Undergraduate Research Program in the Biological Sciences at Carnegie Mellon University.



KEY INDICATOR 8: Faculty Research and Activities (continued)

Figure 8.1
Faculty Research and Activities

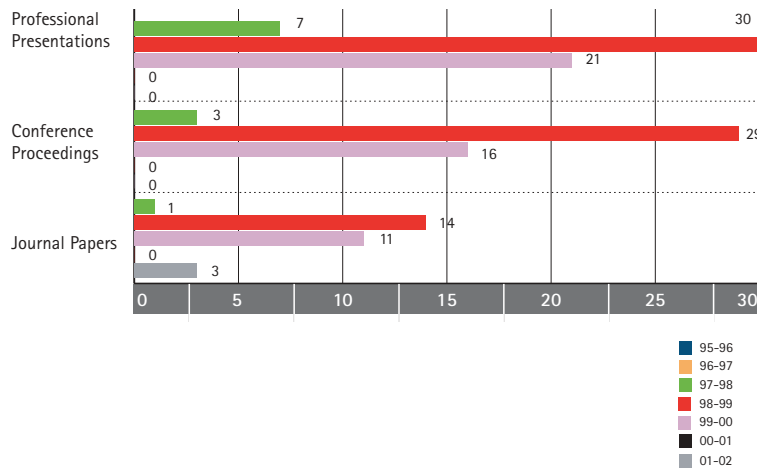


Figure 8.3
Proposals Submitted and Funded: AY 2001-02

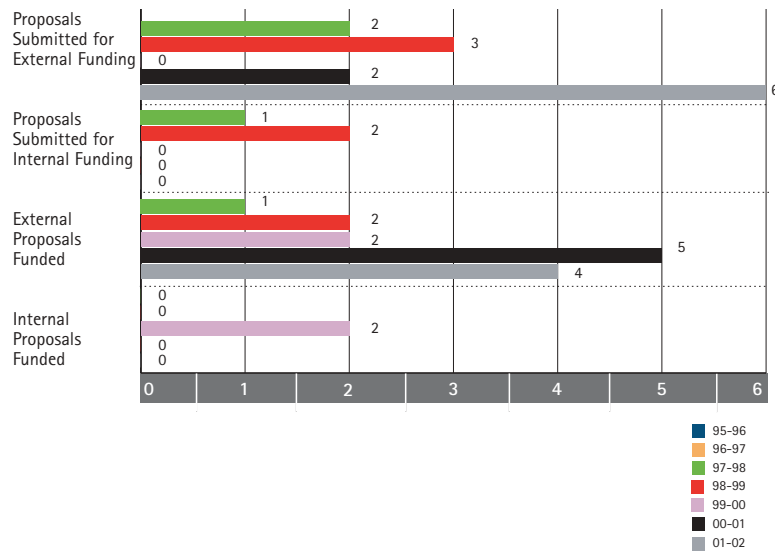
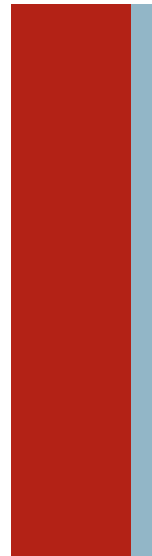
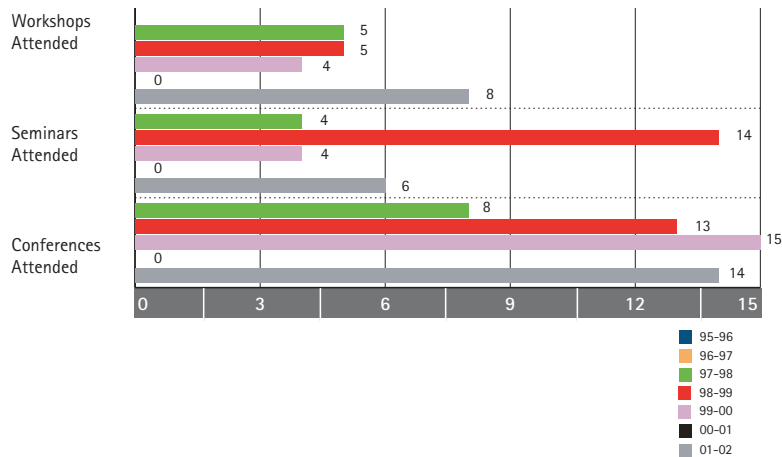


Figure 8.2





KEY INDICATOR 9: Collaborative and Pre-College Activities

The MIE Pre-College Program at Universidad Metropolitana has served more than one thousand high school students from private and public schools in Puerto Rico since 1996 when the MIE Project started. The MIE Pre-College Program has three components: (1) the Saturday Academy, (2) the Summer Adventure Research Training (SART) Program, and (3) the Summer Bridge Program. Each of these programs has a specific goal and objective, but the combination of the three represent the most dynamic outreach program of any public or private university in Puerto Rico.

The Saturday Academy started its activities with 54 high school students in October of 1996. These 54 participants were selected from nearby public schools of the Metropolitan San Juan area. The first four years of the Saturday Academy, the faculty of the Department of Science and Technology designed mathematics intensive training courses to prepare potential candidates from the 10th, 11th, and 12th grades for undergraduate education in Puerto Rico.

This program failed to produce a significant increase in the number of students transferring to UMET's STEM Programs at the BS level. Only approximately 25% of the participants in the program transferred to UMET. In the year 2000, due to the unique experience and positive impact of the SART program, a change was made to the Saturday Academy Program. Beginning in October 2000, the old Saturday Academy was transformed into the new Saturday Adventure Research Training Program; this program is a replica of the Summer Adventure Research Training that has been in operation since the summer of 1997 at the UMET research laboratories.

The SART Program is a summer training program for high school student grades 10, 11, and 12. The main difference with the new Saturday Academy is that it is implemented in five intensive weeks during the summers. The students select projects in areas of Mathematics, Biology, Chemistry, Environmental Sciences, Computer Sciences, and Physics, and mentors, mainly from the Department of Science and Technology, guide the students through the process of developing a well define research project.

One interesting component of the Saturday Academy and SART Program is the implementation of the Pre-College Research Symposia in three seasons of the year: in December (Winter) the version of the Saturday Academy; in May (Spring) version of the Saturday Academy; and in August (Summer) the version of the SART Program. These symposia are the training ground for future SEM majors and eventually the new scientists of our nation.

The third program of the MIE Pre-College Program is the Summer Bridge Program. This program has been designed to give high school students in grade 12 the opportunity for a smooth transition to college life. The focus of this program is to enroll these pre-freshman in college credits courses: Mathematics, Computer Science and English. The experience with the participants of this program is that more than 90% transfer to BS degree program at the Department of Science and Technology of UMET.

Figure 9.1
Saturday Academy Program

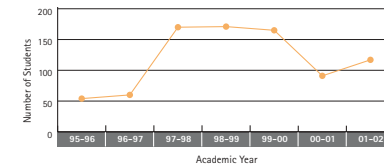
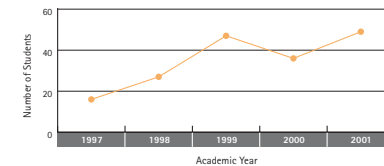


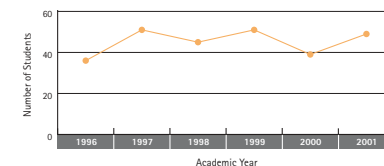
Figure 9.1 shows the total number of high school students that has participated in the Saturday Academy Program of the MIE Project during the seven years since 1995.

Figure 9.2
Summer Adventure Research Training Program



The number of high school students that have participated in the SART Program since 1997 is illustrated in Figure 9.2.

Figure 9.3
Summer Bridge Program



The total number of students participating in the Summer Bridge Program since summer 1996 is shown in Figure 9.3



KEY INDICATOR 10: Research and Computing Resources: AY 1994-95 to AY 2001-02

In the early stages of Phase I, the MIE Project invested a large amount of the grant in state-of-the-art undergraduate teaching and research facilities. Classical classrooms were remodeled and equipped with modern computers, and a fiber optic network was put in place to provide internet access to more than 250 personal computers in the UMET STEM laboratory facilities. Each faculty member of the Department of Science and Technology was given a laptop computer. Laboratory equipment was incorporated to serve the areas of Biology, Chemistry, Cellular Molecular Biology, Environmental Science, Applied Physics, and Applied Mathematics. New teaching/research laboratories were created in Cellular Molecular Biology, Computer Science, Environmental Science, Marine Mammals, Organic Chemistry, Computational Chemistry, Applied Mathematics, and Applied Physics. The Computational Chemistry Area was created in 1998 with a state-of-the-art research laboratory at a cost of \$200k. This computer infrastructure provided a number of students interested in this new field of Chemistry the chance to conduct research at UMET during the fall and spring semesters. One faculty member from UMET, supported by the MIE Project, in collaboration with faculty from local universities (University of Puerto Rico, Bayamón and Humacao), is using the facilities for research-related activities in the field of Theoretical Chemistry.

The area of Organic Chemistry was upgraded with the purchase of modern HPLC equipment, at a cost of \$40k. This equipment is being used for teaching/research purposes. The Chemistry curriculum developed at UMET requires modern equipment to enhance this BS offering. The number

of students engaged in research in this area is growing at a fast rate. Additionally, during the past three summers, students from MIE schools (University of Texas, El Paso, Spelman College, and Oglala Lakota College) used these facilities to carry out interesting research projects, guided by UMET research mentors. Their results have been presented at ACS meeting on the U.S. mainland. Dr. Osvaldo Cox and his group of student researchers have also presented their results at ACS meetings in 2000, 2001 and 2002. The projects developed with research scholars from UMET during the fall and spring semesters have also been presented at ACS meetings and in local research symposia. Computational Chemistry Laboratory research scholars from UMET use these facilities during the fall and spring semesters, as well as MIE scholars from other MIE schools during the summer.

The overall research productivity of faculty mentors and MIE researchers has been very competitive with the facilities developed by the MIE Project in Computational Chemistry and Organic Chemistry. Faculty mentors and student researchers have presented their research results at international conferences such as, the 7th International Symposium on Metal Ions in Biology and Medicine held in St. Petersburg, Russia; The International SPECS Symposium on the New Chemistry held in Delft, The Netherlands; and the 6th World Congress of the World Association of Theoretically Oriented Chemists held in Lugarno, Switzerland. Faculty from Environmental Science, as well as Biological Areas (Professors Heather Erickson and Eva Dávila, respectively) have presented their research projects in Bangalore, India, at the International Conference



on Tropical Ecosystems: Structure, Diversity and Human Welfare.

A Marine Mammal Laboratory was developed at a cost of \$45k for teaching and research activities. With the support of local industry and commerce, the facilities of this laboratory have been enhanced to include two pools for the rehabilitation of marine mammals. One manatee, Rafael, has been in rehabilitation for more than two years. The research activities based at the Marine Mammals Laboratory are producing a good number of research projects at the undergraduate and graduate level for UMET students and other student researchers from local universities (University of Puerto Rico, Rio Piedras). The results of these research projects, guided by one of the faculty mentors, are being presented in national and international conferences in Hawaii, Vancouver, and Buenos Aires.





KEY INDICATOR 10: Research and Computing Resources (continued)

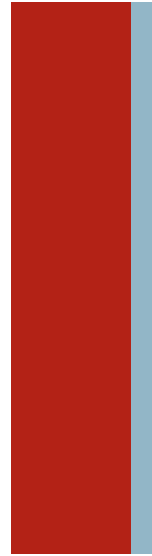
The latest development in Computing Resources is the implementation of a High Performance Research Laboratory at UMET at a cost of \$70k. This laboratory will be for academic, as well as research activities, for all faculty members of the university community of UMET.

As part of the commitment of the President of SUAGM at the time of the signing of the Cooperative Agreement between NSF and UMET, a new office building for faculty of the Department of Science and Technology was inaugurated in October 2001 at a cost of \$2.7 million.



KEY INDICATOR 11: Major Academic Events

- Several BS degree programs were and still are being developed by the STEM faculty of UMET during Phases I and II of the MIE Project. The original STEM offers in Biology and Computer Science at the Department of Science and Technology were complemented with a full array of new BS degree programs in Chemistry, Environmental Science, Cellular Molecular Biology, Natural Tropical Resources, Applied Mathematics, and Applied Physics. In 2003, an Environmental Health BS degree will be implemented to enhance the biomedical area at UMET. A new BS degree program in Geographical Information Systems will be also in place in the fall of 2003.
- The laboratory and research infrastructure of UMET has been enhanced by the implementation of new research laboratories in Computational Chemistry, Marine Mammals, Cellular Molecular Biology, Computer Science, Applied Physics, Applied Mathematics, and, in 2003, the new research facilities for Environmental Toxicology at a cost of over \$272k. The funding for this laboratory will be covered in part by the supplemental grant to the MIE Project by the National Institute of Environmental Health Sciences (NIEHS).
- Policy changes in faculty contracts were implemented in the fall of 2002. New five-year contracts were awarded to young faculty with doctoral degrees.



KEY INDICATOR 12: Major MIE Activities

The documentation of activities implemented during the past eight years has been developed by the MIE administration to showcase the experiences that took place at UMET with students, faculty and administrators.

The Science Support Center, the Scholarship Program, the Undergraduate Research Program, the Bridge to Graduate School initiative and the Pre-College Program are the most significant accomplishments of Phase II of the MIE Project. The dynamics of these programs gave us the opportunity to learn about the weaknesses and strengths of our MIE scholars. A particular weakness among the majority of our low-income students is the command of the English language. By creating a language program, we are offering our students the necessary tools to compete in a bilingual environment. The summer undergraduate research program at U.S. mainland institutions helped us focus our attention on the language program, which has been very beneficial to the majority of the students participating in it. Similarly, the Bridge to Graduate School program taught us the value of writing skills in the English language when the MIE scholars were required to develop essays, personal statements, and fill out applications for graduate school, as well as, when they took the GRE and TOEFL exams. A program was developed by the MIE Project, with the support of our English consultants, to assist all the seniors who were seeking admission into graduate programs at U.S. mainland institutions. This group of professionals has also been key in assuring that all major work done by the MIE Project, students, or staff is reviewed and corrected to assure the highest standard of excellence.

One of the strengths of our project is the undergraduate research program that offers opportunities to our MIE scholars to work with world-class researchers during the summer months. This program has reached mentors across the oceans and within countries of the Americas. The experience gained by the students at these summer internships is highly recommended to all undergraduates. In our case, students with a solid record of research work and publications are able to gain admission into top graduate schools. In terms of the students' personal experiences, the chance to work with top mentors on cutting-edge research projects is a significant advantage to advance their full integration into the scientific community of our nation. The success of these students' research experiences offered us the opportunity to reach a competitive level at the undergraduate research symposium of the Department of Science and Technology. Starting in the Fall of 2000, the local symposium of UMET was transformed into a national event with the participation of, not only our MIE scholars with research work done outside UMET, but students from other universities in Puerto Rico and on the U.S. mainland. The Thirteenth Undergraduate Research Symposium gathered more than 150 presenters from 52 colleges and universities. The quality of the oral and poster presentations was outstanding. The MIE scholars are participating in other national conferences such as NCUR, SACNAS, ACS, and CAMP, at a rate not common for a small urban minority institution.

The creation of a Science Support Center was fundamental in offering our underrepresented minority students the proper academic environment at UMET. We point out that the majority of our

students are low-income, with limited family support for vital academic decisions and academic planning. The scholarship program has given our students the opportunity to dedicate themselves full-time to academic activities and to have an academic load that will enable them to finish the BS degree requirements in four years.

The Pre-College Program of the MIE Project is a very effective tool in motivating high school students to select and pursue careers in STEM-related fields. The UMET experience in this area is showing that early exposure to STEM fundamentals, through research-related activities, is essential to producing solid candidates for undergraduate education willing to follow the path to a Ph.D. in STEM fields.

The experience of dealing with more than two hundred cases at the undergraduate level, and more than 1,000 high school students, is teaching us the singularity of this segment of our population. Their particular socio-economic backgrounds and weaknesses have given us the unique opportunity to design a program that has produced more than 37 BS graduates; more than 25 of those transferred to graduate school; ten are expecting to get their MS degree in less than one year, and our first Ph.D. in Applied Mathematics will graduate in two years. This is a remarkable accomplishment for a minority institution in the Metropolitan area of San Juan, Puerto Rico.



Model Institutions for Excellence



THE UNIVERSITY OF TEXAS AT EL PASO

MIE Fact Book 2002

PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Science Foundation





The University of Texas at El Paso is located in El Paso, Texas, a city of 800,000 at the western most tip of the state. It is in a different time zone (Mountain) than the rest of Texas. In fact, El Paso is closer to San Diego than to Houston. It is also on the border with Mexico. El Paso's Mexican sister city, Juárez, whose rapidly growing population now stands at 1.8 million, joins with El Paso to form the largest binational metropolitan area in the world.

UTEP's student population is more than two-thirds Mexican American, and another 9% of our students come from Mexico. These student demographics, together with UTEP's traditional strengths in science and engineering, give this university a special niche in U.S. higher education.

UTEP's faculty are highly committed to student learning, and they actively involve students, both graduate and undergraduate, in their research. Many UTEP undergraduates complete their degrees with extensive hands-on research experiences and are therefore better prepared for graduate and professional school and more competitive in the job market.

In recognition of our success in creating educational opportunities for non-traditional students, the National Science Foundation has designated UTEP as a Model Institution for Excellence, only one of six in the country. And, our success extends far beyond science and engineering to include outstanding programs in business, teacher education, fine arts,

humanities, social and behavioral sciences, nursing and other health professions.

Reprinted from <http://www.utep.edu/>

Institution Profile in Brief

History and Background

Year Founded:	1916
Institution Control:	Public-State
Institution Type:	4-Year and Graduate
Land-Granted:	No
Co-Ed:	Yes
Affiliation:	Affiliated
Academic Term:	Semesters

Degree Programs Offered

- Business/Economics
- Computer Science
- Education
- Engineering
- Environmental Science
- Liberal Arts
- Life Science
- Mathematic Science
- Nursing/Health Science
- Physical Science
- Social Science
- Others

President Dr. Diana Natalicio

Provost Dr. Stephen Riter

Website <http://www.utep.edu>

Student Enrollment / AY 2001-02

	FT	PT	Total
Undergraduate:	10,013	3,629	13,642
Gender:	Male: 46%		Female: 54%
Race/Ethnicity:	Hispanic: 72%		White: 12%

Degrees Conferred / AY 2000-01

Associate:	0
Baccalaureate:	1,651
Dual Degree:	0
Total:	1,651

Faculty / AY 2001-02

Full Time:	553
Part Time:	370
Total:	923
% Ph.D. Full Time Faculty	n.a.
Student/Faculty Ratio:	15:1





MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I

Grant Period: 9/1/95 - 9/31/2000

Amount: \$12,260,413

Phase II Grant Period:

Amount:

Principal Investigator/Project Director

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The UTEP MIE initiative supports five major components that promote change in institutional culture with the ultimate goal of improving the SMET Educational system. UTEP's MIE components are:

- Circles of Learning for Entering Students (CIRCLES). This is a mandatory orientation, advising, and first year academic program for all incoming students who have indicated an interest in pursuing a SMET career.
- The Academic Center for Engineers and Scientists (ACES). This is a student support center which provides tutoring, study resources, general advising, and other key services for the academic success of a largely commuter SMET student population.
- The Center for Effective Teaching and Learning (CETaL). This is a faculty development center that promotes scholarly teaching and educational research across campus.

- The Research Experiences for Undergraduates (REU) Program. This is a major component of an effort to track talented undergraduates into graduate school by enriching their on campus experiences and encouraging them to pursue off campus research opportunities and professional internships.
- SMET Curriculum Reform. This is an effort that encourages faculty to adopt active learning strategies in the classroom, and revamp course content and student performance assessment techniques.

Each MIE component is driven by a plan with goals, objectives, and expected outcomes. Formative evaluation is a central part of each component. All efforts are integrated through the UTEP MIE Office, which gives direction and focus to the enterprise.





MIE Objectives/Goals

1. Provide entering students with tools for success, through a mandatory freshman summer transition program for all STEM students and course integration and clustering for all STEM entering students, including Freshman Seminar introduction to STEM, Physical Science and Engineering, Life Sciences, Mathematics, and English Composition.
2. Continue support for students by an integrated problem solving course for all second year STEM students and by the services of the Academic Center for Engineers and Scientists, including support for peer tutoring, study groups, and professional societies.
3. Offer research, mentoring, and professional internships, including expansion of undergraduate research experiences, industrial internships, enhancement of upper division STEM courses to take advantage of the active and collaborative learning and other study skills developed in the Entering Students Program.
4. Create an Active learning Center to offer active, collaborative and computer based learning opportunities.
5. Strengthen the faculty by providing new rewards for innovative and outstanding teaching, permanently establish student learning as a key objective of the University's mission, and hire new faculty in selected programs.
6. Improve the University infrastructure by enhancing the Center for Institutional Evaluation, Research, and Planning, Automating Student Information, degree plans and advising services, and creating the MIE office.





Major Achievements based on Key Indicators: A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 01-02	% change
STEM Enrollment	2,922	2,914	-0.3%
URM Enrollment	2,045	2,077	+2%
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 01-02	% change
Biological/Life Science	652	368	-44%
Computer Science	146	275	+88%
Engineering	945	875	-7%
Mathematics	129	82	-36%
Pre-Engineering	556	860	+55%
Pre-Science	311	349	+12%
Other Sciences	183	105	-43%
3. Undergraduate STEM Degrees Conferred	AY 93-94	AY 00-01	% change
STEM Degrees Conferred	275	301	+9%
URM Degrees Conferred	178	215	+21%
4. Undergraduate Retention Rate	AY 93-94	AY 99-00	% change
Return Rate After First Year	73%	76%	+3pp
Return Rate After Second Year	59%	63%	+4pp
5. STEM Student Activities and Achievement	AY 95-96	AY 96-97	% change
Conference Proceedings	0	6	n.a.
Seminars	1	0	n.a.
Orientation	2	0	n.a.
Undergraduate Research Assistants	30	89	+197%
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 99-00	% change
Students Advancing to STEM Career	n.a.	n.a.	n.a.
Students Advancing to Grad Programs	n.a.	77	n.a.
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	189	228	+21%
URM Faculty	51	74	+45%
8. Faculty Research and Activities	AY 96-97	AY 99-00	% change
Proposals Submitted for External Funding	189	164	-13%
Proposals Submitted for Internal Funding	67	0	-100%
External Proposals Funded	119	110	-8%
Internal Proposals Funded	44	0	-100%

STEM Undergraduate Enrollment and Baccalaureate Degrees Conferred¹

Major Group	Enrollment AY 2001-02	Degrees Conferred AY 2000-01
Biological/Life Science	368	63
Computer Science	275	34
Engineering	875	154
Mathematics	82	18
Pre-Engineering	860	0
Pre-Science	349	0
Other Sciences	105	32
Total	2,914	301

¹ All majors not listed.

² Engineering includes: Civil, Metallurgical/Materials, Mechanical and Industrial Engineering, Electrical/Computer Engineering.

³ Other Sciences include: Chemistry, Environmental Science, Geological Science, Natural Science, Physics

STEM Degrees

- Biological/Life Science
- Chemistry
- Civil Engineering
- Computer Science
- Electrical/Computer Engineering
- Environmental Science
- Geological Science
- Mathematics
- Mechanical & Industrial Engineering
- Metallurgical & Materials Engineering
- Natural Science
- Physics
- Pre-Engineering
- Pre-Science

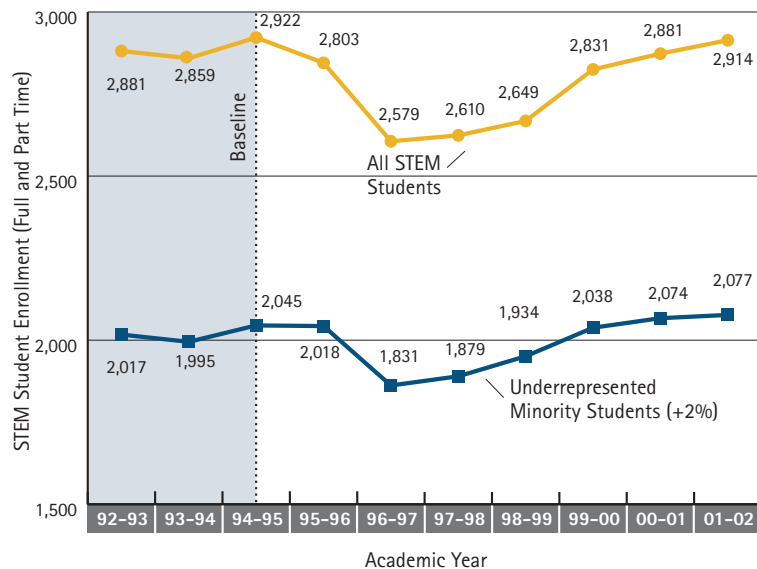


KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2001-02

Key Indicator No. 1 presents trends in Undergraduate STEM Student Enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2001-02. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1

Undergraduate STEM Students Enrolled All STEM Compared To Underrepresented Minority Students



Underrepresented Minorities Enrolled in STEM¹

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All STEM Students	2,922	2,803	2,579	2,610	2,649	2,831	2,881	2,914	-0.3%
Underrepresented Minority Students	2,045	2,018	1,831	1,879	1,934	2,038	2,067	2,077	+2%
Percentage	70%	72%	71%	72%	73%	72%	72%	71%	+1pp

¹ URM Data Imputed AY 1995-96 to AY 1998-99 and AY 2000-01

Institution Total Undergraduate Students

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	14,745	13,910	13,159	12,855	12,680	12,534	12,955	13,642	-7%

Highlights and Notes

STEM student enrollment % change from baseline to AY 2001-02

- All STEM (from 2,922 to 2,914 students) -0.3%
- Underrepresented Minority STEM (from 2,045 to 2,077 students) +2%

STEM enrollment at UTEP has remained stable from AY 1994-95 to AY 2000-01. Enrollment in the College of Science and the College of Engineering have increased.

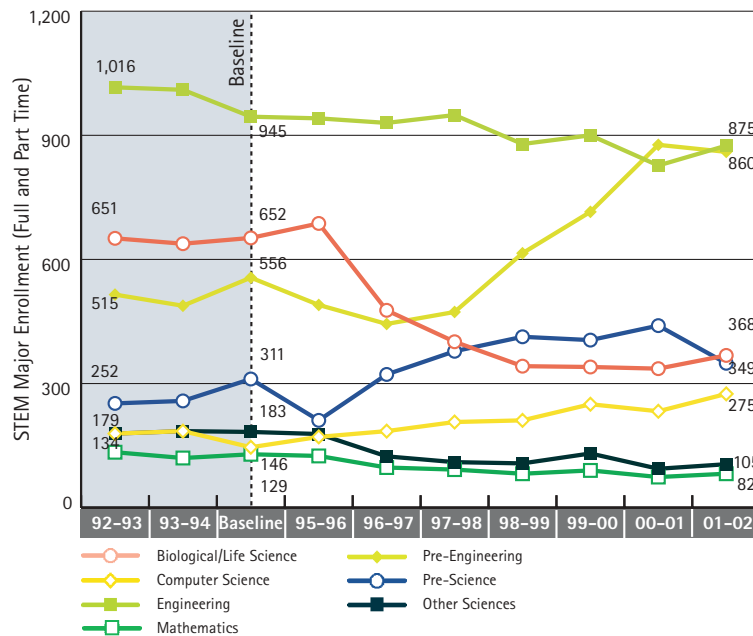




KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2001-02

Key Indicator No. 2 presents Undergraduate Student Enrollment Trends by STEM major: Biological/Life Science, Computer Science, Engineering, Mathematics, Pre-Engineering, Pre-Science, and Other Sciences. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2001-02.

Figure 2
STEM Enrollment by Major



STEM Course Enrollment

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Biological/Life Science	652	687	477	401	342	340	336	368	-44%
Computer Science	146	171	185	207	211	250	233	275	+88%
Engineering	945	941	930	949	879	900	827	875	-7%
Mathematics	129	125	97	92	82	90	74	82	-36%
Pre-Engineering	556	490	444	473	615	715	877	860	+55%
Pre-Science	311	211	322	378	413	405	440	349	+12%
Other Sciences	183	178	124	110	104	131	94	105	-43%
Total	2,922	2,803	2,579	2,610	2,649	2,831	2,881	2,914	-0.3%

Highlights and Notes

Student enrollment % change from baseline to AY 2001-02

- Biological/Life Science (from 652 to 368 students) -44%
- Computer Science (from 146 to 275 students) +88%
- Engineering (from 945 to 875 students) -7%
- Mathematics (from 129 to 82 students) -36%
- Pre-Engineering (from 556 to 860 students) +55%
- Pre-Science (from 311 to 349 students) +12%
- Other Sciences (from 183 to 105 students) -43%

Engineering includes: Civil Engineering, Electrical/Computer Engineering, Mechanical and Industrial Engineering, Metallurgical/Materials Engineering.

Other Sciences include: Chemistry, Environmental Science, Geological Science, Natural Science, Physics

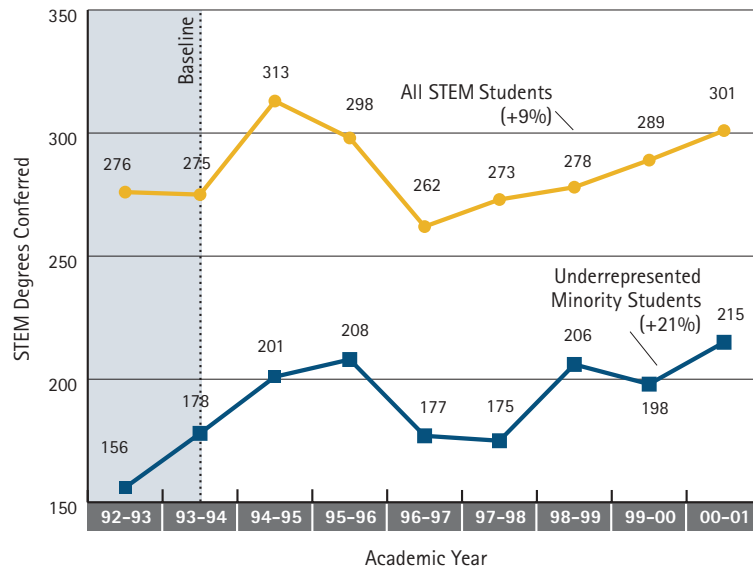


KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2000-01

Key Indicator No. 3 presents trends in total number of Undergraduate STEM Degrees Conferred. Figure 3 shows degrees conferred trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2000-01.

Figure 3

Undergraduate STEM Degrees Conferred All STEM Compared To Underrepresented Minority Students



Underrepresented Minority Students Conferred STEM Degrees

	Baseline	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
All Students	275	313	298	262	273	278	289	301	+9%
Underrepresented Minority Students	178	201	208	177	175	206	198	215	+21%
Percentage	65%	64%	70%	68%	64%	74%	69%	71%	+7pp

Institution Total Degrees Conferred

	Baseline	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
Total	1,687	1,705	1,707	1,588	1,740	1,695	m	1,651	-2%

m: missing data

Highlights and Notes

STEM student degrees conferred % change from baseline to AY 2000-01

- All STEM (from 275 to 301 students) +9%
- Underrepresented Minority STEM (from 178 to 215 students) +21%

While STEM undergraduate graduation rates have remained fairly stable, Underrepresented Minority graduation has increased 21% from 178 degrees conferred in the baseline year (AY 1993-94) to 215 degrees conferred in AY 2000-01. Underrepresented minority students received 65% of STEM degrees in the baseline year, this number increased to 71% of STEM degrees in AY 2000-01.

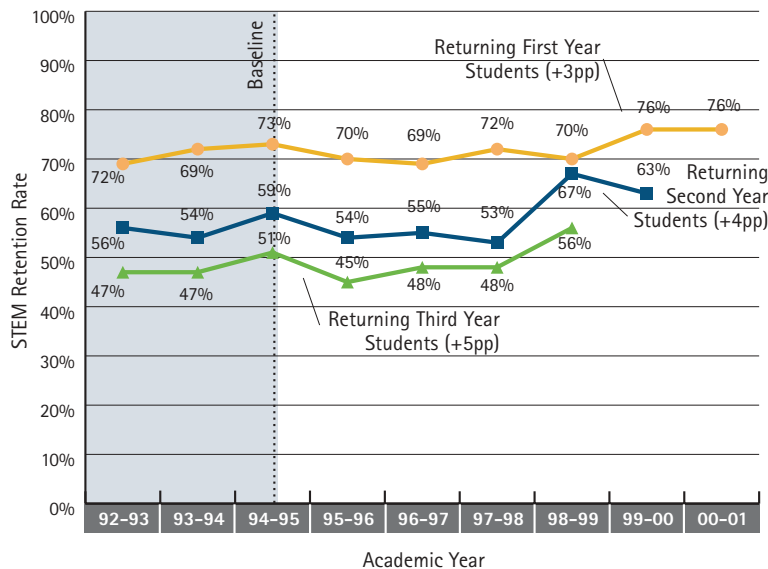




KEY INDICATOR 4: Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2000-01

Key Indicator No. 4 presents trends in Undergraduate STEM Student Retention Rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2000-01.

Figure 4
STEM Student Retention Rate



STEM Retention Rate

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01
Return After First Year	73%	70%	69%	72%	70%	76%	76%
Return After Second Year	59%	54%	55%	53%	67%	63%	
Return After Third Year	51%	45%	48%	48%	56%		

Highlights and Notes

- STEM student retention rate change** Percentage Point (pp) Change
- Return after first year from Baseline to AY 00-01 +3 pp
 - Return after second year from Baseline to AY 99-00 +4 pp
 - Return after third year from Baseline to AY 98-99 +5 pp

Retention rates for the institution have remained relatively stable. STEM retention rates reflect both those students who participated in the CircLES program and those who have not. One-year retention rates for students in the fall 2000 cohort who participated in the CircLES program is approximately 80%. The one-year retention rate for students who did not participate in CircLES is approximately 74%. One-year retention rates for students in the CircLES program tend to be higher than those in comparable fields of study in comparable schools (University of Oklahoma study, 2000).

93% of the students who have received MIE/UTEP/REU stipends are either still in school or have graduated and attending graduate programs at UTEP. 95% of the students who were assigned as peer facilitators are either still in school, graduated with their BS degree or are attending graduate programs at UTEP.



KEY INDICATOR 5: STEM Student Activities and Achievements

Indicator No. 5 presents trends in Undergraduate Student Activities supported by MIE. Figure 5.1 shows total Undergraduate Student Development Activities Supported by MIE. Figure 5.2 shows STEM Student Research Activities from AY 1995-96 to AY 2000-01.

Figure 5.1
STEM Undergraduate Student Development Activities Supported by MIE

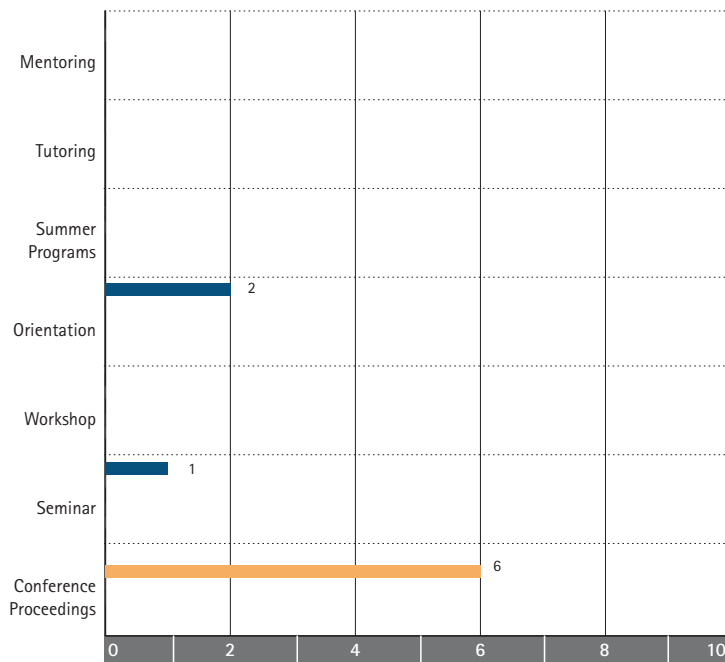
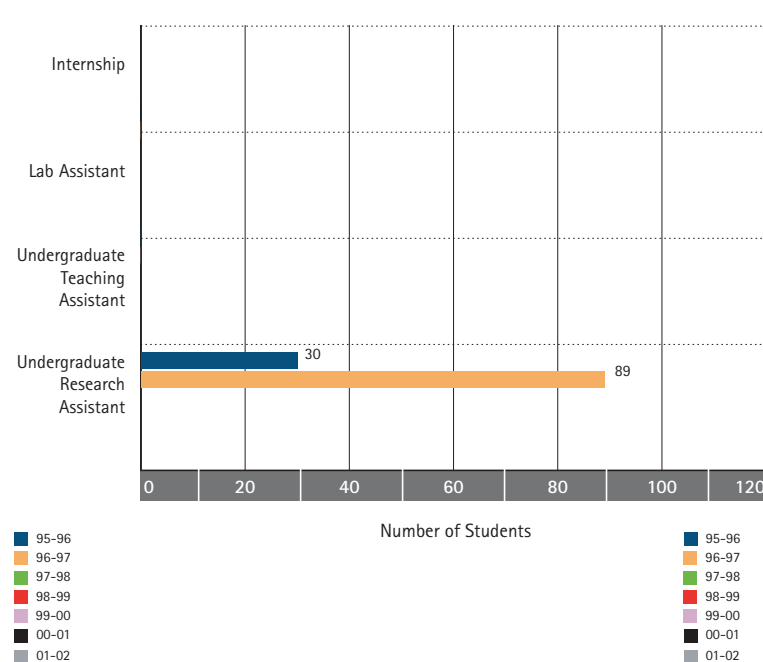


Figure 5.2
STEM Undergraduate Student Research Activities Supported by MIE

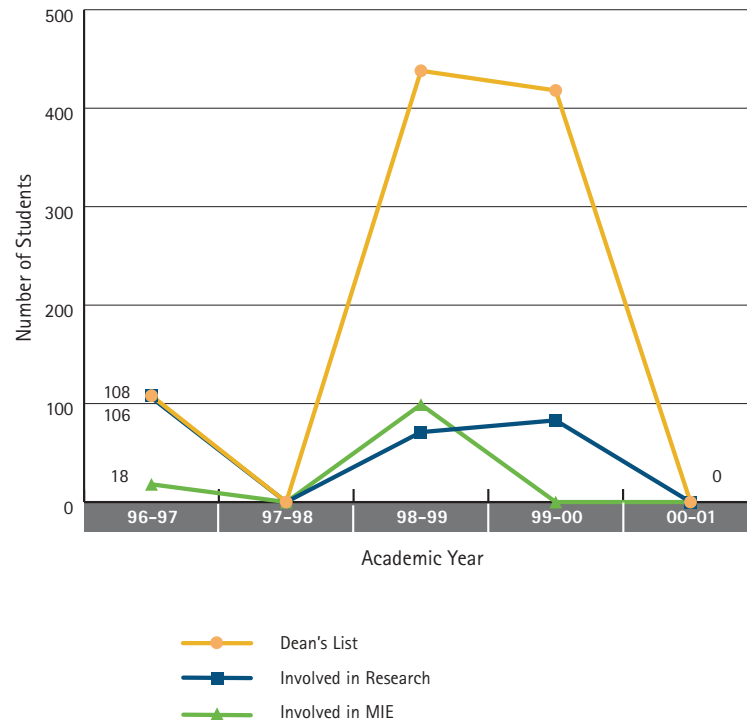




KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 5.3 shows STEM Student Achievement.

Figure 5.3
STEM Student Achievement

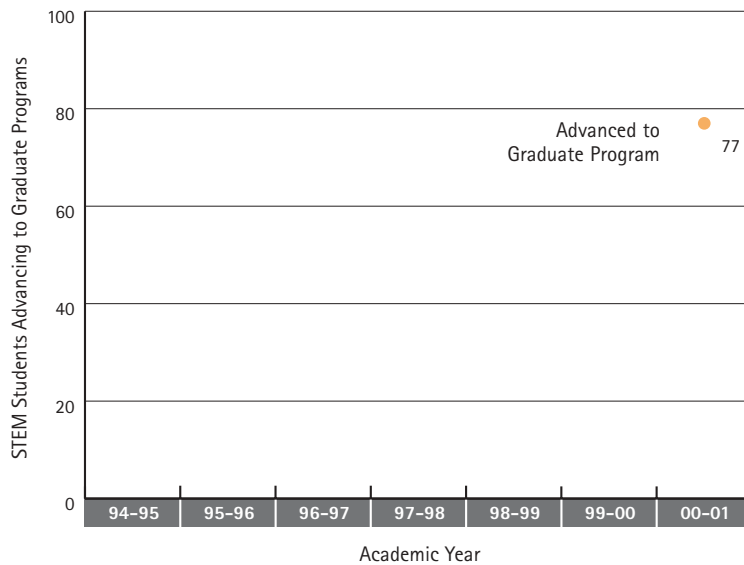




KEY INDICATOR 6: Students Advanced to Graduate Programs or STEM Careers Trends: AY 1994-95 to 2000-01

Key Indicator No. 6 presents trends in STEM Graduates who pursued Advanced Degrees or Advanced to STEM Careers. Figure 6 shows trends for undergraduate STEM students by major from Baseline to AY 2000-01.

Figure 6
Advancing STEM Students



STEM Students Advancing to Graduate Programs from Baseline to AY 2000-01

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01
Computer Science	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	13
Elec/Comp. Engineering	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10
Biology	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10
Civil Engineering	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8
Mathematics	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8
Mechan./Indust. Eng.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	16
Metal. and Materials Sci.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4
Natural Science	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4
Physics	n.a.	n.a.	3	n.a.	n.a.	n.a.	1
Geological Science	n.a.	n.a.	6	n.a.	n.a.	n.a.	1
Chemistry	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2
Total	n.a.	n.a.	9	n.a.	n.a.	n.a.	77

Highlights and Notes

Of the 301 degrees conferred in STEM majors in AY 2000-01, 77 graduates (26%) went on to graduate programs at UTEP.

The number of STEM graduates entering graduate school represents only those entering graduate programs at UTEP.

Data was not available for the number of graduates entering the STEM workforce.



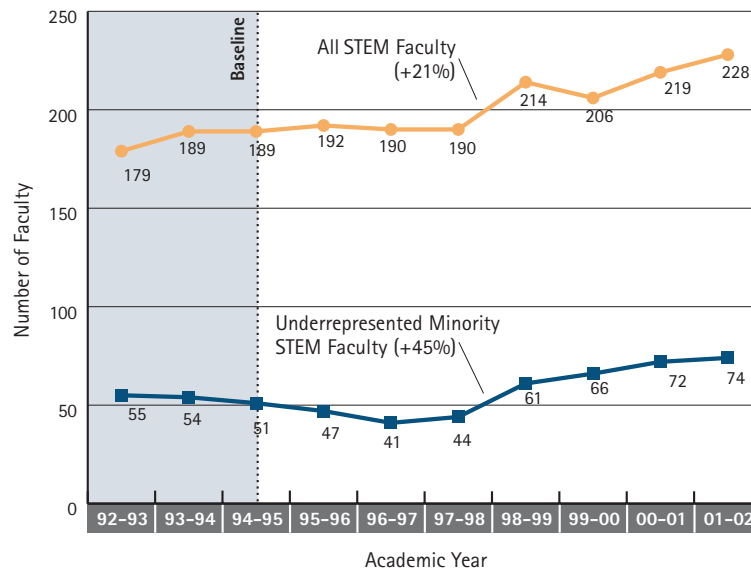


KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No. 7 presents STEM Faculty Demographic Trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 1992-93 to AY 2001-02.

Figure 7

STEM Faculty Demographics All STEM Compared To Underrepresented Minority Faculty



Percentage of Underrepresented Minority Faculty in STEM

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All	189	192	190	190	214	206	219	228	+21%
Underrepresented Minority	51	47	41	44	61	66	72	74	+45%
Percentage	27%	24%	22%	23%	29%	32%	33%	32%	+5pp

Total Institution Faculty Trends

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	849	840	792	799	827	776	830	923	+9%

Highlights and Notes

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 189 to 228 faculty members) +21%
- Underrepresented Minority STEM (from 51 to 74 faculty members) +45%

Networking with faculty at other institutions has proven to be particularly effective in recruiting and retaining new STEM faculty, as well as for sharing any lessons learned.

It was highly recommended that professors complete a teaching portfolio.

Applicants for faculty positions were required to submit a teaching portfolio.



KEY INDICATOR 8: Faculty Research and Activities

Faculty Research Outcome/Achievement

In AY 00-01, the Geological Science Department received a three-year Geo-Diversity Program award, Building Pathways into the Geosciences for an Hispanic Community of Learners in El Paso (In conjunction with the MIE REU Program).

Faculty Funding/Grant Capability

Securing external funding/grants for research and instruction is part of UTEP's institutional culture. UTEP ranked #1 in the state of Texas in AY 1999-00 in securing federal funding for each dollar of state support.

Faculty Activity Support

Continued professional development activities emphasizing cooperative learning have continued to draw interested STEM faculty who teach in the University Seminar, introductory and lower division STEM courses and upper division courses. STEM faculty and peer facilitators who teach the University Seminar participate in the professional development activities focused on the University Seminar.

Outstanding MIE Scholar

No information was available.

Figure 8.1

Proposals

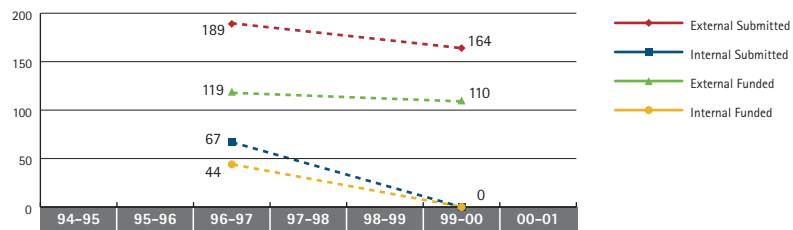


Figure 8.2

Publications and Presentations

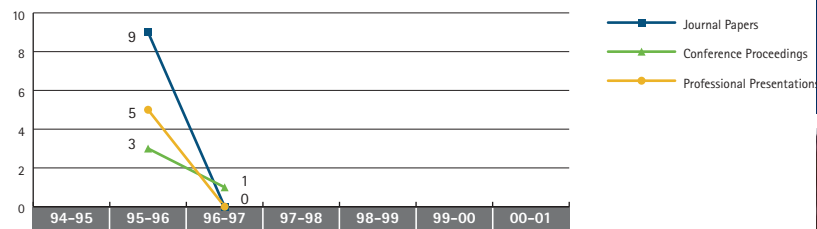
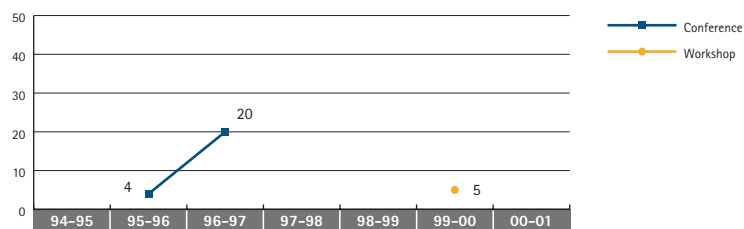


Figure 8.3

Professional Development Activities





KEY INDICATOR 9: Collaborative and Pre-College Activities

Pre-College Activities

CircLES The Circles of Learning for Entering Students Program (CircLES)

- Incoming Freshmen enter into their new college life through the CircLES ORIENTATION created specifically for the benefit of future scientists, mathematicians and engineers.
- Since CircLES was established in 1997 new UTEP engineering, science and mathematics students have made the college adjustment with ease. Check out the RESULTS that CircLES has produced from participating students.
- CircLES has proven to be effective. Incoming Freshmen can really BENEFIT from the CircLES program.

Collaborative Activities

In AY 1999-00:

- The creation of an Entering Students Office and the creation of an Associate Dean for Engineering and Science to oversee the new unit was undertaken.
- Recruitment of undergraduate students in research in partnership with UTEP's McNair program.
- Establishing and maintaining the ACES facilities.
- CETaL fellows who oversee CETaL offerings and activities.
- Joint training with the non-STEM University Training workshop and the Learning Communities Discussion Group and the First-Year Seminar with STEM and non-STEM faculty/administrators led by Jean MacGregor and Betsy Barefoot.

KEY INDICATOR 10: Research and Computing Resources: AY 1995-96 to AY 2000-01

New Building

In fall 2001, the lower level of the Classroom Building was approved for expansion of the Academic Center for Engineers and Scientists. This space will be used for study and tutoring.

Research Center, Lab, and Major Equipment

To replace space taken by ACES II, a chemistry lab was moved to the third floor and rebuilt.

Computing Resources

New student record system installed.

Thirty new laptops with infrared technology purchased for use by students in ACES.

MIE purchased 60 new desktops for the Engineering Computer Center and for Computer Science.

Research Center/Lab	Year Built
MIE Administration-Geology Bldg	1996
Math and Engineering Labs-Classroom Bldg	1996
Science/Engineering Student Center	1996
Center for Environmental Resource Management	
Border Biology Resource Center	
Materials Research Center of Excellence	
Materials Research Institute	
Center for Border Economic Development	
Manufacturing and Materials Management	
Pan Am. Ctr. for Earth and Environmental Studies	



KEY INDICATOR 11: Major Academic Events

Major Academic Events

UTEP established the University College that oversees the University Studies program for entering students in AY 2000-01.

The College of Engineering completed its Fall 2001 ABET Accreditation visit.

The Texas Higher Education Coordinating Board approved the Undergraduate Environmental Science Program.

The Department of Geographical Science received NSF funding for the Building Pathways into the Geosciences for a Hispanic Community of Learners in El Paso program.

Institution/MIE Leadership

In AY 2000-01:

- Dr. Pablo Arenaz was appointed Associate Vice President for Academic Affairs.
- Dr. Helmut Knaust, Mathematics, was appointed Associate Dean for the Colleges of Engineering and Science and Associate Dean for the University College.
- Dr. Nancy Marcus, Mathematics, was appointed Assistant Dean of the College of Science.

Policy Changes

In Fall 2001, a Basic Engineering Program was established for students interested in pursuing Civil, Industrial, Mechanical or Materials and Metallurgical Engineering. The program is a core curriculum that must be completed before an engineering specialization may be selected.

MIE Budget and Expenditure

In FY 2001-02, the total MIE budget was \$2,499,999: 9% was budgeted for senior personnel, 35% on other personnel, 10% on fringe benefits, 5% on permanent equipment, 5% on travel, 12% on participation support costs, 7% on other direct costs, and 16% on total indirect costs. FY 2001-02 expenditure data was not available.



KEY INDICATOR 12: Major MIE Activities

Institutionalized MIE Program Components

- Discussion and planning for the integration of the Circles for Learning for Entering Students (CircLES) and the University College program are ongoing.
- Discussion and planning for institutional funding for ACES continues.
- Environmental Science is an official degree-granting program in the Texas Higher Educational System.
- The Basic Engineering Program is a core curriculum for students interested in specializing in Civil, Industrial, Mechanical, or Materials and Metallurgical Engineering.

The Calculus-based Physics course and lab, and the Introduction to Chemistry course with supplemental instruction and peer facilitators have been redesigned and will continue to be offered.

The "modular" approach to Pre-calculus has been institutionalized.

The salaries of the Directors of the Co-Directors of the Center for Effective Teaching and Learning (CETaL) are funded by the Provost/ Academic Vice President, and can request and receive support from the institution's curriculum development fund for CETaL programs.

Two Chemistry and one Hydrology labs have been redesigned and institutionalized.

Major MIE Activities and Achievements

One-year retention rates (approx. 80%) continue to

be higher for students participating in CircLES than comparable rates for STEM students in comparable schools.

Forty-four percent of the 260 students supported by MIE funds are still in school, and 25% have graduated and entered graduate school at UTEP; 24% have entered graduate school at other institutions.

Of the 97 students supported by MIE funds for peer facilitators, 49% were retained, 24% have graduated and entered graduate school at UTEP; 22% have embarked upon professional careers or have entered graduate school at other institutions.

Additional space has been allocated in the Classroom Building for the Academic Center for Engineers and Scientists.

UTEP hosted the 6th annual MIE Meeting in April 2001.

Four staff members of the Formative Evaluation and Assessment Team received NSF funded scholarships to attend professional development workshops sponsored by the Evaluators' Institute.

Leveraged Funding

In AY 99-00:

- NSF/CISE (Computer Science) connection between MIE supported STEM Entering Students Program and major in CS and evaluation support (received).
- NASA/Recruitment (Physical Sciences) evaluation support (received).
- NASA NTIS Grant evaluation support (received).

In-Kind Contribution

Institutional funding for all MIE-sponsored faculty hires. Percent of time contributed by university administrators.

In-kind contributions have been provided in several key areas: student tuition support, faculty release time, facilities, laboratories, equipment, and Staff/Human resource support.

Major Departmental Changes

Environmental Science was recognized by the Texas Higher Education Coordinating Board and is now a degree-granting department. The Department of Geological Sciences received NSF funding for the Building Pathways into the Geosciences for an Hispanic Community of Learners in El Paso program.



Model Institutions for Excellence

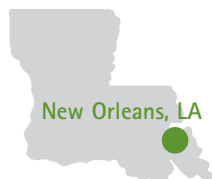


XAVIER UNIVERSITY OF LOUISIANA

MIE Fact Book 2002

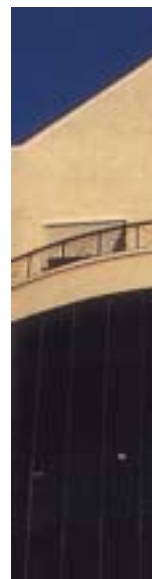
PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Science Foundation





Mission: **Xavier University of Louisiana** is Catholic and historically Black. The ultimate purpose of the University is the promotion of a more just and humane society. To this end, Xavier prepares its students to assume roles of leadership and service in society. This preparation takes place in a pluralistic teaching and learning environment that incorporates all relevant educational means, including research and community service.

National Ranking: According to the U.S. Department of Education, Xavier continues to rank first nationally in the number of African American students earning undergraduate degrees in biology, physics, and the physical sciences overall. Xavier is one of only six schools chosen to participate in the National Science Foundation's Model Institutions for Excellence in Science, Engineering and Mathematics programs.

Xavier has been especially successful in educating health professionals. The College of Pharmacy is first in the nation in the number of Doctor of Pharmacy degrees awarded to African Americans; since 1927 it has graduated nearly 25% of the 6,500 Black pharmacists practicing in the United States. It is one of only two pharmacy schools in Louisiana.

In pre-medical education, Xavier is first in the nation in placing African American students into medical schools – a ranking it has held for the past nine years. The 77% acceptance rate of Xavier graduates by medical schools is almost twice the national average, and 92% of those who enter medical schools complete their degree programs.

Information provided by Xavier University of Louisiana

Institution Profile in Brief

Year Founded: 1915
 Institution Control: Private
 Institution Type: Four year and graduate
 Land-Granted: No
 Co-Ed: Yes
 Affiliation: Independent
 Academic Term: Semesters

Degree Programs Offered

- Liberal Arts
- Education
- Social Science
- Mathematics
- Life Science
- Others
- Business/Economics
- Physical Science
- Environmental Science
- Computer Science
- Nursing/Health Science,

President Norman C. Francis

Website <http://www.xula.edu/>

Student Enrollment / AY 2002-03

	FT	PT	Total
Undergraduate:	3,015	93	3,108
Gender:	Male: 26%		Female: 74%
Race/Ethnicity:	African American: 88%		White: 1%

Degrees Conferred / AY 2000-01

Associate:	0
Baccalaureate:	467
Dual Degree:	0
Total:	467

Faculty / AY 2002-03

Full Time:	226
Part Time:	0
Total:	226
% Ph.D. Full Time Faculty:	86%
Student/Faculty Ratio:	14:1

Xavier University of Louisiana



MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I

Grant Period: 10/1/95 - 9/30/2000

Amount: \$12,260,835

Phase II

Grant Period: 10/1/2000 - 9/30/2003

Amount: \$7,200,000

Principal Investigator/Project Director

Mr. George Baker

Xavier University of Louisiana

1 Drexel Drive

New Orleans, LA 70125

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fax: (504) 485-7911

email: gbaker@xula.edu

Deidre D. Labat, Co-Principal Investigator

1 Drexel Drive

New Orleans, LA 70125

phone: (504) 483-7525

fax: (504) 483-7912

email: dlabat@xula.edu

Data Managers/Evaluators

Earl J. Mitchell

1 Drexel Drive

New Orleans, LA 70125

phone: (504) 483-7395

fax: (504) 485-7911

email: emitchel@xula.edu

MIE at Xavier

Xavier University of Louisiana has a rich tradition of preparing students who excel in science, engineering, and mathematics. Through the MIE Program initiative, the University has sought to strengthen that tradition by developing an infrastructure that will support a substantially larger population of Xavier students who are motivated and prepared to pursue graduate studies in their chosen majors. Major components of the MIE program have included substantial renovations to campus facilities such as the establishment of Resource and Mentoring Centers, and additional teaching and research laboratories. There has also been a significant upgrade in the quality of, and access to, computing and electronic communications systems for faculty and students. Additionally, important developments have taken place in instructional strategies, materials and curricula, and administrative processes that support these efforts.

MIE Goals and Objectives

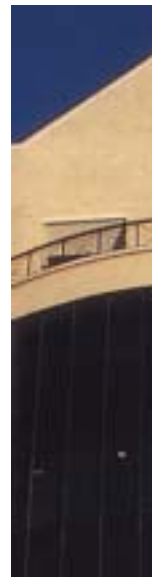
The essential goal of the MIE program at Xavier University has been to enhance the various infrastructures of the University in support of achieving a substantial increase in the number of STEM students who enroll in graduate and professional school. Important long term outcomes of those efforts are to be realized in the achieving of an increase in STEM students retention rates to a level approaching 75%; and a quadrupling in the number of (non-health science related) STEM students entering STEM graduate and professional schools.

The associated objectives identified as critical to the attainment of these goals were/are:

- Substantially increase the number of students entering Xavier who major in STEM areas.
- Renovate space to produce new teaching laboratories in biology, chemistry, computer science, mathematics, and physics.
- Renovate additional space to support collaborative faculty/student research activities.
- Upgrade the quality and increase the quantity of equipment in new and existing STEM laboratories.
- Establish two Student Resource and Mentoring Centers.
- Expand the computing network capability of the university.
- Develop a financial assistance structure that will effectively address student and university needs.
- Strengthen undergraduate research opportunities for students by increasing collaborative ventures between Xavier and other universities and organizations.
- Establish a model mentor training program.
- Implement curriculum revisions and development.
- Develop a framework for a bachelor's degree program in Engineering.
- Disseminate information about MIE and other STEM areas at Xavier to internal and external audiences.

Milestones

All of the following citations represent instances in which the MIE program was a principle initiator and/or contributor in the promulgation of the outcomes that were realized.



Physical Infrastructure

- The completion of major portions of the University communications and information technology network infrastructure. Fiber optic cabling now services all major buildings on the campus and a new telephone system has been installed.
- Created the Resource and Mentoring Center (with over 70 computing stations and 4 group study areas) in the University library with operating hours extended from 8:00pm to 12 midnight.
- The construction of a 100,000 square foot addition to the Academic Science building which houses the departments of Biology, Chemistry, Computer Sciences and Computer Engineering, and Physics/Engineering.

Administrative Infrastructure:

- Establishment of a VP level position for Information Technology.
- Establishment of a faculty mini-grant process to facilitate opportunities for junior faculty research and mentoring of students.
- A major administrative initiative that resulted in a change from the legacy administrative computing system to that of the SCT Banner 2000TM enterprise data management system.
- Establishment of a University-wide commitment and process of providing computer access to every faculty and staff in a systematic 3-year recycling process.

Academic Infrastructure:

- A steady increase in STEM enrollment from 695 students in the baseline year (of 1995) to 893 currently.
- Development of the Xavier University Center for

Undergraduate Research.

- Development of an initiative to incorporate faculty research mentoring into the faculty evaluation and rewards process.
- Development of a process to endow a scholarship funding stream for both STEM and non-STEM students.
- Establishment of a BS degree program in Computer Engineering.

Website:

http://www.xula.edu/Sponsored_Programs/xumie/sempage.html



Major Achievements based on Key Indicators: A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 02-03	% change
STEM Enrollment	1,272	1,551	+22%
URM Enrollment	1,267	1,448	+14%
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 02-03	% change
Biology	775	1,132	+46%
Chemistry	269	246	-9%
Computer Science	64	85	+33%
Mathematics	38	16	-58%
Physics/Engineering	126	72	-43%
3. Undergraduate STEM Degrees Conferred	AY 94-95	AY 01-02	% change
STEM Degrees Conferred	152	287	+89%
URM Degrees Conferred	150	287	+91%
4. Undergraduate Retention Rate	AY 94-95	AY 99-00	% change
Return Rate After First Year	76%	73%	-3pp
Return Rate After Second Year	63%	63%	no change
5. STEM Student Activities and Achievement	AY 95-96	AY 01-02	% change
Conference	6	2	-67%
	AY 95-96	AY 02-03	% change
Research Internships	n.a.	27	n.a.
Undergraduate Research Assistants	67	27	-60%
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 01-02	% change
Students Advancing to STEM Careers	n.a.	n.a.	n.a.
Students Advancing to Grad Programs	n.a.	n.a.	n.a.
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	68	78	+15%
URM Faculty	29	30	+3%
8. Faculty Research and Activities	AY 94-95	AY 00-01	% change
Journal Papers	0	12	0 to 12
Conference Proceedings	0	2	0 to 2
Professional Presentations	1	13	+1,200%
Conferences	3	40	+1,233%
Seminars	3	58	+1,833%
Workshops	3	32	+967%
Proposals Submitted for External Funding	37	n.a.	n.a.
Proposals Submitted for Internal Funding	24	n.a.	n.a.
External Proposals Funded	21	n.a.	n.a.
Internal Proposals Funded	24	11	-54%

STEM Undergraduate Enrollment and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2002-03	Degrees Conferred AY 2001-02
Biology	1,132	180
Chemistry	246	60
Computer Science	85	8
Mathematics	16	6
Physics/Engineering	72	33
Total	1,551	287

STEM Degrees

- Biology
- Chemistry
- Computer Science
- Mathematics
- Physics/Engineering

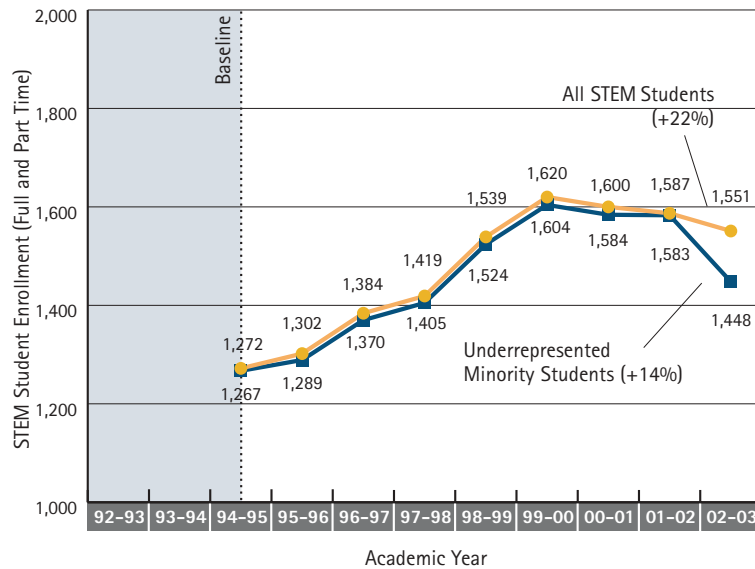


KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2002-03

Key Indicator No. 1 presents trends in Undergraduate STEM Student Enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2002-03. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1

Undergraduate STEM Students Enrolled All STEM Compared To Underrepresented Minority Students



Percentage of Underrepresented Minorities Enrolled in STEM

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% change
All STEM Students	1,272	1,302	1,384	1,419	1,539	1,620	1,600	1,587	1,551	+22%
Underrepresented Minority Students	1,267	1,289	1,370	1,405	1,524	1,604	1,584	1,583	1,448	+14%
Percentage	100%	99%	99%	99%	99%	99%	99%	100%	93%	-7pp

Institution Total Undergraduate Student Trends

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% change
Total	3,172	2,448	2,620	2,653	2,795	2,937	2,968	3,019	3,108	+27%

Highlights and Notes

STEM student enrollment % change from baseline to AY 2002-03

- All STEM (from 1,272 to 1,551 students) +22%
- Underrepresented Minority STEM (from 1,267 to 1,448 students) +14%

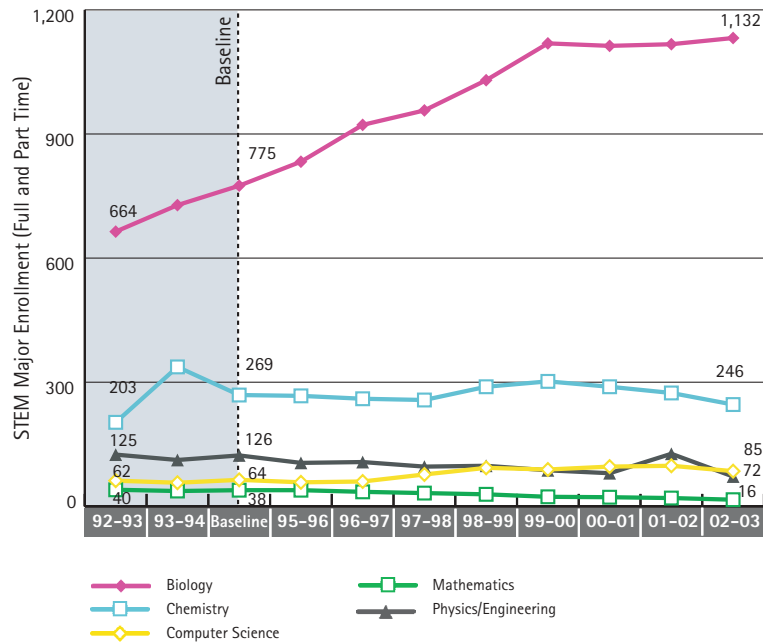
Student enrollment in undergraduate STEM courses increased 22% between AY 1994-95 and 2002-03. Ninety-three percent of all students are from an underrepresented minority group.



KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2002-03

Key Indicator No. 2 presents Undergraduate Student Enrollment Trends by STEM major: Biology, Chemistry, Computer Science, Mathematics, and Physics/Engineering. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2002-03.

Figure 2
STEM Enrollment by Major



STEM Course Enrollment

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% change
Biology	775	833	922	957	1,030	1,119	1,113	1,117	1,132	+46%
Chemistry	269	267	260	257	289	302	289	274	246	-9%
Computer Science	64	58	60	77	93	89	96	98	85	+33%
Mathematics	38	39	35	32	29	23	22	15	16	-58%
Physics/Engineering	126	105	107	96	98	87	80	83	72	-43%
Total	1,272	1,302	1,384	1,419	1,539	1,620	1,600	1,587	1,551	+22%

Highlights and Notes

Students enrollment % change from baseline to AY 2002-03

- Biology (from 775 to 1,132 students) +46%
- Chemistry (from 269 to 246 students) -9%
- Computer Science (from 64 to 85 students) +33%
- Mathematics (from 38 to 16 students) -58%
- Physics/Engineering (from 126 to 72 students) -43%

The greatest enrollment gains by major was in Biology, which increased 46% from 775 in AY 1994-95 to 1,132 in 2002-03. Enrollment in Computer Science increased 33% from 64 in AY 1994-95 to 85 in AY 2002-03.

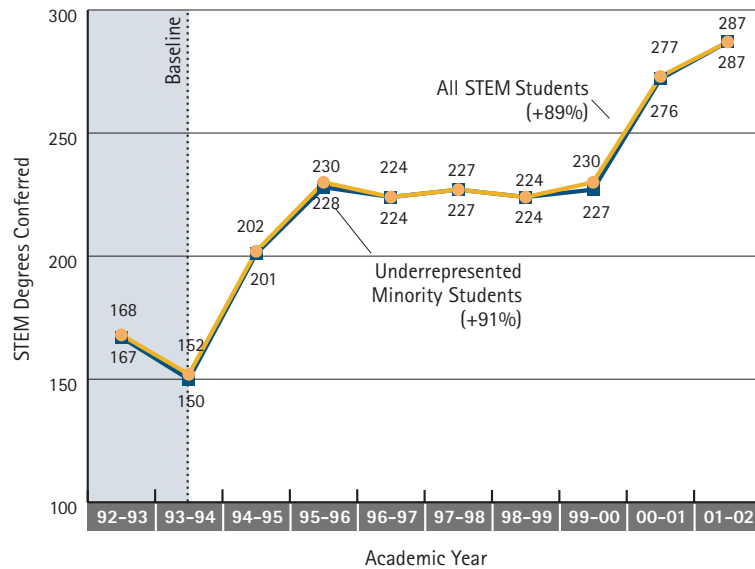


KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2001-02

Key Indicator No. 3 presents trends in total number of Undergraduate STEM Degrees Conferred. Figure 3 shows degrees conferred trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2001-02.

Figure 3

Undergraduate STEM Degrees Conferred All STEM Compared To Underrepresented Minority Students



Underrepresented Minority Students Conferred STEM Degrees

	Baseline	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All Students	152	202	230	224	227	224	230	277	287	+89%
Underrepresented Minority Students	150	201	228	224	227	224	227	276	287	+91%
Percentage	99%	100%	99%	100%	100%	100%	99%	100%	100%	+1pp

Institution Total Degrees Conferred

	Baseline	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	369	361	417	363	400	396	410	467	467	+27%

Highlights and Notes

STEM student degrees conferred % change from baseline to AY 2001-02

- All STEM (from 152 to 287 students) +89%
- Underrepresented Minority STEM (from 150 to 287 students) +91%

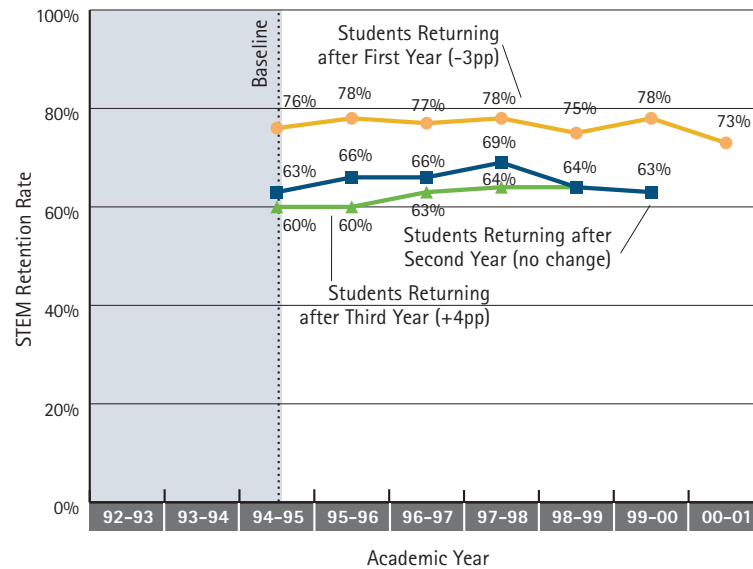
The number of degrees conferred in STEM majors increased 89% from 152 in AY 1994-95 to 287 in AY 2001-02. In AY 2001-02, all graduates were underrepresented minority students.



KEY INDICATOR 4: Undergraduate STEM Students Retention Rate: AY 1992-93 to 2000-01

Key Indicator No. 4 presents trends in Undergraduate STEM Student Retention Rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2000-01.

Figure 4
STEM Student Retention Rate



STEM Retention Rate

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01
Return After First Year	76%	78%	77%	78%	75%	78%	73%
Return After Second Year	63%	66%	66%	69%	64%	63%	
Return After Third Year	60%	60%	63%	64%	64%		
Return After Fourth Year	26%	28%	26%	25%			
Return After Fifth Year	15%	26%	13%				
Return After Sixth Year	6%	6%					

Highlights and Notes

STEM student retention rate change	Percentage Point (pp) Change
Return after first year from Baseline to AY 2000-01	-3 pp
Return after second year from Baseline to AY 1999-00	no change
Return after third year from Baseline to AY 1998-99	+4 pp

Third year retention rates improved 4pp from 60% to 64% between AY 1994-95 and 1998-99.



KEY INDICATOR 5: STEM Student Activities and Achievement

Indicator No. 5 presents trends in Undergraduate Student Activities supported by MIE. Figure 5.1 shows total Undergraduate Student Development Activities Supported by MIE. Figure 5.2 shows STEM Student Research Activities from AY 1995-96 to AY 2000-01.

Figure 5.1
STEM Undergraduate Student Development Activities Supported by MIE

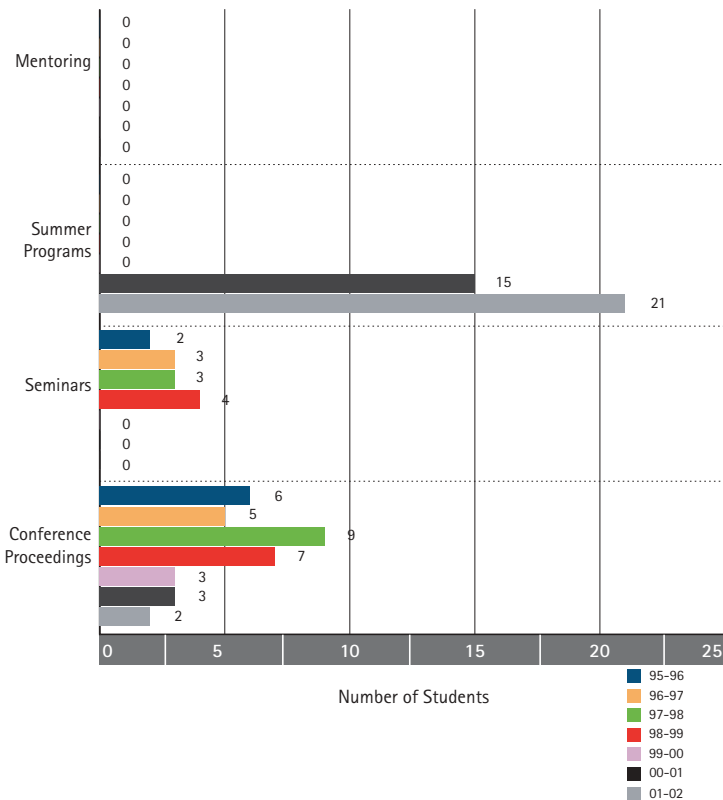
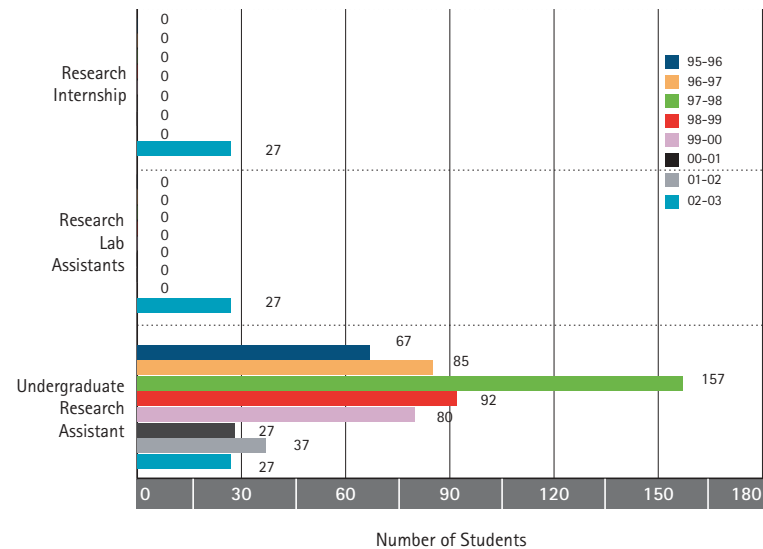


Figure 5.2
STEM Undergraduate Student Research Activities Supported by MIE



Highlights and Notes

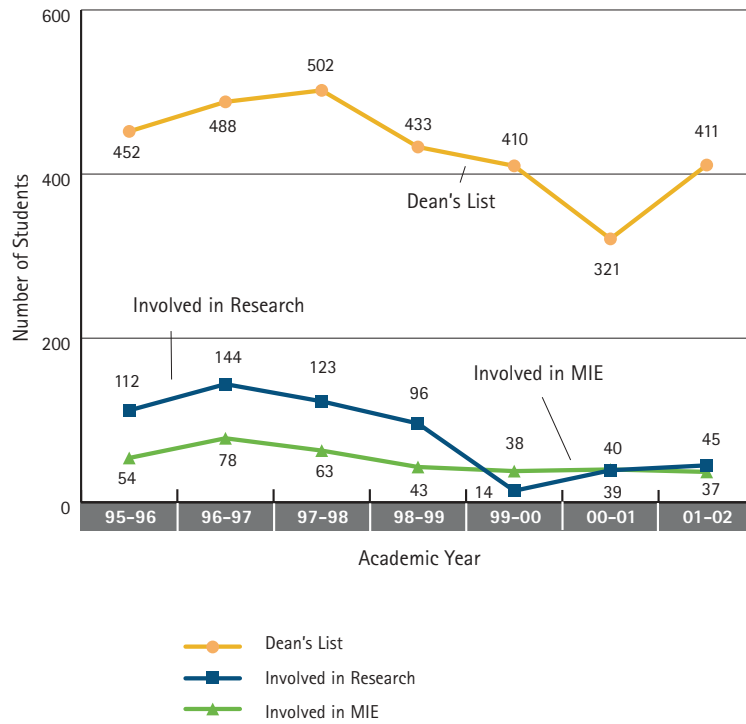
In AY 2000-01, 15 summer programs were held compared to zero in AY 1995-96; 3 conferences were held, and 27 students served as research assistants.



KEY INDICATOR 5: STEM Student Activities and Achievement, continued

Figure 5.3 shows STEM Student Achievement.

Figure 5.3
STEM Student Achievement



Highlights and Notes

In AY 1997-98, 502 students were placed on the Dean's List.



KEY INDICATOR 6: Students Advanced to Graduate Programs or STEM Careers Trends: AY 1994-95 to 2000-01

Reagan Higgins

2002 Packard
\$100,000
Scholarship
Recipient

Major: Math
Grad School:

University of Nebraska-Lincoln.
Area: Mathematics
2002 Graduate



Alicia Williams

2002 Packard
\$100,000
Scholarship
Recipient

Major: Chemistry
Grad School:

Louisiana State Univ.
Area: Chemistry
2002 Graduate



Kiandra Johnson

2000 Packard
\$100,000
Scholarship
Recipient

Major: Math
Grad School:

Emory University
Area: Mathematics
2000 Graduate



Calandra Tate

2000 S.T.A.R.S.
\$100,000
Scholarship
Recipient

Major: Math
Grad School:

University of Maryland
Area: Mathematics
1999 Graduate



Kwame Osei-Sarfo

was awarded a scholarship
ranging from \$5,000-\$7,000 for
Training to study environmental
science in Ecuador.

Major: Biology
Grad School:

NY School of
Medicine
Area: Medicine
MD-Ph.D.
2003 Graduate



Brian Landry

2002 Packard \$100,000
Scholarship Recipient

Major: CS

Grad School:
Georgia Institute
of Technology
Area: CS
2002 Graduate



Kimberly Jackson

Earn distinction from the
Computer Research Association
(CRA) **Major:** CS

Grad School:
Univ. of Central
Florida
Area: CS
2002 Graduate



Fenwick Broyard

2000 Packard \$100,000
Scholarship Recipient

Major: Physics
Grad School:
Columbia Univ.
(NY) **Area:**
Physics
2000 Graduate



Brandi Tregre

was named a Rousseve Scholar
for the 2002-2003 academic year.
She receives a full tuition
scholarship of \$10,100 allowance.

Major:
Biomedical
Engineering (3-2
Program)
Grad School:
Tulane Univ.



Rachel L. Wilhite

Completed a masters dual-degree
biostatistics program at LSU-
Health Sciences Center

Major: Biostatistic
Grad School:
University of
Arizona
Area: PhD
candidate in
epidemiology
2001 Graduate



April Savoy

2002 Packard \$100,000
Scholarship Recipient

Major: CS

Grad School:
Purdue University
Area: CS
2002 Graduate



Azzari Caillier

2001 Packard \$100,000
Scholarship Recipient

Major: CS

Grad School:
Northwestern U.
Area: CS
2001 Graduate



Kimberly Smith

Rice Diversity in Science and
Engineering Fellowship Recipient

Major: Physics
Grad School: Rice
University
Area: Physics
1999 Graduate



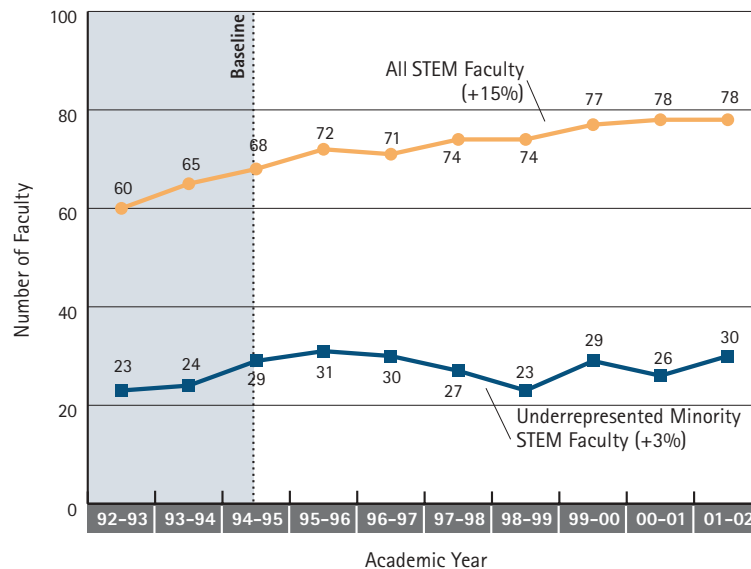


KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No. 7 presents STEM Faculty Demographic Trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 1992-93 to AY 2001-02.

Figure 7

STEM Faculty Demographics All STEM Compared To Underrepresented Minority Faculty



Underrepresented Minority Faculty in STEM

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All	68	72	71	74	74	77	78	78	+15%
Underrepresented Minority	29	31	30	27	23	29	26	30	+3%
Percentage	43%	43%	42%	36%	31%	38%	33%	38%	-5pp

Total Institution Faculty Trends

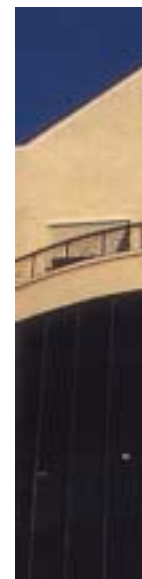
	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	207	211	203	209	250	248	259	212	+2%

Highlights and Notes

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 68 to 78 faculty members) +15%
- Underrepresented Minority STEM (from 29 to 30 faculty members) +3%

The number of underrepresented minority STEM faculty increased by 1 from AY 1994-95 to AY 2001-02.



KEY INDICATOR 8: Faculty Research and Activities

Endowed Chair–Computer Science Dept.

Dr. Antonio M. Lopez, Jr., Professor and the Conrad N. Hilton Endowed Chair in Computer Science at Xavier University of Louisiana, does research in the area of artificial intelligence. Specifically, he is interested in knowledge



engineering and intelligent agent development.

During the 2000-2001 academic year, Dr. Lopez also held the Chair of Artificial Intelligence in the Center for Strategic Leadership at the United States Army War College, Carlisle Barracks, PA where he holds a Visiting Professorship in Artificial Intelligence. This academic year, his research work at that institution continues. Recent publications include:

- Dr. Antonio M. Lopez, Jr. and Major James J. Donlon, Knowledge Engineering and Education, Educational Technology, 41, 2 (Mar.-Apr. 2001) 45-50.
- Lieutenant Colonel Michael Bowman, Dr. Antonio M. Lopez, Jr. and Dr. Gheorghe Tecuci, Ontology Development for Military Applications, Proceedings of the Thirty-ninth Annual ACM Southeast Conference, March 16-17, 2001, Atlanta, GA, 112-117.
- Lieutenant Colonel Michael Bowman, Dr. Antonio M. Lopez, Jr., Major James J. Donlon, and Dr. Gheorghe Tecuci, Teaching Intelligent Agents: Software Design Methodology,
- CrossTalk: The Journal of Defense Software Engineering, 12, 6 (June 2001) 10-14.

Dr. Lopez taught entering freshmen Computer Science major in CPSC 1710 Computer Science I in the fall 2001 semester. He is currently teaching CPSC 3130 Computer Architecture to junior and senior Computer

Science and Computer Engineering majors. Dr. Lopez is also the Project Director and Principal Investigator for two grants, one from the National Science Foundation to study gender equity issues in the education of African American female Computing Sciences majors and the other from the Missile Defense Agency to investigate the use of intelligent agents in battle space management.

Endowed Professor–The Margaret W. Kelly Professorship in Chemistry

Dr. Cheryl L. Klein Stevens earned her B.S. degree in chemistry from the University of Tampa in 1978 and the Ph.D. degree from the University of New Orleans in physical chemistry in 1982. She held a post-doctoral position in the area of X-ray crystallography for a short time before



joining the chemistry faculty at Xavier University of Louisiana in 1982 where she is currently a Margaret W. Kelly Endowed Professor of Chemistry. Dr. Stevens' research focuses on the use of x-ray crystallographic techniques for determination of the structures and charge densities of small pharmacologically interesting molecules. These molecules are dopamine agonists (used to treat Parkinson's disease), dopamine antagonists (used to treat psychosis and depression), and dopamine uptake inhibitors (used to understand cocaine addiction). Most recently, Dr. Stevens' research group has been using molecular modeling techniques to understand the relationship between the three-dimensional structures of these molecules and their pharmacological activities.

Dr. Stevens has more than fifty publications in refereed journals with many undergraduate student co-authors. Her students participate fully in the X-ray crystallographic investigations of compounds of interest beginning with crystallization of the compounds, processing diffraction data, and solving the crystal structures. They are provided library training and opportunities to discuss their results at Xavier as well as at national scientific meetings. Dr. Stevens was recently elected to be a member of the United States National Committee on Crystallography, a governing board that represents crystallographers and their scientific issues within the United States as well as the international scientific community.

Endowed Professor–The Norwood Professorship in Physics

Dr. Murty Akundi was born and educated in India, receiving his Ph.D. in Physics (Optical Spectrometry) in 1972. He joined Xavier University of Louisiana as an assistant professor in 1980 and became full professor in 19990. Nominated twice for the Who is Who among American teachers, he was also recognized as most outstanding professor for years 1990 – 1992, 1994, 1998, and 2000. He has trained several undergraduate students through his research projects and three of his students received Masters degrees in Physics under his supervision. Dr. Akundi has had 25 papers published in refereed journals and has made more than 20 presentations. He has received over \$2 million in research funding over the past 10 years. Research interests include Optical Spectroscopy of small molecules, and material characterization using FTIR and Magnetization techniques.





KEY INDICATOR 8: Faculty Research and Activities (continued)

Figure 8.1

Proposals

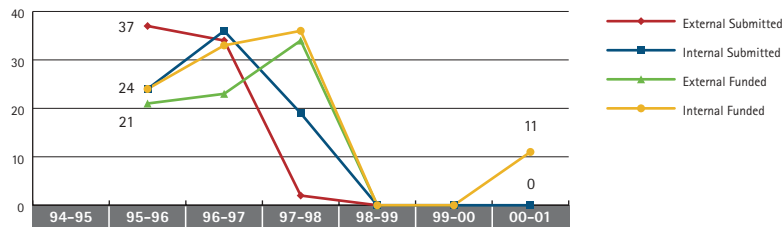


Figure 8.2

Publications and Presentations

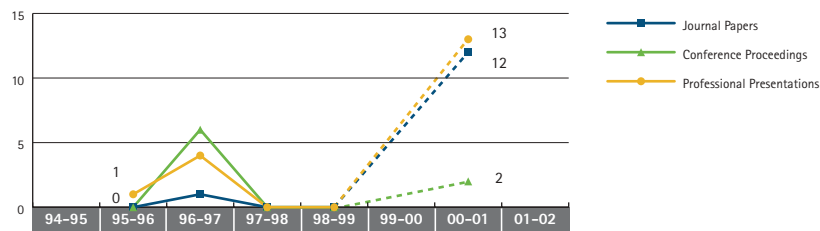
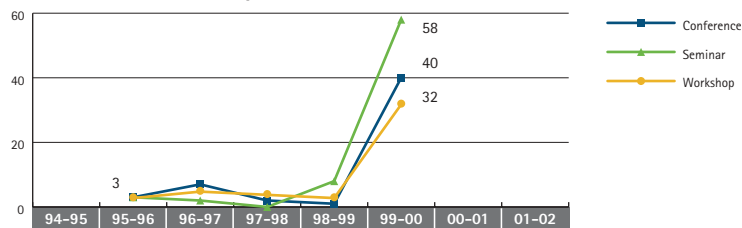
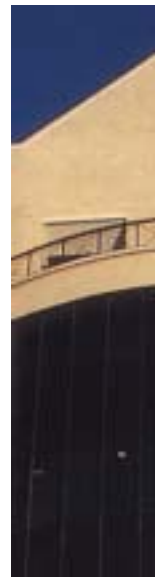


Figure 8.3

Professional Development Activities





KEY INDICATOR 9: Collaborative and Pre-College Activities

Bridge Activities

No Pre-college programs.

Collaborative Activities

No collaborative activities.

KEY INDICATOR 10: Research and Computing Resource Trends: AY 1995-96 to AY 2000-01

New Building

In AY 00-01, three new labs were constructed for Advanced Physics, Materials Physics and Computer research.

Research Center, Lab, and Major Equipment

Atomic-Force Microscope

Computing Resources

IT resources were expanded (hardware and software). Xavier has fully implemented its Banner 2000™ System, which manages the academic and fiscal tracking of XU students and the University's financial management.

Research Center/Lab	Year Built	Research Center/Lab	Year Built
Research Center/Lab	2000-01	Chemistry Research Lab	1998
Advanced Physics Lab	2000-01	GIS Lab	1998
Materials Lab	2000-01	Physics/Engineering Lab	1998
Computer Research Lab	2000-01	Research Lab (ASC 312)	1988
General Physics Lab	1998	Research Labs	1988
Biology	2002	Chemistry	2002



KEY INDICATORS 11 AND 12: Major Academic Events and Major MIE Activities

The main objective of Xavier's Model Institutions for Excellence Program is to develop a viable pool of candidates whose impetus is towards completing a graduate education. To this end, Xavier needed to overcome a number of impediments in order to achieve its goal. With its significant growth, particularly in the STEM disciplines, over the eight years prior to the MIE initiative, the University had fully utilized the space in the Academic/Science Complex (a building containing all of the science departments and laboratories) that was completed specifically for STEM major programs. However, because of its commitment then to the STEM programs, and its continued growth that Complex became oversubscribed by nearly 30%. Consequently, in order to alleviate the severely overcrowded condition and to prepare for the projected increased rate of growth, the University with the help of MIE funds and other leveraged funds, such as funds from the Lily Endowment/UNCF-HBCU program and the Kresge Foundation, developed a 100,000 square ft. science addition which doubled the teaching and research facilities available to STEM faculty and students. This was followed with widespread change throughout the University from its internet and telecommunication infrastructure to its administrative infrastructure to ensure institutionalization of these changes. Changes included:

- the implementation of a new University Data Management System (Banner 2000), which provides the University community with its first

integrated management system with capacity to support student on-line registration, enhanced student advising, and student tracking;

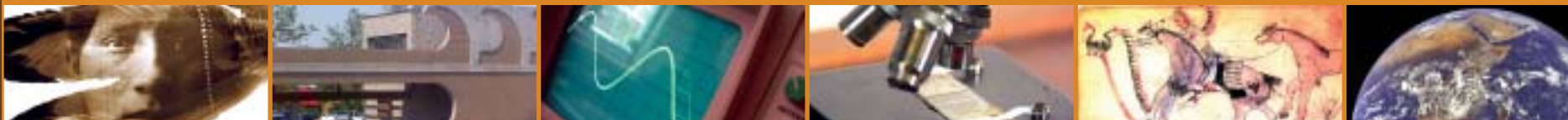
- the establishment of the position of Associate Vice President for Technology Administration to ensure the coordinated management of planning and implementation of technology on the campus;
- initiation of fundraising efforts for the purpose of supporting establishment of a BS degree program in Computer Engineering;
- development of the Xavier University Center for Undergraduate Research (XUCUR) to coordinate research activity between faculty and students;
- establishment of a system that provides the equivalent of 1 FTE (12 credit hours) of release time for faculty to pursue their research interests; enhancement of the instrumentation and equipment infrastructure in SEM department laboratories; and
- appointment, by the President of the University, of a University Research Coordinating Team consisting of selected senior faculty, and chaired by the Director of the Office of Sponsored Programs. In an effort to tell our story, our outreach endeavors include the MIE newsletter and website located at (http://www.xula.edu/Sponsored_Programs/xumie/sempage.html).

Xavier University is committed to its goal to create an atmosphere in the University that will develop and nurture (to the maximum extent possible) an

interest and commitment by STEM majors to pursue advanced (doctoral) study in graduate and professional schools. The MIE/NSF initiative has been a strong contributor to our mission.



Model Institutions for Excellence

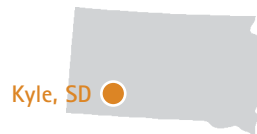


OGLALA LAKOTA COLLEGE

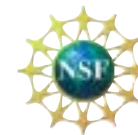
MIE Fact Book 2002

PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Science Foundation



Oglala Lakota College (Oyate Consortium)



Since the creation of the Pine Ridge Indian Reservation, Oglala leaders have pressed the federal government to meet the educational obligations it promised in treaties and agreements. With the advent of efforts to extend tribal sovereignty by American Indians throughout the United States came a recognition by Lakotas that control of education is also the control of its destiny. On March 4, 1971, the Oglala Sioux Tribal Council exercises its sovereignty by chartering the Lakota Higher Education Center.

The college awarded its first associate degrees in 1974. In 1978, the name of the college was changed to Oglala Sioux Community College to reflect its status as community college.

In 1979, Oglala Sioux Community College became a candidate for North Central Association accreditation. The college settled into its dispersed, decentralized campus system which features college centers in each of the nine reservation districts.

In 1980, the Oglala Sioux Tribal Council allowed the college to occupy its present administrative center. Piya Wiconi is the most visible symbol of the college but the district centers are where the mission is being fulfilled.

When accreditation was granted in 1983, the degree offerings were a Bachelor's degree in Elementary Education and Associate Degrees in Education, Human Services, General Studies, Nursing, Lakota Studies, Business and Vocational fields. In subsequent accreditations by North Central in 1987, 1992, and 1994, the college has expanded its Bachelor Degrees in Lakota Studies, Human Services,

and Applied Sciences, and a Master's Degree in Tribal Leadership.

At the 1983 annual retreat, OSCC underwent another name change to **Oglala Lakota College** to reflect its status as a four year degree granting institution and to replace the word Sioux with Lakota. Since Sioux is not a word in our language, the proper word to describe our people is Lakota.

At present, OLC is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools and offers degrees at the associate, baccalaureate and masters level. It can offer accredited graduate courses and certificates. Education graduates are certified by the South Dakota Division of Education. Nursing graduates are certified by the South Dakota State Board of Nursing and are permitted to sit for the Registered Nurse examination.

Source: <http://www.olg.edu/history.htm>

Institution Profile in Brief

History and Background

Year Founded:	1971
Institution Control:	Public-Tribal
Institution Type:	4-year and Graduate
Land-Granted:	Yes
Co-Ed:	Yes
Affiliation:	Affiliated
Academic Term:	Semesters

Degree Programs Offered

Business/Economics	Life Science
Education	Mathematical Science
Engineering	Nursing/Health Science
Environmental Science	Social Science
Information Technology	Others

President Dr. Thomas Short Bull

Website <http://www.olg.edu>

Student Enrollment / AY 2001-02

	FT	PT	Total
Undergraduate:	629	527	1,156
Gender:	Male: 29%	Female: 71%	
Race/Ethnicity:	Native American: 91%	Other: 9%	

Degrees Conferred / AY 2000-01

Associate:	53
Baccalaureate:	43
Dual Degree:	13
Total:	109

Faculty / AY 2001-02

Full Time:	45
Part Time:	109
Total:	154
% Ph.D. Full Time Faculty	20%
Student/Faculty Ratio:	8:1



Oglala Lakota College (Oyate Consortium)



MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I

Grant Period: 9/15/95 - 8/31/2000

Amount: \$12,350,000 (Oyate Consortium)

Phase II

Grant Period: 10/1/2000 - 9/30/2004

Amount: \$12,121,192 (Oyate Consortium)

Principal Investigator/Project Director

Stacy Phelps, Principal Investigator

PO Box 490

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email: sphelps@olc.edu

Data Managers/Evaluators

Faith Richards

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Kyle, SD 57752

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fax: (605) 455-2603

email: frichards@olc.edu

The Oyate Consortium consists of five Lakota reservation colleges and universities (Oglala Lakota College, Sinte Gleska University, Sitting Bull College, Sisseton-Wahpeton College, and Si Tanka College). This award follows an initial MIE award that provided substantial network infrastructure, physical infrastructure, personnel infrastructure, and course and curriculum development aimed towards the development of Science, Mathematics, Engineering, and Technical Education (SMETE) capacity at Native American colleges. This award will continue these activities building upon existing infrastructure to develop new information (Information Technology BS and an MS in Environmental Science, articulations with additional non-reservation colleges and universities, and additional outreach to Native American Schools (at least 10). Additionally, methods of institutionalization of the MIE accomplishments will be pursued including the development of an endowment for SMET capacity and the means for providing housing for faculty and, perhaps, for students at the campus sites.



MIE Objectives/Goals

1. Incorporate science engineering and mathematics degree programs into the existing organization.
2. Oglala Lakota College directs all programs in its Mission and Purposes to focus on the Tribal concern for trained graduates. The students are trained with the Tribal concern over legal issues including sovereignty. There are classes taught, such as GIS/GPS, at of the request of the Tribal Programs. Students are encouraged to do their internships in the Tribal Environmental Programs. The Oglala Sioux Tribal Rural Water Program, the Oglala Sioux Tribal Bombing Reclamation Program, and the Oglala Sioux Tribal Parks Board are in constant communications with Oglala Lakota College.
3. Integrate technology systems to better serve geographically isolated students and also extend OLC's connectivity to outside institutions.
4. Develop and refine institutional infrastructure at the college to support the new degree program and



Oglala Lakota College (Oyate Consortium)



Major Achievements based on Key Indicators: A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 01-02	% change
STEM Enrollment	n.a.	78	n.a.
URM Enrollment	n.a.	74	n.a.
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 01-02	% change
Interdisciplinary Environmental Science	13	28	115%
Life Science	0	16	0 to 16
SEM	0	34	0 to 34
3. Undergraduate STEM Degrees Conferred	AY 96-97	AY 00-01	% change
STEM Degrees Conferred	3	3	no change
URM Degrees Conferred	m	3	n.a.
4. Undergraduate Retention Rate	AY 96-97	AY 99-00	% change
Return Rate After First Year	47%	100%	+53%
Return Rate After Second Year	40%	67%	+27%
5. STEM Student Activities and Achievement	AY 96-97	AY 00-01	% change
Mentoring	0	30	0 to 30
Tutoring	0	20	0 to 20
Summer Programs	0	8	0 to 8
Orientation	0	2	0 to 2
Workshops	0	5	0 to 5
Seminars	0	0	no change
Conferences	0	23	0 to 23
	AY 96-97	AY 00-01	% change
Internships	0	1	0 to 1
Lab Assistants	0	0	no change
Undergraduate Teaching Assistants	0	0	no change
Undergraduate Research Assistants	0	3	0 to 3
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 99-00	% change
Students Advancing to STEM Career	m	m	n.a.
Students Advancing to Grad Programs	m	m	n.a.
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	11	11	no change
URM Faculty	2	1	-50%
8. Faculty Research and Activities	AY 95-96	AY 00-01	% change
Journal Papers	0	0	0
Conference Proceedings	1	1	no change
Professional Presentations	1	0	-100%
Conference	4	1	-75%
Seminar	3	2	-33%
Workshop	1	2	+100%
Proposals Submitted for External Funding	n.a.	5	n.a.
Proposals Submitted for Internal Funding	n.a.	0	n.a.
External Proposals Funded	n.a.	3	n.a.
Internal Proposals Funded	n.a.	0	n.a.

STEM Undergraduate Enrollment¹ and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2001-02	Degrees Conferred AY 2000-01
Interdisciplinary Environmental Science (ES)	28	2
Life Science (LS)	16	0
Science, Engineering and Math (SE)	34	1
Total	78	3

¹ Includes full and part-time enrollment

STEM Degrees

- Interdisciplinary Environmental Science
- Life Science
- Science, Engineering, and Math

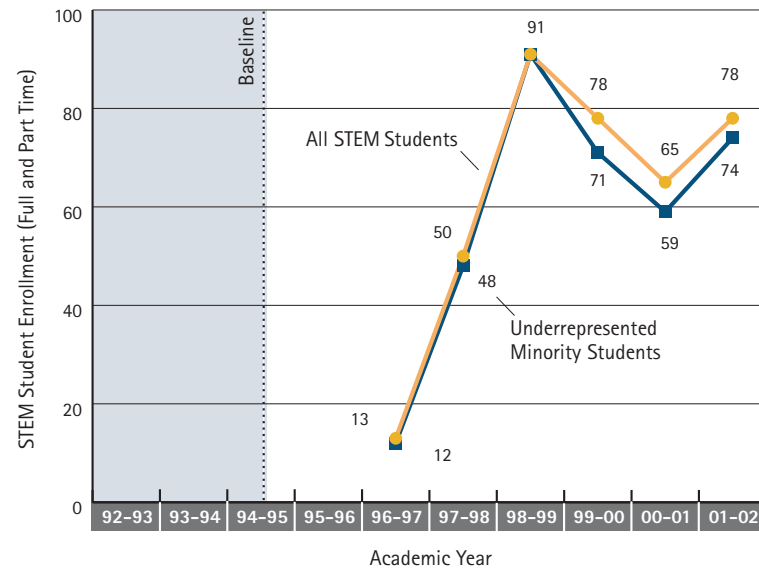


KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2001-02

Key Indicator No. 1 presents trends in Undergraduate STEM Student Enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2001-02. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1

Undergraduate STEM Students Enrolled All STEM Compared to Underrepresented Minority Students



Percentage of Underrepresented Minorities Enrolled in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% Change
All STEM Students	n.a.	n.a.	13	50	91	78	65	78	n.a.
Underrepresented Minority Students	n.a.	n.a.	12	48	91	71	59	74	n.a.
Percentage	n.a.	n.a.	92%	96%	100%	91%	91%	95%	+3pp

n.a.: not applicable

Institution Total Undergraduate Students

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% Change
Total	1,037	929	1,120	1,145	1,024	1,079	1,141	1,156	11%

Highlights and Notes

STEM students enrollment % change from baseline to AY 2001-02

- All STEM (from 0 to 78 students)
- Underrepresented Minority STEM (from 0 to 74 students)

The first STEM program was initiated in AY 1996-97 with 13 students. Enrollment in STEM courses increased to 78 by AY 2001-02, with a peak of 91 in AY 1998-99. Ninety-five percent of STEM enrollment is by underrepresented minority students.

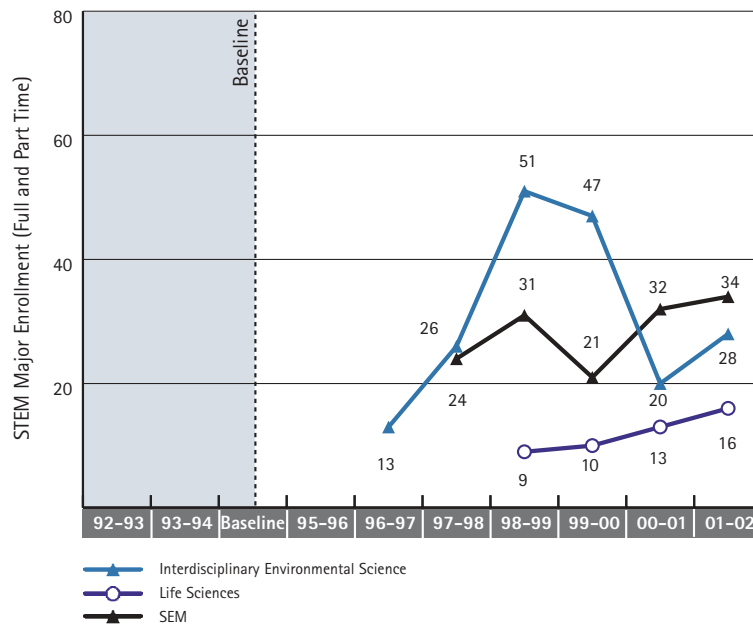
Oglala Lakota College (Oyate Consortium)



KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2001-02

Key Indicator No. 2 presents Undergraduate Student Enrollment Trends by STEM major: Interdisciplinary Environmental Science, Life Sciences and SEM*. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2001-02.

Figure 2
STEM Enrollment by Major



STEM Majors Enrollment

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
Inter. Env. Sci.	n.a.	n.a.	13	26	51	47	20	28
Life Sciences	n.a.	n.a.	0	0	9	10	13	16
SEM*	n.a.	n.a.	0	24	31	21	32	34
Total	n.a.	n.a.	13	50	91	78	65	78

n.a.: not applicable

Highlights and Notes

Student enrollment % change from baseline to AY 2001-02

- Interdisciplinary Environmental Science (from 0 to 28 students)
- Information Technology (first year of program, data not available)
- Life Science (from 0 to 16 students)
- Science, Engineering and Math (from 0 to 34 students)

Environmental Science was the most popular major through AY 1999-00. SEM had the highest STEM enrollments in each of the succeeding years. Overall STEM enrollment increased from 0 in baseline year to 78 in AY 2001-02

* In AY 2001-02, Pre-Engineering became Science, Engineering and Mathematics (SEM).

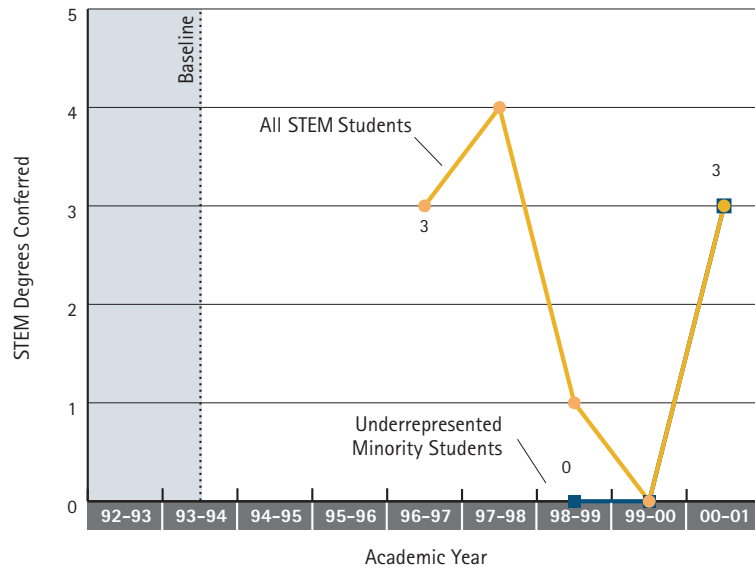


KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2000-01

Key Indicator No. 3 presents trends in total number of Undergraduate STEM Degrees Conferred. Figure 3 shows degrees conferred trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2000-01.

Figure 3

Undergraduate STEM Degrees Conferred All STEM Compared to Underrepresented Minority Students



Underrepresented Minority Students Conferred STEM Degrees

	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% Change
BA/BS	n.a.	n.a.	n.a.	3	3	1	0	1	n.a.
AA	n.a.	n.a.	n.a.	n.a.	1	0	0	2	n.a.
Total	n.a.	n.a.	n.a.	3	4	1	0	3	n.a.
Underrepresented Minority Students ^{†1}	n.a.	n.a.	n.a.	n.a.	n.a.	0	0	3	n.a.
% URM	n.a.	n.a.	n.a.	n.a.	n.a.	0%	0%	100%	n.a.

Institution Total Degrees Conferred

	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% Change
Total	130	123	86	133	122	148	137	109	-16%

^{†1} Data imputed. n.a.: not applicable

Highlights and Notes

STEM student degrees conferred % change from baseline to AY 2000-01

- All STEM (from 0 to 3 students)
- Underrepresented Minority STEM (from 0 to 3 students)

In AY 2000-01 problems with degree advising caused nine students that were supposed to graduate and transfer to 4-year colleges to be delayed by one year: most have completed the transfer process and will graduate in June 2002.

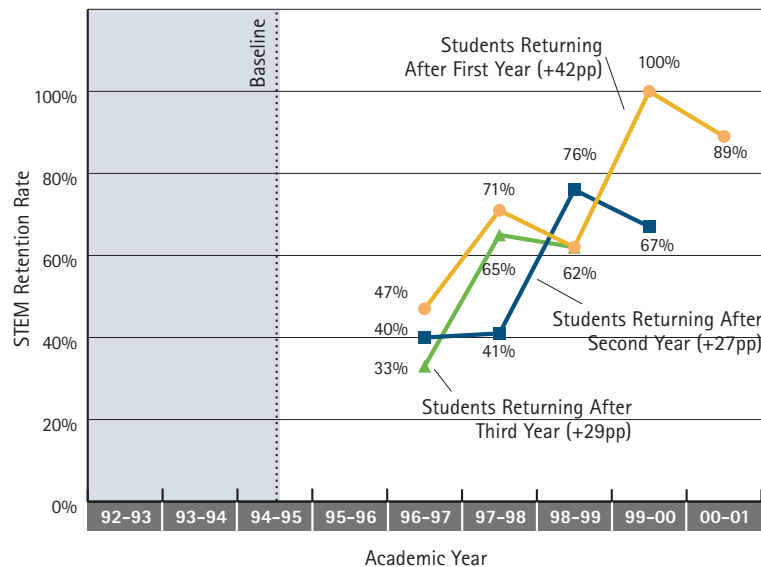
Oglala Lakota College (Oyate Consortium)



KEY INDICATOR 4: Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2000-01

Key Indicator No. 4 presents trends in Undergraduate STEM Student Retention Rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2000-01.

Figure 4
STEM Student Retention Rate



STEM Student Retention Rate

	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Students Returning After First Year	n.a.	n.a.	47%	71%	62%	100%	89%
Students Returning After Second Year	n.a.	n.a.	40%	41%	76%	67%	
Students Returning After Third Year	n.a.	n.a.	33%	65%	62%		

n.a.: not applicable

Highlights and Notes

STEM students retention rate change

Percentage Point (pp) Change

- Students returning after first year (AY 1996-97 to AY 2000-01) +42 pp
- Students returning after second year (AY 1996-97 to AY 1999-00) +27 pp
- Students returning after third year (AY 1996-97 to AY 1998-99) +29 pp

In AY 1999-00, the retention rate after first year reached 100%.

Third year retention improved 29 percentage points to 62% for AY 1998-99.



KEY INDICATOR 5: STEM Student Activities and Achievements

Indicator No. 5 presents trends in Undergraduate Student Activities supported by MIE. Figure 5.1 shows total Undergraduate Student Development Activities Supported by MIE. Figure 5.2 shows STEM Student Research Activities from AY 1995-96 to AY 2000-01.

Figure 5.1
STEM Undergraduate Student Development Activities Supported by MIE

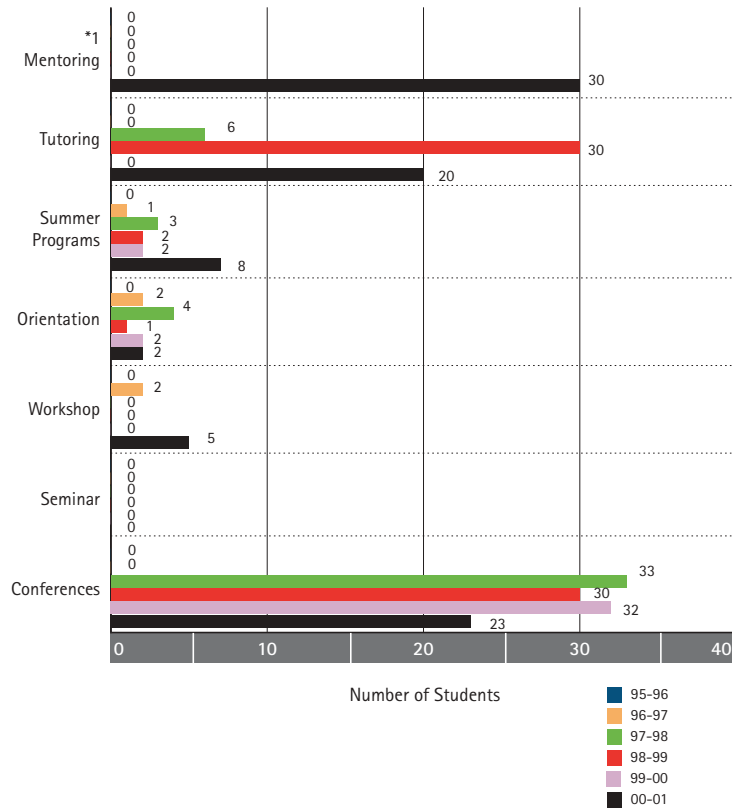
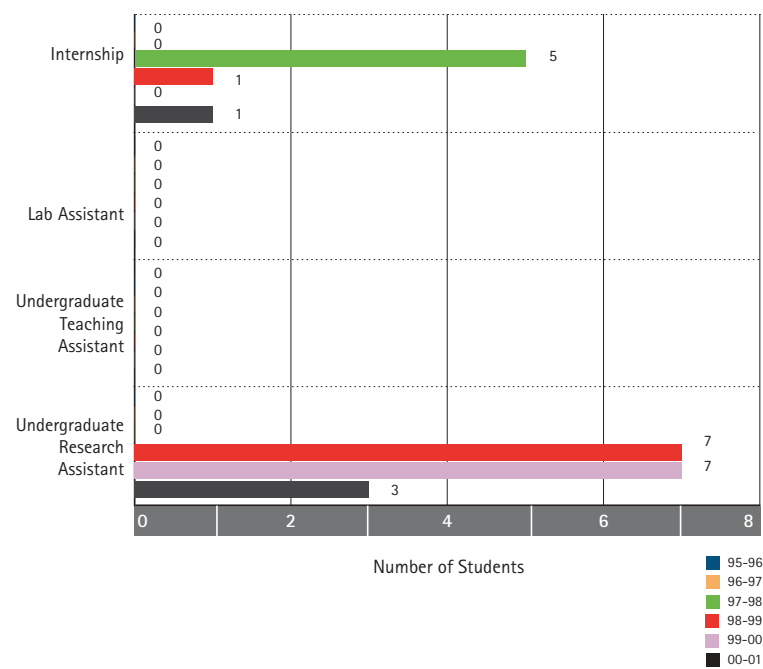


Figure 5.2
STEM Undergraduate Student Research Activities Supported by MIE



Highlights and Notes

In AY 2000-01, ten OLC STEM students attended conferences, up from zero in AY 95-96. eight were involved in internships and two served as research assistants, both improvements from zero in AY 1995-96.

*1 Mentoring program started in AY 2000-01.

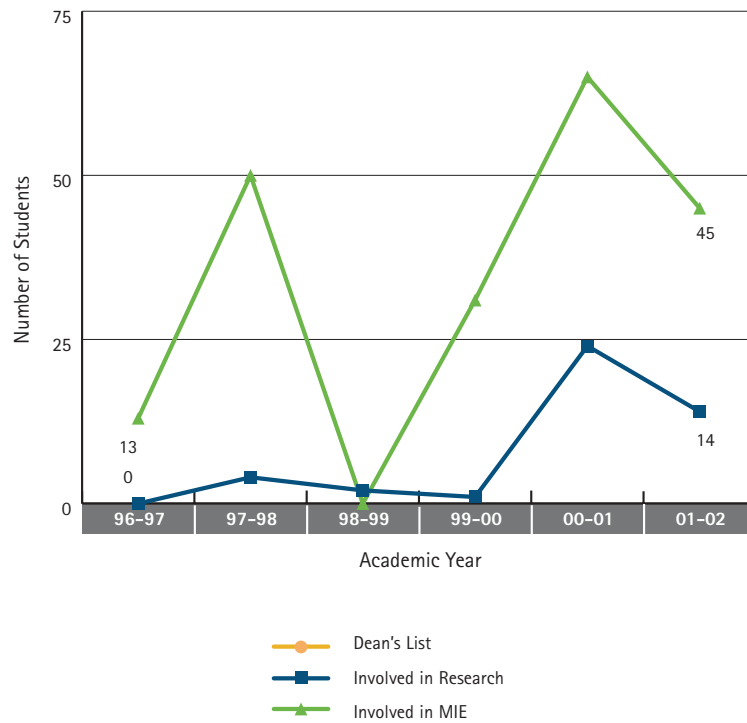
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KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 5.3 shows STEM Student Achievement.

Figure 5.3
STEM Student Achievement

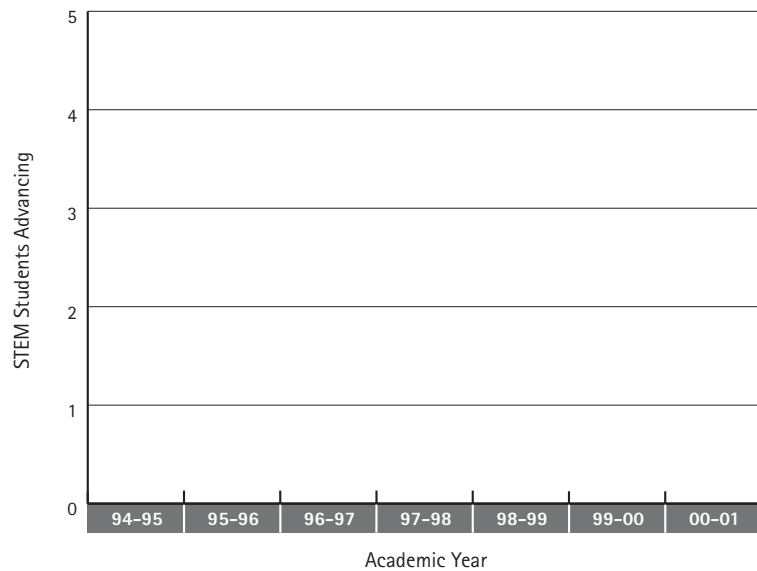




KEY INDICATOR 6: Students Advanced to Four Year Programs or STEM Careers Trends: AY 1994-95 to AY 2000-01

Key Indicator No. 6 presents trends in STEM Graduates who pursue Four Year Degrees or Advance to STEM Careers. Figure 6 shows trends for undergraduate STEM students by major from AY 1994-95 to AY 2000-01.

Figure 6
Advancing STEM Students



STEM Students Advancing to Four Year Programs from Baseline to AY 2000-01

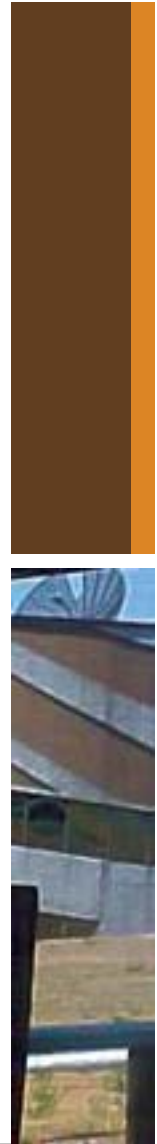
	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Inter. Environmental Sci.	n.a.	n.a.	m	m	m	m	m
SEM*	n.a.	n.a.	m	m	m	m	m
Life Science	n.a.	n.a.	m	m	m	m	m
Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a.: not applicable

STEM Students Advancing to STEM Careers from Baseline to AY 2000-01

	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Inter. Environmental Sci.	n.a.	n.a.	m	m	m	m	m
SEM*	n.a.	n.a.	m	m	m	m	m
Life Science	n.a.	n.a.	m	m	m	m	m
Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Highlights and Notes



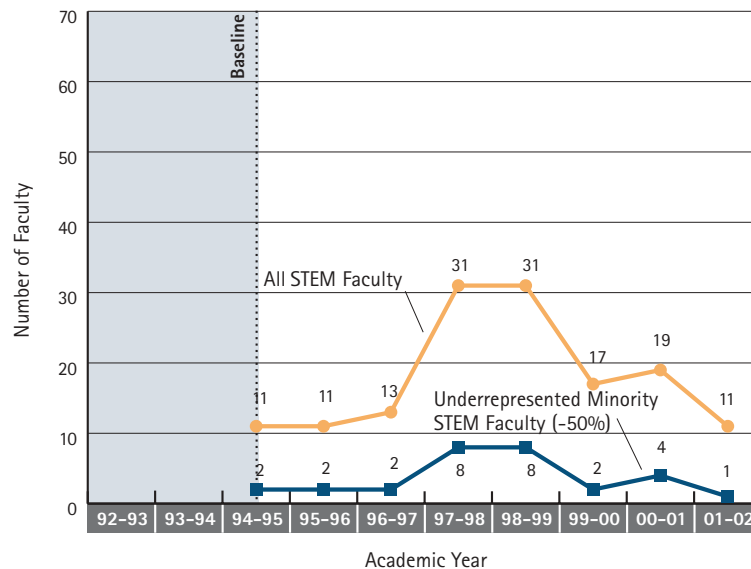
Oglala Lakota College (Oyate Consortium)



KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No. 7 presents STEM Faculty Demographic Trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to Underrepresented Minority Faculty from AY 1992-93 to AY 2001-02.

Figure 7
STEM Faculty Demographics
All STEM Compared to Underrepresented Minority Faculty



Percentage of Underrepresented Minority Faculty in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% Change
All	11	11	13	31	31	17	19	11	no change
Underrepresented Minority Faculty	2	2	2	8	8	2	4	1	-50%
Percentage	18%	18%	15%	26%	26%	12%	21%	9%	-9pp

Total Institution Faculty Trends

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% Change
Total	112	116	129	180	180	152	169	154	38%

Highlights and Notes

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 11 to 11 faculty members) no change
- Underrepresented Minority STEM (from 2 to 1 faculty member) -50%



KEY INDICATOR 8: Faculty Research and Activities

Faculty Research Outcome/Achievement

Faculty Funding/Grant Capability

In AY 2000-01, three of five proposals submitted for external funding were successful.

Faculty Activity Support

OLC faculty received training in distance education (video conferencing and the internet).

Outstanding MIE Scholar

No outstanding outcome/achievement reported.

Figure 8.1

Proposals

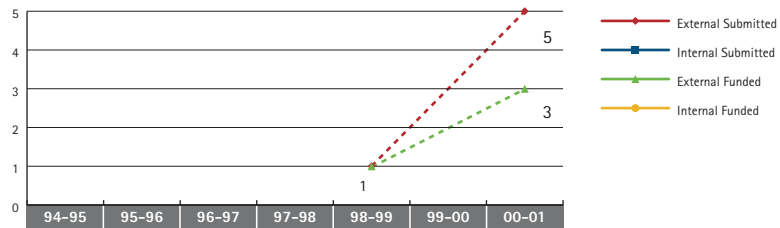


Figure 8.2

Publications and Presentations

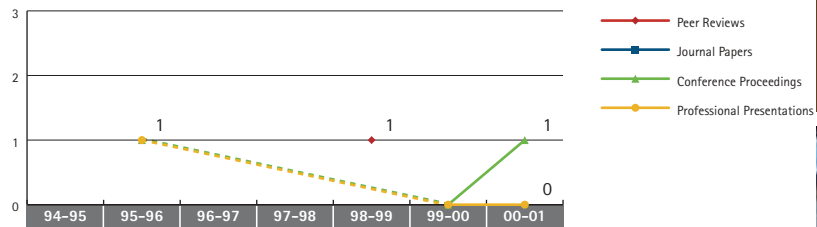
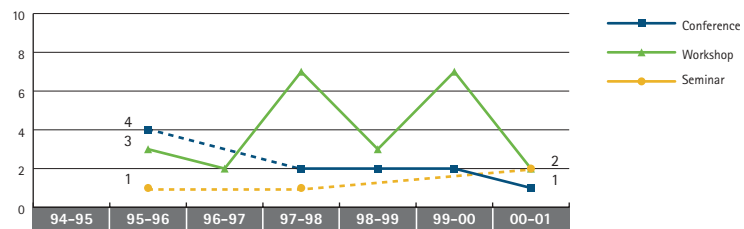


Figure 8.3

Professional Development Activities



Oglala Lakota College (Oyate Consortium)



KEY INDICATOR 9: Collaborative and Pre-College Activities

Pre-College Activities

OLC completed the NASA Honors pre-college summer program, which included 75 American Indian high school students.

OLC is trying to expand the Pine Ridge Reservations schools' involvement with science fairs for students in cooperation with the University of North Dakota.

Collaborative Activities

In AY 1999-00, in collaboration with the South Dakota School of Mines and Technology, OLC completed the NASA Honors pre-college summer program. The MIE program received a 5-year, \$223,000 grant in cooperation with the University of North Dakota to expand the Pine Ridge Reservation schools' involvement with science fairs for students.

KEY INDICATOR 10: Research and Computing Resources: AY 1995-96 to AY 2000-01

New Building

In AY 2000-01, the renovation of the Petjuta Haka College Center was completed. The new addition to the facility included a new computer lab, distance learning room, and a chemistry/biology lab. The location will allow for easier access to more science courses at the periphery of the reservation.

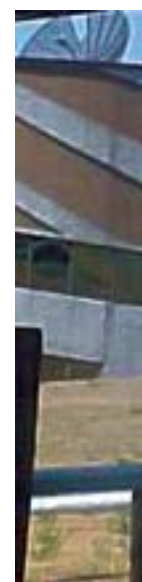
Research Center, Lab, and Major Equipment

The new chemistry/ biology labs at the Petjuta Haka College Center were added, and new information technology and environmental science labs are being constructed with grants from the Department of Defense and NSF respectively.

Computing Resources

A new computer lab.

Research Center/Lab	Year Built
Chemistry/Biology Lab	2001
Computer Lab	2001
Environmental Science	Under Construction
Information Technology Lab	Under Construction



KEY INDICATOR 11: Major Academic Events

Major Academic Events

During the Summer of 2001, three students and one faculty member participated in an undergraduate internship program at NASA's Goddard Space Flight Center. One student went to Kennicott Energy and another participated in an internship with the IBM Corporation.

Institution/MIE Leadership

No changes in institution/MIE leadership.

Policy Changes

There continues to be refinements of the distance learning policies regarding video conferencing and internet instruction.

Institutional Revenues and Expenditure

Received NSF funds to improve the equipment infrastructure in the environmental sciences by building three analytical testing facilities. The grant is for \$500,000 per year for up to 5 years based upon progress. The other grant is for \$200,000 for one year from the Department of Defense. The grant will be used to equip an information technology lab for the new Information Technology Degree program. The new labs will include an analytical labs, Geographic Information Systems lab, and a biological sciences lab. In FY 2001-02, of the \$4.26M MIE budget, 7% was expended on senior personnel, 21% on other personnel, 7% on fringe benefits, 1% on permanent equipment, 5% on travel, 17% on participation support costs, 30% on other direct costs, and 12% on total indirect costs.

KEY INDICATOR 12: Major MIE Activities

Institutionalized MIE Program Components

The grants from NSF and Department of Defense are being used to create enterprise opportunities in environmental analytical laboratories and information technology services.

The MIE program has led to the creation and staffing of the STEM departments. The program has increased the number of new positions that support STEM degrees to 12 full-time persons for teaching the new STEM degree programs.

Major MIE Activities and Achievements

The student scholarship program in AY 2000-01 was instrumental in expanding the opportunities available to OLC students; financial support for undergraduate research, internship, and summer programming have increased participation in these activities.

The college is in the process of institutionalizing aspects of the MIE program to create enterprise opportunities in environmental analytical laboratories and information technology services.

Leveraged Funding

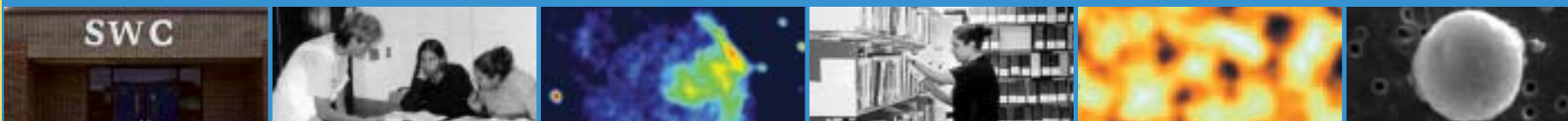
In-kind contributions have been provided in several key areas: student tuition support, faculty release time, facilities, laboratories, equipment, and staff/ human resource support.

Major Departmental Changes

In AY 2001-02, OLC created and staffed the Science, Engineering and Mathematics Department. The program has increased the number of new positions that support STEM degrees to 12 full time persons for teaching the new STEM degree programs.



Model Institutions for Excellence



SISSETON-WAHPETON COLLEGE

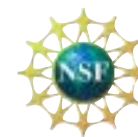
MIE Fact Book 2002

PART II: MIE Institutions' Key Indicator Reports

July 2003



MIE Program Funded by:
National Science Foundation



Sisseton–Wahpeton College (Oyate Consortium)



The **Sisseton Wahpeton College** is a part of a long history of education that has gone through many phases and changes since first contact with Europeans. Before America was a nation, Sisseton and Wahpeton Bands knew and practiced applied sciences and lifelong learning. Their knowledge of the natural sciences astounded the learned Europeans who could not accept them as more than primitive savages.

The Sisseton and Wahpeton have survived mission schools, boarding schools, and hundreds of educational laws and policies, and even being banded from their homeland to a reservation. Here in the northeastern corner of the state of South Dakota, the remnant of the two bands were allowed to retain a small triangular-shaped piece of land now known as the Lake Traverse Reservation. Here the elders of the tribe visualized a time when their own people would take control of the education of its youth.

On August 7, 1979, this vision became a reality with the establishment of the Sisseton Wahpeton College. SWC received a needed financial boost in 1980 when federal funds were allocated through the Tribally Controlled Community College Assistance Act. While these funds are about half the amount given the individual states for educational assistance, it was enough to get some basic programs established.

In spite of a lack of adequate funding, and with limited resources, SWC continued to pursue the vision. In 1983, SWC was granted educational candidacy by the North Central Association's Commission on Institutions of Higher Education

<<http://www.ncacihe.org/>>. SWC received initial accreditation in 1990. SWC has kept its doors open to serve anyone who desires and education. Even though the State of South Dakota does not provide any support for the non-Indian students who attend SWC, they are served along with tribal members.

SWC has made enormous strides with several divisions. Academic programs include Business, Computers, Counseling, Dakota Studies, Early Childhood Development, Hospitality and Gaming, Mass Communication, Nursing, Nutrition, and General Studies. SWC provides such support services as Adult Basic Education, GED preparation and testing, Career Counseling, Financial Aid, Library Services, Learning Lab, and Tribal Archives.

SWC had made its resources available to the tribe. The tribe is one of a few nationwide that has accepted the challenge to develop and administer welfare reform measures. SWC is a partner in this effort in providing basic education needs and job readiness training. As the tribe enters the new millennium, SWC will continue its mission to meet the ever changing needs of its tribal members and community.

Source: <http://www.swcc.cc.sd.us/welcome.htm>

Institution Profile in Brief

History and Background

Year Founded:	1979
Institution Control:	Public-Tribal
Institution Type:	2-Year College
Land-Granted:	Yes
Co-Ed:	Yes
Affiliation:	Independent
Academic Term:	Semesters

Degree Programs Offered

Business/Economics	Liberal Arts
Computer Science	Nursing/Health Science
Environmental Science	Others

President Dr. William LoneFight

Website <http://www.swcc.cc.sd.us>

Student Enrollment / AY 2001–02

	FT	PT	Total
Undergraduate :	149	96	245
Gender:	Male: 27%	Female: 73%	
Race/Ethnicity:	Native American: 78%		

Degrees Conferred / AY 2000–01

Associate:	24	Baccalaureate: 0
Dual Degree:	0	Total: 24

Faculty / AY 2001–02

Full Time:	15
Part Time:	11
Total:	26
% Ph.D. FT Faculty	4%
Student/Faculty Ratio:	9:1



Sisseton-Wahpeton College (Oyate Consortium)



MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I

Grant Period: 10/1/1997 - 9/31/2000

Amount: \$275,024

Phase II

Grant Period: 10/1/2000-9/30/2004

Amount: \$245,000

Principal Investigator/Project Director

Ella M. Robertson

P. O. Box 689

Agency Village, SD 57262

phone: (605) 698-3966

fax: (605) 698-3132

email: ella@mail.swcc.cc.sd.us

web: <http://swcc.cc.sd.us/cc.html>

The Oyate Consortium consists of five Lakota reservation colleges and universities (Oglala Lakota College, Sinte Gleska University, Sitting Bull College, Sisseton-Wahpeton College, and Si Tanka College). This award follows an initial MIE award that provided substantial network infrastructure, physical infrastructure, personnel infrastructure, and course and curriculum development aimed toward the development of Science, Mathematics, Engineering, and Technical Education (STEM) capacity at Native American colleges. This award will continue these activities building upon existing infrastructure to develop new information (Information Technology BS and an MS in Environmental Science, articulations with additional non-reservation colleges and universities, and additional outreach to Native American Schools (at least 10). Additionally, methods of institutionalization of the MIE accomplishments will be pursued including the development of an endowment for STEM capacity and the means for providing housing for faculty and, perhaps, for students at the campus sites.



MIE Objectives/Goals

1. Science majors in the work force.
2. Possible Science majors at the high school level.
3. Establish a "buddy system," where sophomores mentor freshmen.
4. Student Research on local ecology and resources.
5. Summer research projects for faculty members.



Sisseton-Wahpeton College (Oyate Consortium)



Major Achievements based on Key Indicators: A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 02-03	% change
STEM Enrollment	3	51	+1,600%
URM Enrollment	3	45	+1,400%
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 02-03	% change
Computer Systems Technology	2	43	2,050%
Environmental Science	n.a.	4	n.a.
Natural Science	1	4	+300%
3. Undergraduate STEM Degrees Conferred	AY 93-94	AY 01-02	% change
STEM Degrees Conferred	0	8	0 to 8
URM Degrees Conferred	0	7	0 to 7
4. Undergraduate Retention Rate	AY 94-95	AY 01-02	% change
Return Rate After First Year	m	m	n.a.
Return Rate After Second Year	m	m	n.a.
5. STEM Student Activities and Achievement	AY 94-95	AY 01-02	% change
Mentoring	m	2	n.a.
Tutoring	m	m	n.a.
Summer Programs	m	1	n.a.
Orientation	m	2	n.a.
Workshops	m	m	n.a.
Seminars	m	m	n.a.
Conferences	m	m	n.a.
	AY 94-95	AY 01-02	% change
Internships	m	1	n.a.
Lab Assitants	m	m	n.a.
Undergraduate Teaching Assistants	m	m	n.a.
Undergraduate Research Assistants	m	m	n.a.
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 01-02	% change
Students Advancing to STEM Career	m	m	n.a.
Students Advancing to Four-Year Programs	m	4	n.a.
7. Faculty Demographic Trends	AY 94-95	AY 02-03	% change
All STEM Faculty	m	5	n.a.
URM Faculty	m	0	n.a.
8. Faculty Research and Activities	AY 95-96	AY 01-02	% change
Journal Papers	0	3	0 to 3
Conference Proceedings	0	0	no change
Professional Presenations	0	2	0 to 2
Conference	0	2	0 to 2
Seminar	0	0	no change
Workshop	0	3	0 to 3
Proposals Submitted for External Funding	0	3	0 to 3
Proposals Submitted for Internal Funding	0	0	no change
External Proposals Funded	0	3	0 to 3
Internal Proposals Funded	0	0	no change

STEM Undergraduate Enrollment¹ and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2002-03	Degrees Conferred AY 2001-02
Computer Systems Tech. (CST)	43	3
Environmental Science (ES)	4	2
Natural Science (NS)	4	0
Total	51	5

¹ Includes full and part-time enrollment
All majors not listed.

STEM Degrees

- Computer Systems Technology
- Environmental Science
- Natural Science

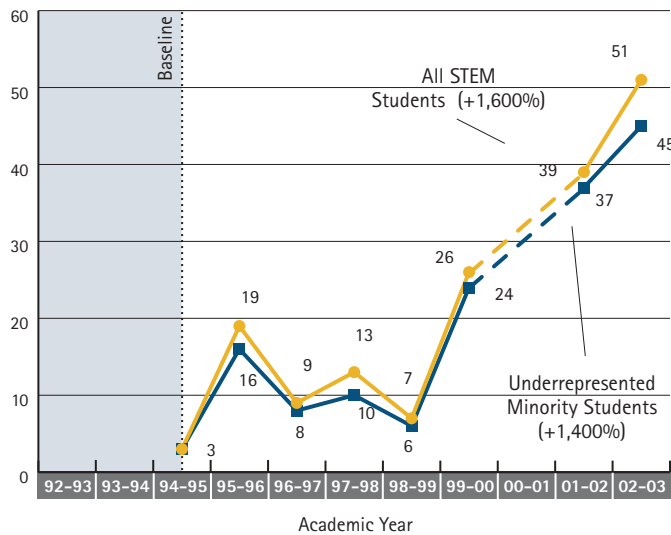
Sisseton-Wahpeton College (Oyate Consortium)



KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2002-03

Key Indicator No. 1 presents trends in Undergraduate STEM Student Enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2002-03. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1
Undergraduate STEM Students Enrolled
All STEM Compared to Underrepresented Minority Students



Percentage of Underrepresented Minorities Enrolled in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% Change
All STEM Students	3	19	9	13	7	26	m	39	51	+1,600%
Underrepresented Minority Students ¹	3	16	8	10	6	24	m	37	45	+1,400%
Percentage	100%	83%	93%	80%	97%	94%	100%	94%	88%	-12pp

¹ Data Imputed

Institution Total Undergraduate Students

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% Change
Total	247	312	305	320	241	218	229	245	231	-6%

Highlights and Notes

STEM students enrollment % change from baseline to AY 2002-03

- All STEM (from 3 to 51 students) +1,600%
- Underrepresented Minority STEM (from 3 to 45 students) +1,400%



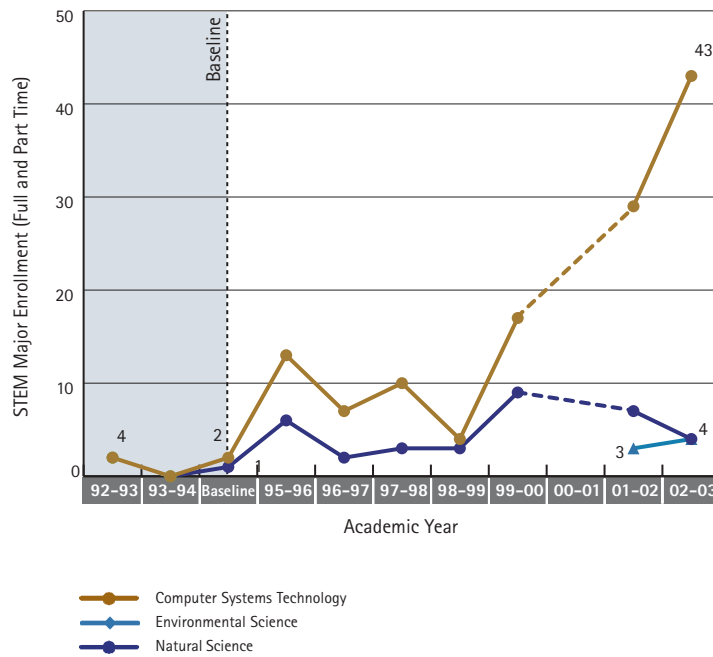
Sisseton-Wahpeton College (Oyate Consortium)



KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2002-03

Key Indicator No. 2 presents Undergraduate Student Enrollment Trends by STEM major: Computer Systems Technology, Natural Science and other STEM majors. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2002-03.

Figure 2
STEM Enrollment by Major



STEM Majors Enrollment

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% change
Computer Systems Tech.	2	13	7	10	4	17	m	29	43	+2,050%
Environmental Science ¹	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3	4	n.a.
Natural Science	1	6	2	3	3	9	m	7	4	+300%
Total	3	19	9	13	7	26	n.a.	39	51	+1,600%

m: missing data
n.a.: not applicable

Highlights and Notes

Student enrollment % change from baseline to AY 2002-03

- Computer Systems Technology (from 2 to 43 students) +2,050%
- Environmental Science (4 students)
- Natural Science (from 1 to 4 students) +300%

There was an increase in Natural Science (from 1 to 4) from baseline through AY 2002-03.

¹ The Environmental Science major was initiated in AY 2001-02

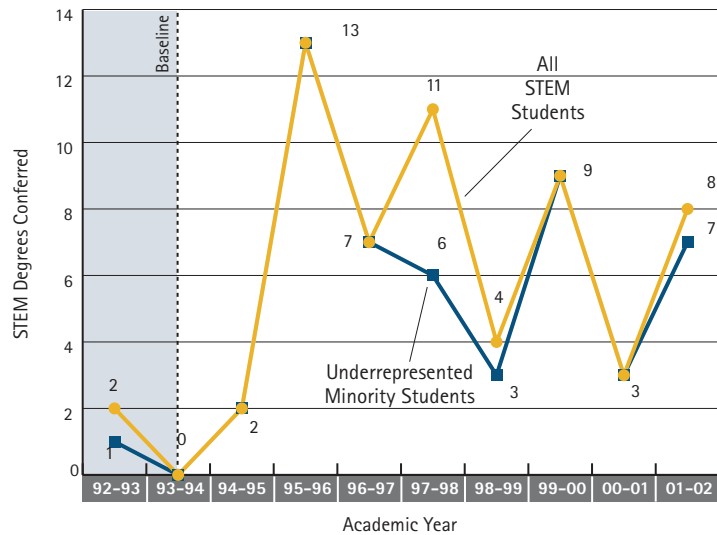


KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends / AY 1992-93 to 2001-02

Key Indicator No. 3 presents trends in total number of Undergraduate STEM Degrees Conferred. Figure 3 shows degrees conferred trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to 2001-02.

Figure 3

Undergraduate STEM Degrees Conferred All STEM Compared to Underrepresented Minority Students



m: missing data

Underrepresented Minority Students Conferred STEM Degrees

	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% Change
All STEM Students	0	2	13	7	11	4	9	3	8	0 to 8
Underrepresented Minority Students	0	2	13	7	6	3	9	3	7	0 to 7
% URM	n.a.	100%	100%	100%	67%	75%	100%	100%	100%	n.a.

n.a.: not applicable

Institution Total Degrees Conferred

	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% Change
Total	53	28	42	52	31	21	22	24	40	-25%

Highlights and Notes

STEM students degree conferred % change from baseline to AY 2001-02

- All STEM (from 0 to 8 students)
- Underrepresented Minority STEM (from 0 to 7 students)

The number of STEM degrees conferred increased from zero to 8 for STEM students overall and from 0 to 7 for underrepresented minority students from baseline to AY 2001-02. Of the three STEM graduates in AY 2000-01, two were in the MIE program, one of whom was hired at SWC as the TRIO program student retention/recruitment specialist.

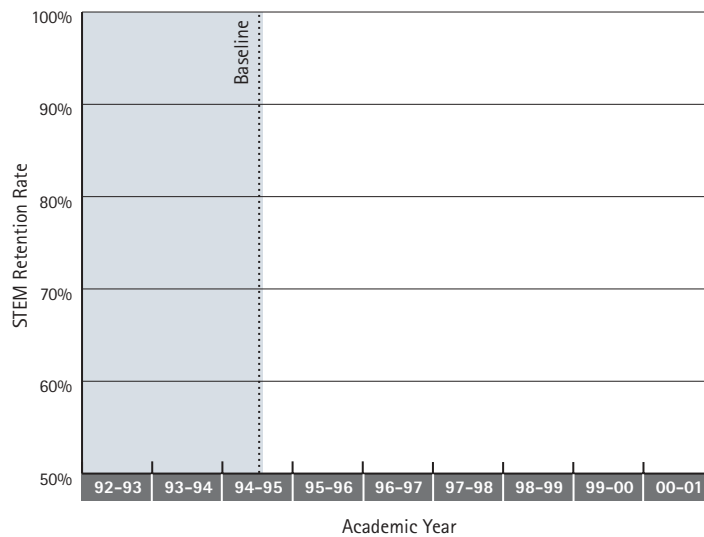
Sisseton-Wahpeton College (Oyate Consortium)



KEY INDICATOR 4: Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2001-02

Key Indicator No. 4 presents trends in Undergraduate STEM Student Retention Rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2001-02.

Figure 4
STEM Student Retention Rate



m: missing data

STEM Student Retention Rate

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
Students Returning After First Year	m	m	m	m	m	m	m	m
Students Returning After Second Year	m	m	m	m	m	m	m	
Students Returning After Third Year	m	m	m	m	m	m		

Highlights and Notes

No Data Available. SWC does not track the overall retention rate among students. The MIE program retained 90% of its students.



KEY INDICATOR 5: STEM Student Activities and Achievements

Indicator No. 5 presents trends in Undergraduate Student Activities supported by MIE. Figure 5.1 shows total Undergraduate Student Development Activities Supported by MIE. Figure 5.2 shows STEM Student Research Activities from AY 1995-96 to AY 2001-02.

Figure 5.1
STEM Student Research Activities Supported by MIE
Undergraduate Student Development Activities

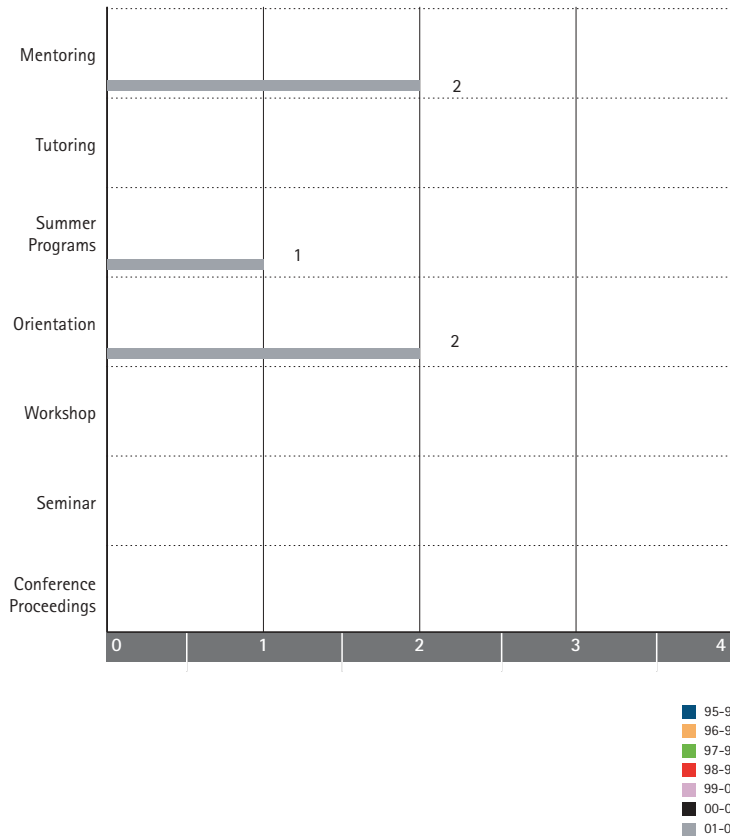
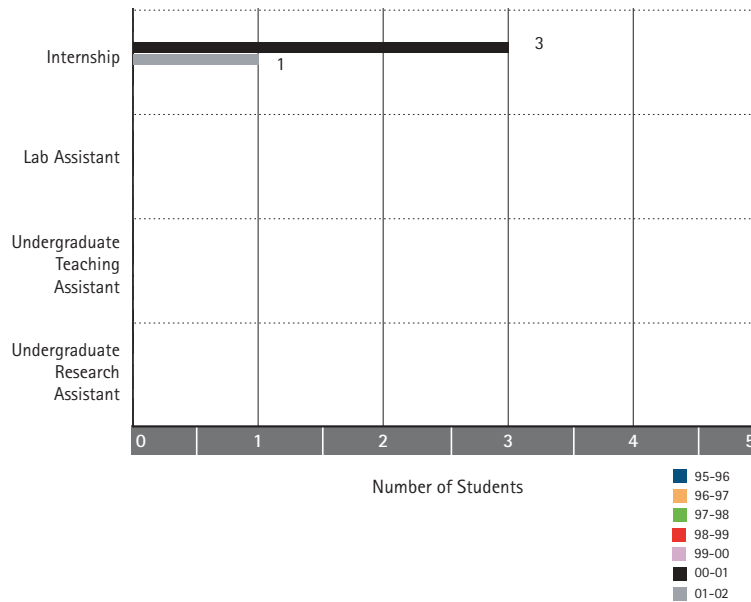
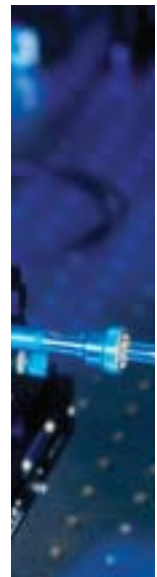


Figure 5.2
STEM Student Research Activities Supported by MIE
STEM Student Research Activities



Highlights and Notes



Sisseton-Wahpeton College (Oyate Consortium)

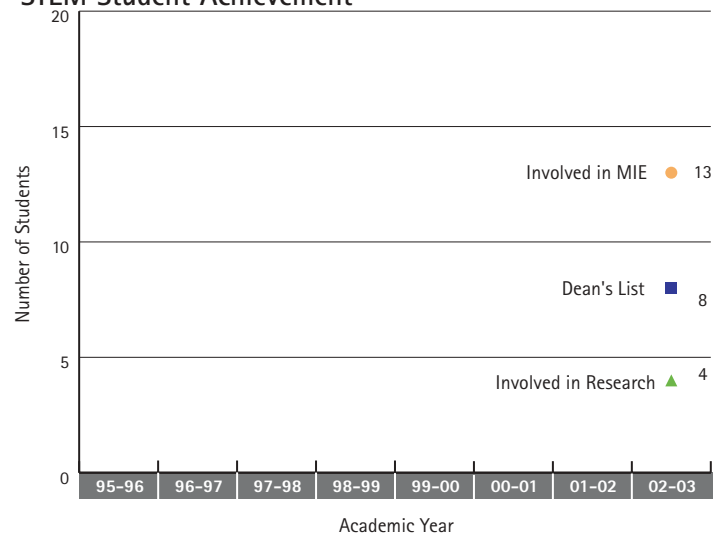


KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 5.3 shows STEM Student Achievement.

Figure 5.3

STEM Student Achievement

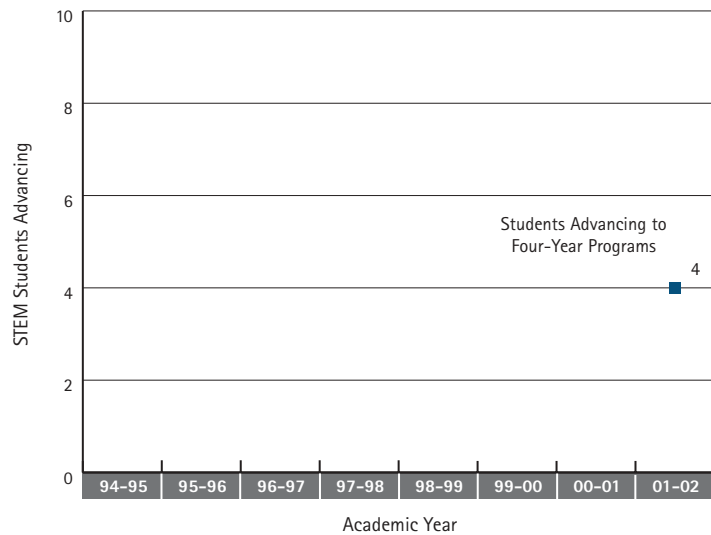




KEY INDICATOR 6: Students Advanced to Four Year Programs or STEM Careers Trends: AY 1994-95 to AY 2001-02

Key Indicator No. 6 presents trends in STEM graduates who pursue four year degrees or advance to STEM careers. Figure 6 shows trends for undergraduate STEM students by major from Baseline to AY 2001-02.

Figure 6
Advancing STEM Students



m: missing data

STEM Students Advancing to Four Year Programs from Baseline to AY 2000-01

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
Computer Systems Tech.	m	m	m	m	m	m	m	2
Environmental Science	m	m	m	m	m	m	m	2
Natural Science	m	m	m	m	m	m	m	0
Total	m	m	m	m	m	m	m	4

STEM Students Advancing to STEM Careers from Baseline to AY 2000-01

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02
Computer Systems Tech.	m	m	m	m	m	m	m	m
Environmental Science	m	m	m	m	m	m	m	m
Natural Science	m	m	m	m	m	m	m	m
Total	m	m	m	m	m	m	m	m

Highlights and Notes



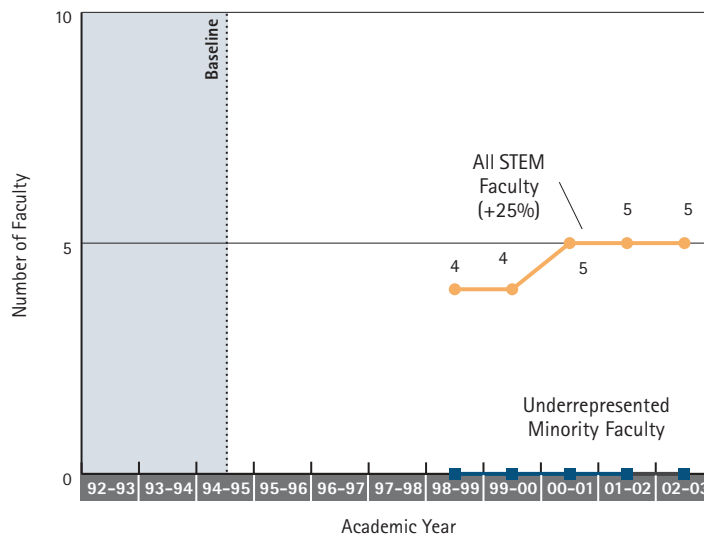
Sisseton-Wahpeton College (Oyate Consortium)



KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2002-03

Key Indicator No. 7 presents STEM Faculty Demographic Trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 1992-93 to AY 2002-03.

Figure 7
STEM Faculty Demographics
 All STEM Compared to Underrepresented Minority Faculty



m: missing data

Percentage of Underrepresented Minority Faculty in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% Change
All	m	m	m	m	4	4	5	5	5	n.a.
Underrepresented Minority Faculty	m	m	m	m	0	0	0	0	0	n.a.
Percentage	m	m	m	m	0%	0%	0%	0%	0%	n.a.

Total Institution Faculty Trends

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	% Change
Total	m	m	m	m	38	38	29	26	m	n.a.

Highlights and Notes

STEM faculty % change from AY 1998-99 to AY 2002-03

- All STEM (from 4 to 5 faculty members) +25%
- Underrepresented Minority STEM (from 0 to 0 faculty members) no change

Data not available prior to AY 1998-99



KEY INDICATOR 8: Faculty Research and Activities

Faculty Research Outcome/Achievement

Two SWC faculty members made professional presentations and one member served on a peer review panel.

Faculty Funding/Grant Capability

In AY 2000-01, three out of five research proposals submitted received external funding.

Faculty Activity Support

Arlie Phillips, the computer instructor, attended CISCO workshops better enabling him to offer higher level classes. Linda Flannery was hired as the mathematics instructor; both salaries are being paid for through a grant awarded to SWC.

Outstanding MIE Scholar

No MIE Outstanding Scholar was reported.

Figure 8.1

Proposals

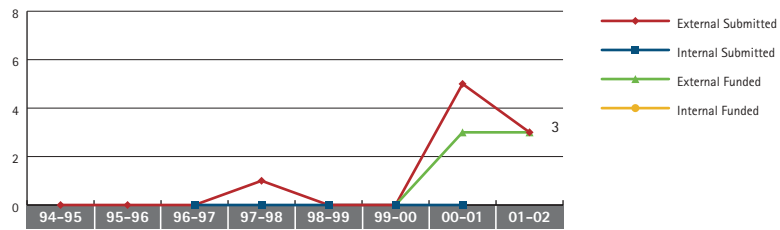


Figure 8.2

Publications and Presentations

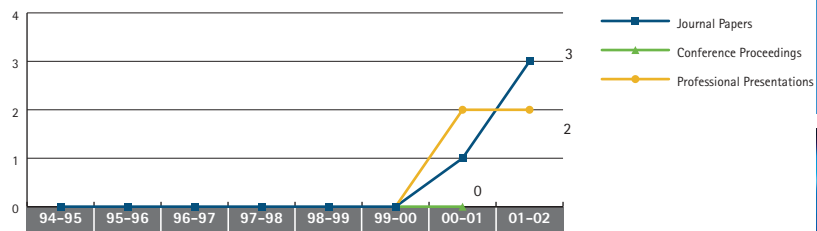
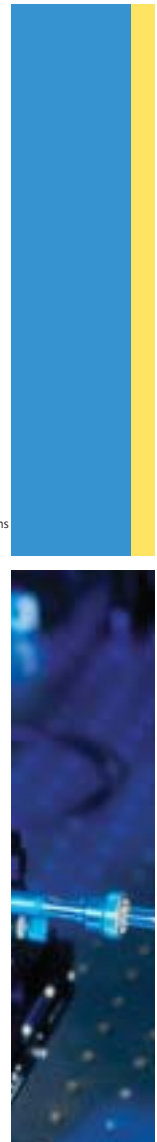


Figure 8.3

Professional Development Activities

3
2
0



Sisseton-Wahpeton College (Oyate Consortium)



KEY INDICATOR 9: Collaborative and Pre-College Activities

Pre-College Activities

No pre-college activities were reported.

Collaborative Activities

No collaborative activities were reported.

KEY INDICATOR 10: Research and Computing Resources: AY 1995-96 to AY 2000-01

New Building

No new building was undertaken.

Research Center, Lab, and Major Equipment

The renovations of the science lab were completed in October 2001.

Research Centers and Labs

Research Center/Lab	Year Built	Research Center/Lab	Year Built
Science Lab	1988	Learning Lab	1996
Computer Lab	1990	Library	1990

Computing Resources

There was a large increase in the number of computers, 99% of which are networked and internet ready. Sixteen computers were installed in the computer lab and ten with CD burners were put in the Learning Lab.



KEY INDICATOR 11: Major Academic Events

Major Academic Events

The Associates of Science in Computer Systems Technology degree was approved in April 2000.

Institution/MIE Leadership

No leadership changes were reported.

Policy Changes

No policy changes were reported.

MIE Revenues and Expenditure

For FY 2001-02, out of the total \$275,185 MIE budget 18% was budgeted for senior personnel, 3% on other personnel, 4% on fringe benefits, 0% on permanent equipment, 2% on travel, 54% on participation support costs, 15% on other direct costs, and 5% on total indirect costs.

KEY INDICATOR 12: Major MIE Activities

Institutionalized MIE Program Components

The Computer Systems Technology degree that was developed will continue after the MIE Program no longer exists. The head of the science department has expressed his plans to continue to provide students with opportunities to conduct research in the absence of the MIE Program funding.

Major MIE Activities and Achievements

Two MIE students in the Computer Systems Technology degree program completed an internship at the college.

Leveraged Funding

The Smart Classroom will be built using Vocational Education funding awarded to SWC.

In-Kind Contribution

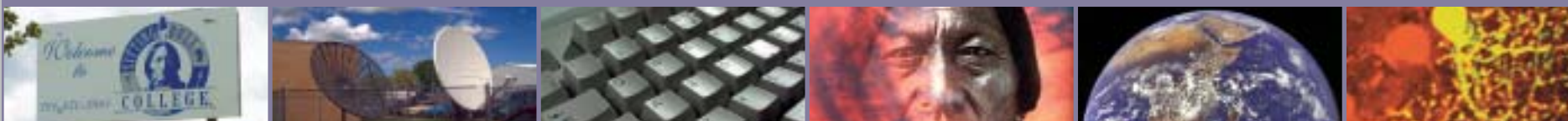
In-kind contributions have been provided in several key areas: student tuition support, faculty release time, facilities, laboratories, equipment, and Staff/Human resource support.

Major Departmental Changes

In AY 2000-01, the Computer Systems Technology Program was added.



Model Institutions for Excellence



SITTING BULL COLLEGE

MIE Fact Book 2002

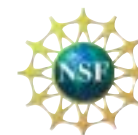
PART II: MIE Institutions' Key Indicator Reports

July 2003



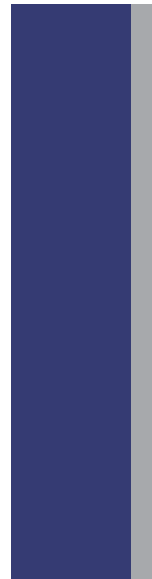
Fort Yates, ND ●

MIE Program Funded by:
National Science Foundation



Systemic Research, Inc.

Sitting Bull College (Oyate Consortium)



Sitting Bull College began with a vision and plenty of hard work. One of the first tribal colleges to be formed under the Tribally Controlled Community College Act, Sitting Bull College (formerly Standing Rock College) officially opened its doors in July of 1973. The first offices and classrooms were located in the Douglas Skye Memorial Retirement Complex in Fort Yates, and there were 3 full-time staff members.

Today, Sitting Bull College has grown to offer 12 degrees with five different levels of completion ranging from a one-year certificate to a four-year Bachelor's degree. In addition to providing a range of education and vocational degrees, Sitting Bull College provides many other community services such as the Tribal Business Information Center, GED/ABSE instruction, the Standing Rock Sioux Vocational Rehabilitation Program and the Standing Rock Public Library.

As a tribal college, Sitting Bull College is dedicated to providing more than quality education. The unique responsibility of a tribal college is reflected in Sitting Bull College's mission statement:

"Sitting Bull College will improve the education level of the people it serves by expanding existing academic and technical areas, developing four-year programs, providing continuing education, enhancing the understanding of the Lakota/Dakota culture and assisting with the social and economic development of the Standing Rock Sioux Nation, creating vision and responsible behavior."

Source: <http://www.sittingbull.edu>

Institution Profile in Brief

History and Background

Year Founded: 1973
Institution Control: Public-Tribal
Institution Type: 2 and 4-Year
Land-Granted: Yes
Co-Ed: Yes
Affiliation: Independent
Academic Term: Semesters

Faculty / AY 2001-02

Full Time: 15
Part Time: 14
Total: 29
% Ph.D. FT Faculty: 7%
Student/Faculty Ratio: 5:1

Degree Programs Offered

- Business/Economics
- Education
- Environmental Science
- Liberal Arts
- Life Science
- Others
- Natural Resource Management

President Dr. Ron His Horses Thunder

Website <http://www.sittingbull.edu>

Student Enrollment / AY 2001-02

	FT	PT	Total
Undergraduate :	135	4	139
Gender:	Male: 37%	Female: 63%	
Race/Ethnicity:	Native American: 95%	White: 5%	

Degrees Conferred / AY 2000-01

Associate: 25
Baccalaureate: 0
Dual Degree: 0
Total: 25

Sitting Bull College (Oyate Consortium)



MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I

Grant Period: 9/1/1997 - 8/31/2000

Amount: \$270,000

Phase II

Grant Period: 10/1/2000 - 9/30/2004

Amount: \$12,121,192 (Oyate Consortium)

Principal Investigator/Project Director

Koreen Ressler

The Oyate Consortium consists of five Lakota reservation colleges and universities (Oglala Lakota College, Sinte Gleska University, Sitting Bull College, Sisseton-Wahpeton Community College, and Si Tanka College). This award follows an initial MIE award that provided substantial network infrastructure, physical infrastructure, personnel infrastructure, and course and curriculum development aimed towards the development of Science, Mathematics, Engineering, and Technical Education (SMETE) capacity at Native American colleges. This award will continue these activities building upon existing infrastructure to develop new information (Information Technology BS and an MS in Environmental Science, articulations with additional non-reservation colleges and universities, and additional outreach to Native American Schools (at least 10). Additionally, methods of institutionalization of the MIE accomplishments will be pursued including the development of an endowment for STEM capacity and the means for providing housing for faculty and, perhaps, for students at the campus sites.

MIE Objectives/Goals

1. Purchase 8 new computers for Science Department.
2. One room dedicated to Math/Science computer lab.
3. New Science Lab.
4. Purchase gas chromatograph for science lab.
5. Purchase new parts for science lab heater.





STEM Undergraduate Enrollment¹ and Baccalaureate Degrees Conferred

Major Group	Enrollment AY 2001-02	Degrees Conferred AY 2000-01
Environmental Science (ES)	7	2
Information Technology (IT)	5	0
Natural Resource Management (NR)	3	0
Total	15	0

¹ Includes full and part-time enrollment

STEM Degrees

- Environmental Science
- Information Technology
- Natural Resource Management

Major Achievements based on Key Indicators: A Brief Summary

1. Undergraduate STEM Enrollment	AY 94-95	AY 01-02	% change
STEM Enrollment	0	15	0 to 15
URM Enrollment	0	15	0 to 15
2. Undergraduate STEM Enrollment by Major	AY 94-95	AY 01-02	% change
Environmental Science	n.a.	7	n.a.
Information Technology	n.a.	5	n.a.
Natural Resource Management	n.a.	3	n.a.
3. Undergraduate STEM Degrees Conferred	AY 94-95	AY 00-01	% change
STEM Degrees Conferred	n.a.	4	n.a.
URM Degrees Conferred	n.a.	4	n.a.
4. Undergraduate Retention Rate	AY 96-97	AY 99-00	% change
Return Rate After First Year	100%	100%	no change
Return Rate After Second Year	86%	100%	+14pp
5. STEM Student Activities and Achievement	AY 95-96	AY 00-01	% change
Mentoring	0	11	0 to 11
Tutoring	0	6	0 to 6
Summer Programs	0	10	0 to 10
Orientation	0	6	0 to 6
Workshops	0	2	0 to 2
Seminars	0	0	no change
Conferences	0	3	0 to 3
	AY 95-96	AY 01-02	% change
Internships	0	1	0 to 1
Lab Assistants	0	0	no change
Undergraduate Teaching Assistants	0	0	no change
Undergraduate Research Assistants	0	7	0 to 7
6. Students Advancing to Grad. Prog./Career Trends	AY 94-95	AY 99-00	% change
Students Advancing to STEM Career	n.a.	4	0 to 4
Students Advancing to Grad Programs	n.a.	0	n.a.
7. Faculty Demographic Trends	AY 94-95	AY 01-02	% change
All STEM Faculty	5	5	no change
URM Faculty	0	3	0 to 3
8. Faculty Research and Activities	AY 94-95	AY 00-01	% change
Journal Papers	0	0	no change
Conference Proceedings	0	0	no change
Professional Presentations	0	0	no change
Conference	0	5	0 to 5
Seminar	0	2	0 to 2
Workshop	0	2	0 to 2
Proposals Submitted for External Funding	0	8	0 to 8
Proposals Submitted for Internal Funding	0	0	no change
External Proposals Funded	0	5	0 to 5
Internal Proposals Funded	0	0	no change



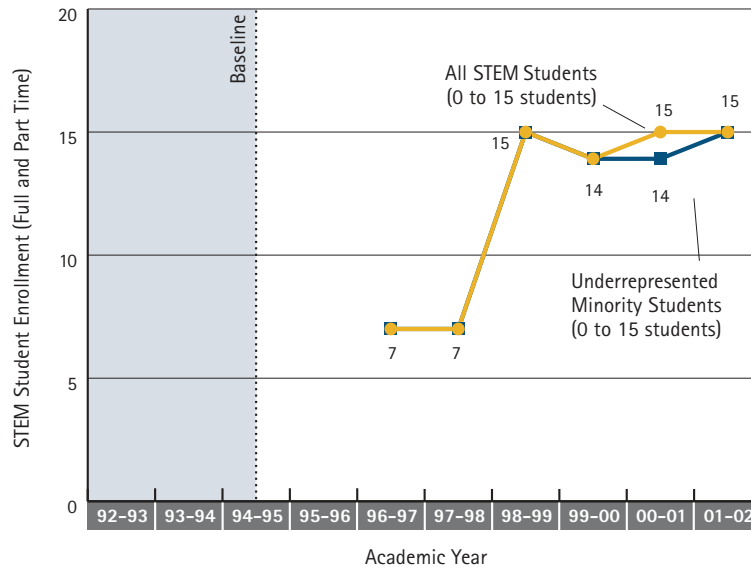
Sitting Bull College (Oyate Consortium)



KEY INDICATOR 1: Undergraduate STEM Student Enrollment Trends: AY 1992-93 to 2001-02

Key Indicator No.1 presents trends in undergraduate STEM student enrollment including both full and part time students. Figure 1 shows trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to AY 2001-02. The baseline year (AY 1994-95) is highlighted with a dotted line.

Figure 1
Undergraduate STEM Students Enrolled
All STEM Compared to Underrepresented Minority Students



Percentage of Underrepresented Minorities in STEM

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All STEM Students	0	0	7	7	15	14	15	15	n.a.
Underrepresented Minority Students	0	0	7	7	15	14	14 ¹	15	n.a.
Percentage	n.a.	n.a.	100%	100%	100%	100%	92%	100%	n.a.

Total Institution Undergraduate Student Enrollment

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	484	372	367	367	242	233	197	139	-71%

¹ data imputed
 m: missing data
 n.a.: not applicable

Highlights and Notes

STEM students enrollment % change from baseline to AY 2001-02

- All STEM (from 0 to 15 students)
- Underrepresented Minority STEM (from 0 to 15 students)

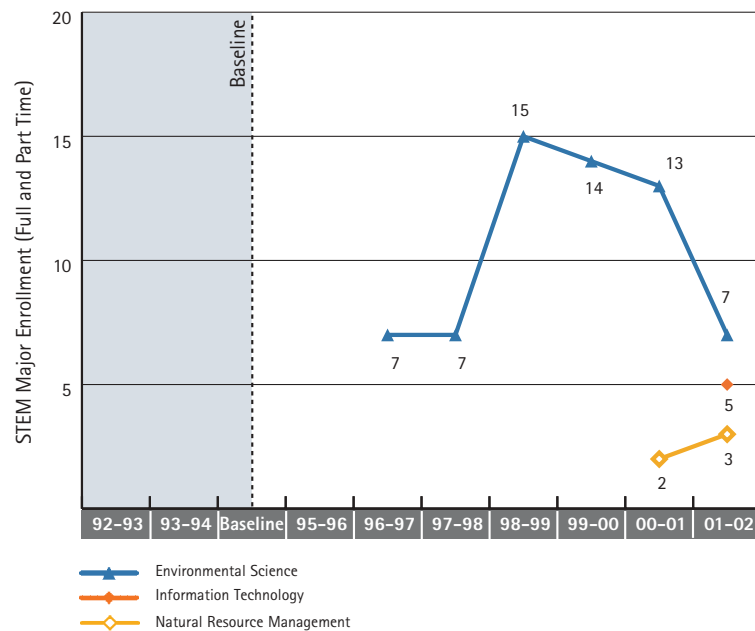
The number of students enrolled in STEM majors increased to 15 by 2001-02. Enrollment remained stable from AY 1998-99 through AY 2001-02 at approximately 15; all were underrepresented minority students with the exception of one student enrolled in AY 2001-02.



KEY INDICATOR 2: Undergraduate STEM Student Enrollment Trends By STEM Major: AY 1992-93 to 2001-02

Key Indicator No.2 presents undergraduate student enrollment trends by STEM major: Environmental Science, Information Technology, and Natural Resource Management. Figure 2 shows trends for undergraduate STEM by major from AY 1992-93 to AY 2001-02.

Figure 2
STEM Enrollment by Major



STEM Major Enrollment

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Environmental Science	n.a.	n.a.	7	7	15	14	13	7	n.a.
Information Technology	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5	n.a.
Natural Resource Mgt.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2	3	n.a.
Total	n.a.	n.a.	7	7	15	14	15	15	n.a.

Highlights and Notes

Students enrollment % change from baseline to AY 2001-02

- Environmental Science (from 0 to 7 students)
- Natural Resources Management (from 0 to 3 students)

Environmental Science enrollment is currently 7 students.

n.a.: not applicable

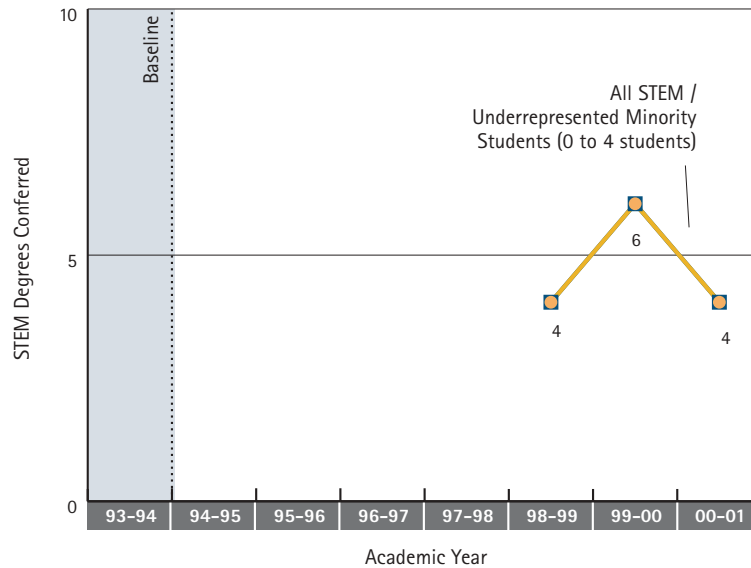
Sitting Bull College (Oyate Consortium)



KEY INDICATOR 3: Undergraduate STEM Student Degrees Conferred Trends: AY 1992-93 to 2000-01

Key Indicator No.3 presents trends in total number of undergraduate STEM degrees conferred. Figure 3 shows degrees conferred trends for all STEM students compared to Underrepresented Minority Students from AY 1992-93 to 2000-01.

Figure 3
Undergraduate STEM Degrees Conferred
All STEM Compared to Underrepresented Minority Students



n.a.: not applicable

Underrepresented Minority Student Conferred STEM Degrees

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
All STEM Students	n.a.	n.a.	n.a.	n.a.	4	6	4	n.a.
Underrepresented Minority Students	n.a.	n.a.	n.a.	n.a.	4	6	4	n.a.
Percentage	n.a.	n.a.	n.a.	n.a.	100%	100%	100%	n.a.

Total Institution Degrees Conferred

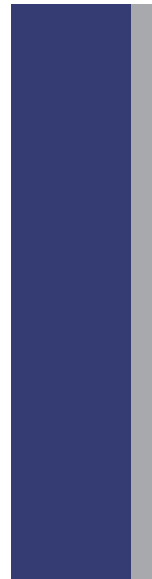
	94-95	95-96	96-97	97-98	98-99	99-00	00-01	% change
Total	25	25	39	44	37	34	25	no change

Highlights and Notes

STEM students degree conferred % change from baseline to AY 2000-01

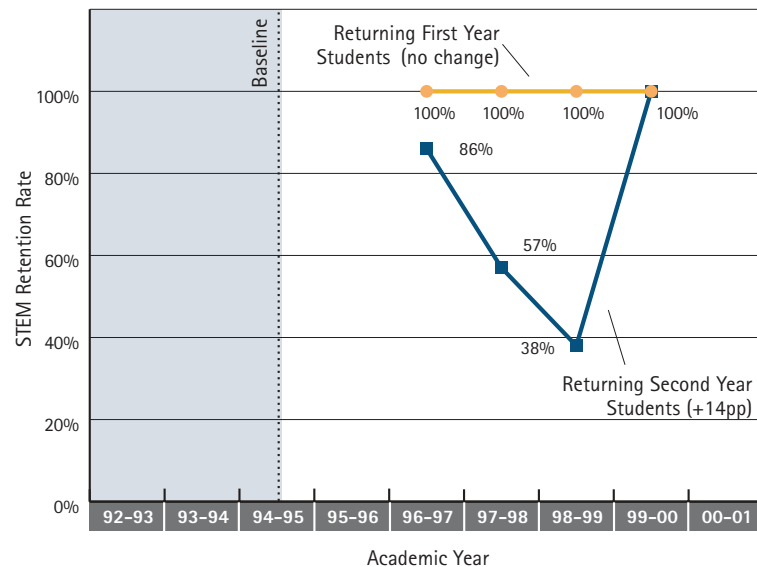
- All STEM (from 0 to 4 students)
- Underrepresented Minority STEM (from 0 to 4 students)

All students who graduated in AY 2000-01 are either employed in the field of environmental science or are attending a four-year institution.



KEY INDICATOR 4: Undergraduate STEM Students' Retention Rate Trends: AY 1992-93 to 2000-01
 Key Indicator No.4 presents trends in undergraduate STEM student retention rate. Figure 4 shows trends for STEM student retention rate from AY 1992-93 to AY 2000-01.

Figure 4
STEM Student Retention Rate



m: missing data
 n.a.: not applicable

STEM Student Retention Rate

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01
Return After First Year	n.a.	n.a.	100%	100%	100%	100%	m
Return After Second Year	n.a.	n.a.	86%	57%	38%	100%	

Highlights and Notes

- STEM students retention rate change** Percentage Point (pp) Change
- Return after first year from AY 1996-97 to AY 2000-01 no change
 - Return after second year from AY 1996-97 to AY 1999-00 +14 pp

During the Spring 2001 semester SBC had an overall retention rate of 82%, with 72% of students making satisfactory progress, i.e., having grade point averages of 2.00 or better. Returning students only applicable to part-time students or those who did not complete degree requirements. The retention rates for STEM students is higher than that of the institution as a whole. The reasons for this higher rate are only speculative, but could include activities such as research, internships, or science club activities. A more in-depth study needs to be conducted to determine the reasons for the retention rates.

Sitting Bull College (Oyate Consortium)



KEY INDICATOR 5: STEM Student Activities and Achievements

Indicator No.5 presents trends in Undergraduate student activities supported by MIE. Figure 5.1 shows total Undergraduate Student Development Activities Supported by MIE. Figure 5.2 shows STEM Student Research Activities from AY 1995-96 to AY 2000-01.

Figure 5.1
STEM Undergraduate Student Development Activities Supported by MIE

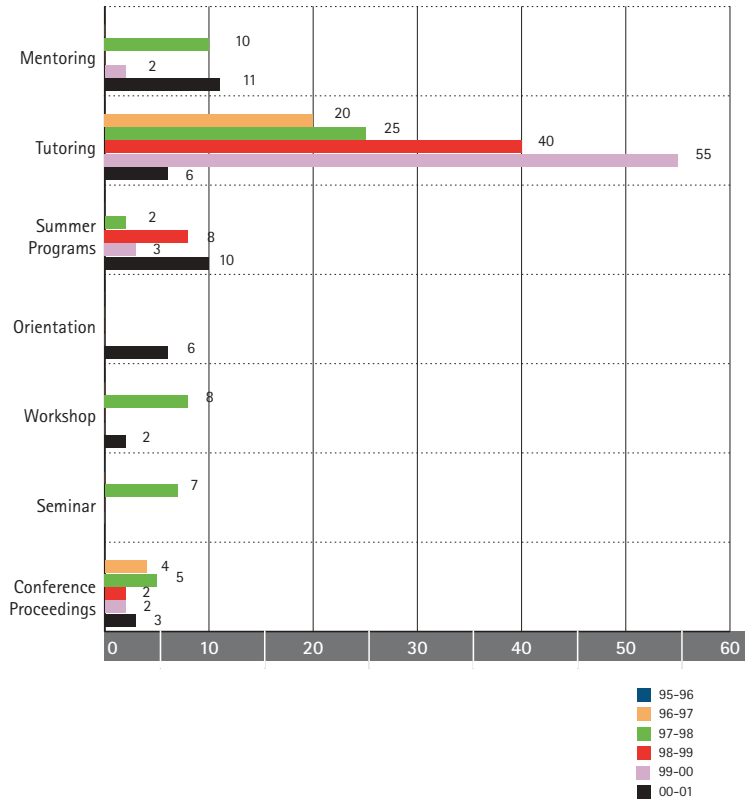
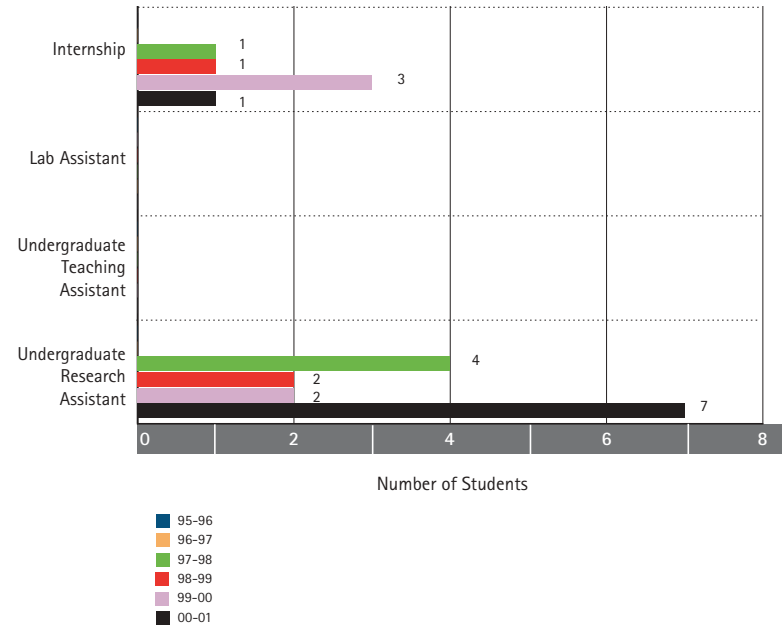


Figure 5.2
STEM Undergraduate Student Research Activities Supported by MIE



Highlights and Notes

The program that has had the greatest impact on SBC reaching its MIE goals is the student stipend program. The stipend program has helped to increase retention rates of the first year SEM students. In addition, since the inception of the student stipend program, student attendance and participation has increased from AY 1997-98 to 2000-001.

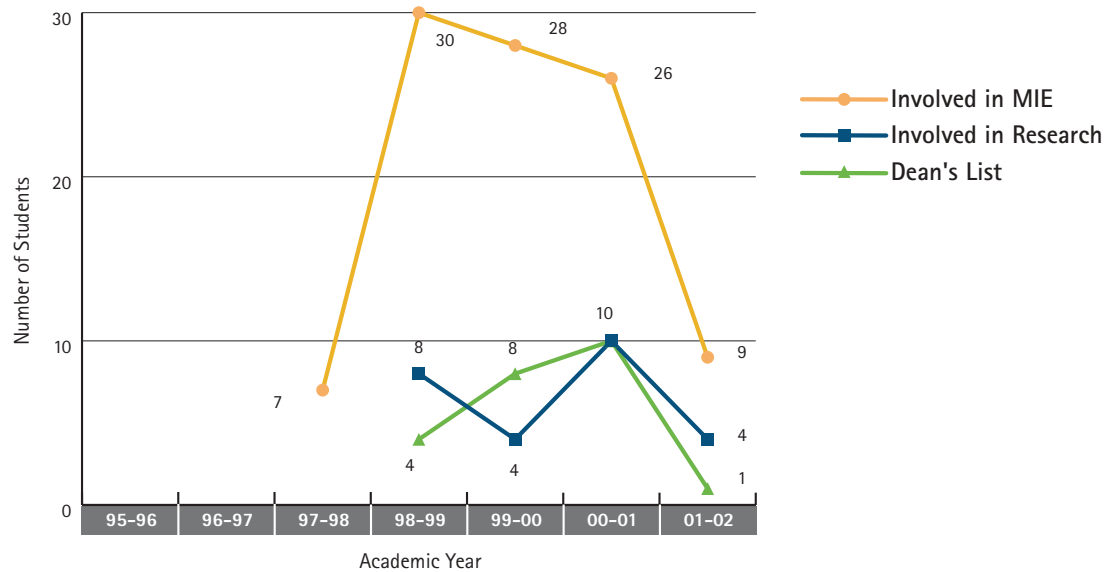


KEY INDICATOR 5: STEM Student Activities and Achievements (continued)

Figure 8.3 shows STEM Student Achievement.

Figure 5.3

STEM Student Achievement



Highlights and Notes

In AY 1998-99, all STEM students were involved in the MIE program.



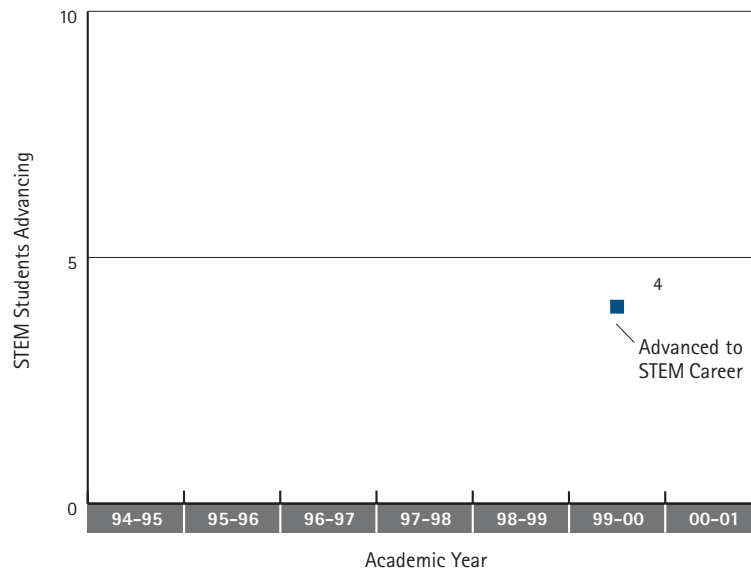
Sitting Bull College (Oyate Consortium)



KEY INDICATOR 6; Students Advanced to Four-Year Programs or STEM Careers Trends: AY 1994-95 to AY 2000-01

Key Indicator No.6 presents trends in STEM graduates who pursue four-year degrees or advance to STEM careers. Figure 6 shows trends for undergraduate STEM students by major from AY 1994-95 to AY 2000-01.

Figure 6
Advancing STEM Students



n.a.: not applicable

STEM Students Advancing to Four-Year Programs from AY 1994-95 to AY 2000-01

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01
Environmental Science	n.a.	n.a.	0	0	0	0	0
Information Technology	n.a.	n.a.	0	0	0	0	0
Natural Resource Mgt.	n.a.	n.a.	0	0	0	0	0
Total	n.a.	n.a.	0	0	0	0	0

STEM Students Advancing to STEM Careers from AY 1994-95 to AY 2000-01

	Baseline	95-96	96-97	97-98	98-99	99-00	00-01
Environmental Science	n.a.	n.a.	0	0	0	2	0
Information Technology	n.a.	n.a.	0	0	0	2	0
Natural Resource Mgt.	n.a.	n.a.	0	0	0	0	0
Total	n.a.	n.a.	0	0	0	4	0

Highlights and Notes

In AY 1999-00, four students entered into STEM careers after graduation, two each in Environmental Science and Information Technology.

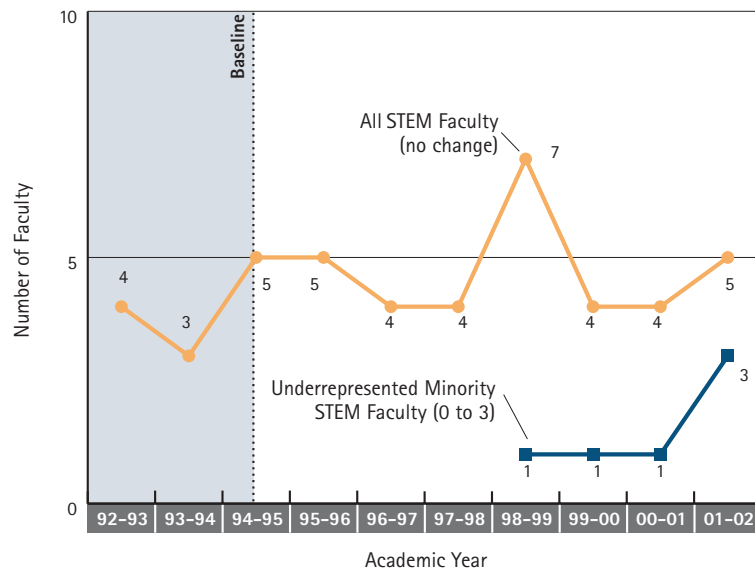


KEY INDICATOR 7: Faculty Demographic Trends: AY 1992-93 to 2001-02

Key Indicator No.7 presents STEM faculty demographic trends including both full and part time faculty. Figure 7 shows trends for all STEM faculty compared to underrepresented minority faculty from AY 1992-93 to AY 2001-02.

Figure 7

STEM Faculty Demographics All STEM Compared to Underrepresented Minority Faculty



Percentage of Underrepresented Minority Faculty in STEM

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
All	5	5	4	4	7	4	4	5	no change
Underrepresented Minority Faculty	0	0	0	0	1	1	1	3	n.a.
Percentage	0%	0%	0%	0%	14%	25%	25%	60%	n.a.

Total Institution Faculty Trends

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	% change
Total	26	34	27	27	29	32	69	29	+12%

Highlights and Notes

STEM faculty % change from baseline to AY 2001-02

- All STEM (from 5 to 5 faculty members) no change
- Underrepresented Minority STEM (from 0 to 3 faculty members) 0 to 3

The number of Underrepresented Minority STEM faculty increased from 0 to 3 out of 5 (0% to 60%) from AY 1994-95 to 2001-02. Overall, the number of faculty was stable from AY 1994-95 to 2001-02 with a peak of 7 faculty members in AY 1998-99.



Sitting Bull College (Oyate Consortium)



KEY INDICATOR 8: Faculty Research and Activities

Faculty Research Outcome/Achievement

In AY 2000-01, three SBC faculty members served as peer reviewers compared to one in AY 1999-00.

Faculty Funding/Grant Capability

In AY 2000-01, five of eight (63%) externally submitted proposals received funding, compared to AY 1994-95 when no proposals were submitted by faculty; however staff grant writers were hired.

Faculty Activity Support

The number of faculty members attending conferences increased from zero to five from AY 1994-95 to 2000-01. The number of faculty members attending workshops increased from zero to two from AY 1994-95 to 2000-01.

Outstanding MIE Scholar

No outstanding MIE scholars were reported.

Figure 8.1

Proposals

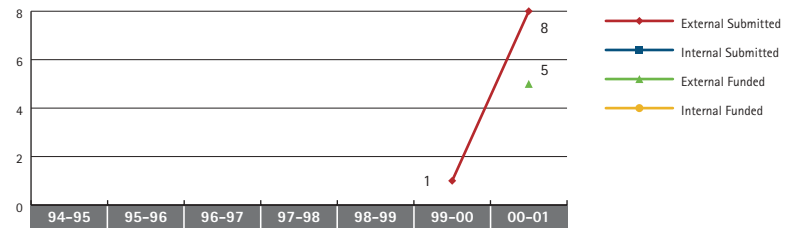


Figure 8.2

Publications and Presentations

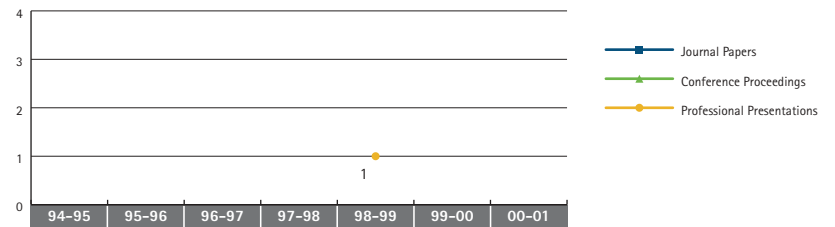
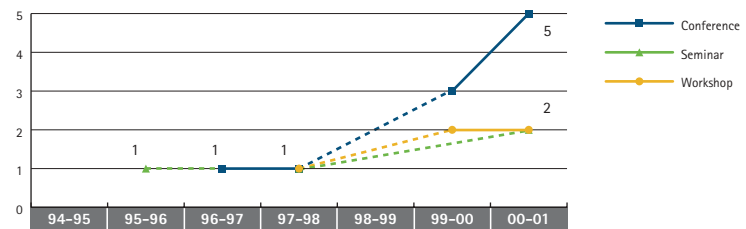


Figure 8.3

Professional Development Activities



Sitting Bull College (Oyate Consortium)



KEY INDICATOR 9: Collaborative and Pre-College Activities

Pre-College Activities

None reported.

Collaborative Activities

None reported.

KEY INDICATOR 10: Research and Computing Resources: AY 1995-96 to AY 2000-01

New Building

In Spring 2002, ground was broken for phase I of SBC 's new academic center. Phase I will include three new laboratories/classrooms.

Research Center, Lab, and Major Equipment

No new major equipment was purchased.

Computing Resources

No changes in computing resources were reported.

Sitting Bull College (Oyate Consortium)



KEY INDICATOR 11: Major Academic Events

Major Academic Events

No major MIE related academic events were reported.

Institution/MIE Leadership

No major changes were reported.

Policy Changes

No policy changes were reported.

MIE Revenues and Expenditure

In FY 2001-02, of the \$141,378 MIE budget, 36% was expended on senior personnel, 8% on fringe benefits, 3% on travel, 28% on participation support costs, 8% on other direct costs, and 17% on total indirect costs.

KEY INDICATOR 12: Major MIE Activities

Institutionalized MIE Program Components

The two-year Associates of Science degree program in Environmental Science will be institutionalized upon completion of the MIE award.

Major MIE Activities and Achievements

Environmental Science major started in AY 1996-97, Natural Resource Management major started in AY 2000-01, and Information Technology major started in AY 2001-02.

Leveraged Funding

Funds from MIE were leveraged to assist with phase I of the construction of SBC's new academic center.

In-Kind Contribution

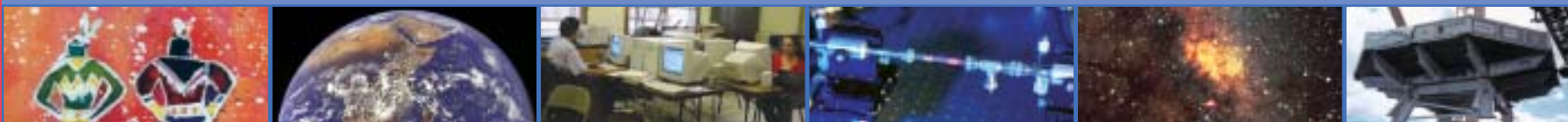
In-kind contributions have been provided in several key areas: student tuition support, faculty release time, facilities, laboratories, equipment, and Staff/Human resource support.

Major Departmental Changes

No major changes were reported.



Model Institutions for Excellence

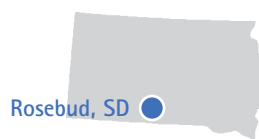


SINTE GLESKA UNIVERSITY

MIE Fact Book 2002

PART II: MIE Institutions' Key Indicator Reports

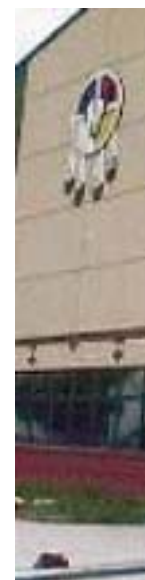
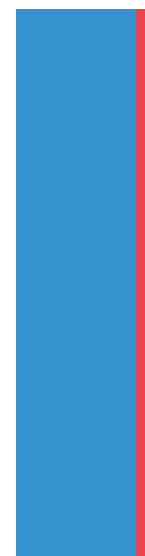
July 2003



MIE Program Funded by:
National Science Foundation



Sinte Gleska University (Oyate Consortium)



In 1970, the Rosebud Sioux Tribe granted a charter to **Sinte Gleska College**. Sinte Gleska College was chartered to provide post-secondary and other education opportunities to area residents. The doors opened on February 3, 1971, and courses were offered under the auspices of the University of South Dakota and the University of Colorado extension division. Associate degrees were developed and approved by the State of South Dakota's Board of Regents in 1972. The first Associate of Arts degree was awarded in August of 1973.

The University subsequently offered degrees and courses through Black Hills State College (General Studies, Education, Business Education, Lakota Studies and Social Services), and under the University of South Dakota (Nursing and Human Services). In 1978, the Bachelor's degree in Selected Studies (Human Services-Mental Health or Criminal Justice minor and Elementary Education) were implemented through cooperative agreements with the University of South Dakota and Black Hills State College, respectively. These early relationships enabled the College to offer courses leading to degrees at both the College and through accredited institutions. In 1976, Sinte Gleska College sought and received candidacy for accreditation from the North Central Association of Colleges and Schools. Two biennial site visits in 1978 and 1980 and a final site review in 1982 enabled Sinte Gleska College to receive accreditation from the North Central Association of Colleges and Schools in the Spring of 1983.

The accreditation at the Associate and Baccalaureate levels made Sinte Gleska College the first tribal college to receive accreditation at the four-year level, and only the second to receive it at the two-year

level. In 1988, Sinte Gleska College requested a focused evaluation for the purpose of accreditation approval of the offering of a Master's degree program in Elementary Education for teachers of American Indian children. The program was approved in Spring 1989, making Sinte Gleska College the first tribal college to offer a Master's program on an Indian reservation.

In August 1988, Sinte Gleska College began to host education forums to draw together individuals and organizations to discuss and change education and social policy. Along with these forums, the College opened public and institutional discussion in February 1991 regarding the College becoming a University. Following these discussions, Sinte Gleska College became Sinte Gleska University on February 2, 1992, in a traditional tribal ceremony. Also, the Board of Directors became the Board of Regents.

Since 1992, the University has focused efforts on increasing its endowment, building adequate facilities, and strengthening academic programs.

Source: <http://www.sinte.edu/catalog/2003catalogue.pdf> (pages 9-10)

Institution Profile in Brief History and Background

Year Founded:	1971
Institution Control:	Public-Tribal
Institution Type:	2-year
Land-Granted:	Yes
Co-Ed:	Yes
Affiliation:	Affiliated
Academic Term:	Semester

Degree Programs Offered

Arts and Sciences	Lakota Studies
Business Administration	Technology
Education	Others
Human Services	

President	Mr. Lionel Bordeaux
Website	http://www.sinte.edu

Student Enrollment / AY 2001-02

	FT	PT	Total
Undergraduate :	559	622	1,181
Gender:	Male: 40%	Female: 60%	
Race/Ethnicity:	Native American: 70%	White: 30%	

Degrees Conferred / AY 2000-01

Associate: 41	Dual Degree: 4
Baccalaureate: 28	Total: 73

Faculty / AY 2001-02

Full Time: 149	Part Time: 136	Total: 285
% Ph.D. Full Time Faculty	3%	
Student/Faculty Ratio:	4:1	

Sinte Gleska University (Oyate Consortium)



MIE Profile

MIE Project and Grant

Funded by: NSF

Phase I

Grant Period: 9/15/95 – 8/31/2000

Amount: \$12,350,000 (Oyate Consortium)

Phase II

Grant Period: 10/1/2000 - 9/30/2004

Amount: \$12,121,192 (Oyate Consortium)

Principal Investigator/Project Director

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The Oyate Consortium consists of five Lakota reservation colleges and universities (Oglala Lakota College, Sinte Gleska University, Sitting Bull College, Sisseton-Wahpeton College, and Si Tanka College). This award follows an initial MIE award that provided substantial network infrastructure, physical infrastructure, personnel infrastructure, and course and curriculum development aimed towards the development of Science, Mathematics, Engineering, and Technical Education (SMETE) capacity at Native American colleges. This award will continue these activities building upon existing infrastructure to develop new information (Information Technology BS and an MS in Environmental Science, articulations with additional non-reservation colleges and universities, and additional outreach to Native American Schools (at least 10). Additionally, methods of institutionalization of the MIE accomplishments will be pursued including the development of an endowment for STEM capacity and the means for providing housing for faculty and, perhaps, for students at the campus sites.

Cheyenne River Community College with programs offered at SGU. NSF has actively encouraged innovation in these efforts. State-of-the-art computing facilities are being developed, faculty are being recruited, and computer science and pre-engineering courses are being offered at SGU as a direct result of this grant.

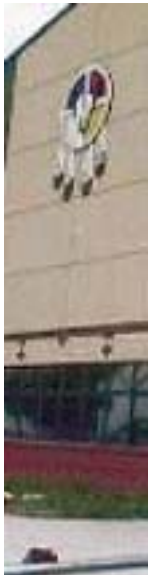
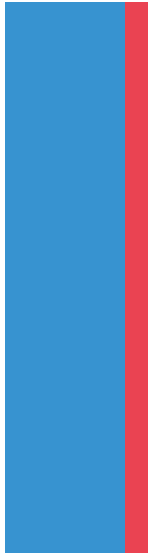
STEM Degrees

Biological Science
Computer Science
Ecology
Environmental Science (BS/AS)
Physical Science
Tribal Land Management

MIE Objectives and Goals

The National Science Foundation has provided a \$12,300,000 MIE grant to the Oyate Consortium, which consists of Sinte Gleska University, Oglala Lakota College, Sitting Bull College, and the Sisseton Wahpeton and Cheyenne Community Colleges. These funds have been used to establish computer science and pre-engineering programs on the SGU campus, to create a natural resources program at Oglala Lakota College, and to provide Sitting Bull College, Sisseton Wahpeton Community College, and





KEY INDICATOR 1: Undergraduate STEM Student Enrollment, Degrees Conferred and Faculty Demographics AY 2000-01 and 2001-02

Key Indicator No.1 presents undergraduate STEM student enrollment for AY 2001-02, including both full and part time students; degrees conferred in all subjects and in STEM majors for AY 2000-01; and faculty demographics for AY 2001-02.

Highlights and Notes

STEM Students Enrollment AY 01-02

	Number	Percentage of Total
• All STEM (total enrollment of 1,181 students)	30	3%
• Underrepresented Minority STEM (total enrollment of 783 URM)	25	3%

STEM Students Degree Conferred AY 00-01

	Number	Percentage of Total
• Total number of BA/BS degrees conferred	28	
• All STEM (number of STEM BA/BS degrees conferred)	2	7%
• Underrepresented Minority (number of STEM BA/BS degrees conferred)	2	100%

STEM Faculty Demographic Breakdown AY 01-02

	Number	Percentage of Total
• All STEM Faculty	7	
• Underrepresented Minority SEM	2	29%

