An Institutional Model for Student and Faculty Support

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Model Institutions for Excellence Project
The University of Texas at El Paso

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UTEP Undergraduate Student Population Profile

24 years of age
72% Hispanic (Mexican American)
83% from El Paso County
10% from Mexico
98% commuter
81% employed
54% first generation university students
El Paso County Demographic Data: US Census 2000

TOTAL: 679,622

Hispanic - 78.2%

Other - 21.8%
Fall 2001 Enrollment

16,220 students

2,010 in Engineering
+ 904 in Science

2,914 or 18% of total enrollment

Preliminary Fall 2002 Enrollment

17,200 -- up 1000 students
# National & UTEP Minority Engineering Enrollment

<table>
<thead>
<tr>
<th>National</th>
<th>Women</th>
<th>Hispanic</th>
<th>African American</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19.5%</td>
<td>8.0%</td>
<td>6.7%</td>
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</table>

<table>
<thead>
<tr>
<th>UTEP</th>
<th>Women</th>
<th>Hispanic</th>
<th>African American</th>
<th>Mexican National</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21.8%</td>
<td>65.6%</td>
<td>1.4%</td>
<td>20.9%</td>
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</table>

UTEP is the top producer of Mexican American Engineers in the USA.
The MIE Initiative Goal

- National: To increase the quality and quantity of underrepresented minorities who earn baccalaureate degrees in science, engineering, and mathematics (SEM) and go on to pursue graduate degrees in these fields

- UTEP: To double the number of SEM degrees conferred by 2010
UTEP’s Model for SEM Student Success
Program Synergy
CircLES SEM Entering Student Program

Increases the retention and academic performance of SEM entering students

- Week long summer orientation (with faculty involvement)
- Placement exams in Math and English
- Course clustering (Math, University Seminar, English Composition)
- Proactive advising and scheduling (by professional staff)
CircLES Structure

**COURSE CLUSTERING**
CircLES Director

**ORIENTATION**
3 Coordinators
2 Professors
20 Peer Leaders

**UNDERGRADUATE**
PEER LEADER
TRAINING
30 Students per Year

**ADVISING**
3 Coordinators
CircLES 1 Week Long Orientation

CONNECTIONS TO UNIVERSITY SERVICES

DEVELOPMENTAL MATH REVIEW AND PLACEMENT

STUDY SKILLS

RESEARCH MODULES (Science or Engineering)
CircLES Advising

- SCHEDULING
- STUDENT TRACKING
- NETWORKING (student organizations)
- CAREER PATH PLANNING
- MENTORING (support and encouragement)
CircLES Course Clusters:
designed to address diverse academic capabilities

- Pre-College Math I
  - Seminar in Critical Inquiry
    - Pre-College or College English
      - Introductory Eng / Sci Course
- Pre-College Math II
  - Seminar in Critical Inquiry
    - Pre-College or College English
- Pre-Calculus
  - Seminar in Critical Inquiry
    - Pre-College or College English
- Calculus
  - Seminar in Critical Inquiry
    - Pre-College or College English

Small cohorts in small classes
enrolled according to Math and English placement exams
One-Year Retention Rates by Student Cohort
Before and After Scale Up (Stat. Significant)

- 1997 Comparison (n=276): 68%
- 1997 Pilot (n=60): 77%
- 1998 CircLES (n=389): 80%
- 1999 CircLES (n=357): 81%
- 2000 CircLES (n=330): 79%
One and Two-Year Retention Rates by Cohort

Census Day Data
- 1998 CircLES (n=389)
- 1999 CircLES (n=357)
- 2000 CircLES (n=330)

Retention Rates:
- One Year:
  - Baseline: 68%
  - 1998: 80%
  - 1999: 81%
  - 2000: 79%
- Two Year:
  - 1998: 69%
  - 1999: 68%

Baseline: 55%
Academic Centers for Engineers and Scientists

Promotes and supports good study habits in a state-of-the-art environment for all SEM commuter students

- Hub for resources
- Study and reference materials
- Group and individual study
- Student management (28 student team selected every year)
ACES Services

Quality SEM Tutoring

Seminars and Workshops

Career Opportunities

Graduate School Recruiting

<table>
<thead>
<tr>
<th>Month</th>
<th>Fall 2000</th>
<th>Fall 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept.</td>
<td>376</td>
<td>452</td>
</tr>
<tr>
<td>Oct.</td>
<td>393</td>
<td>591</td>
</tr>
<tr>
<td>Nov.</td>
<td>453</td>
<td>564</td>
</tr>
<tr>
<td>Dec.</td>
<td>332</td>
<td>438</td>
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</table>
AY Research Experiences for Undergraduates

- Provides student with an undergraduate research experience (9 months)
- Matches student with faculty mentor
- Encourages student to apply to 3 SEM summer research programs
- Encourages student to be part of ACES tutor team
REU Student Track 1996-2001 (n=260)

- Pursuing BS Degree: 98
- Graduated with BS Degree: 144
- Stopped Out: 18
- Graduate School at UTEP: 89
- Graduate School Elsewhere: 32
Summer Focus: External Research Experiences

- University of Nebraska
  - Lincoln, NE
- University of Minnesota
  - St. Paul, MN
- University of Wisconsin
  - Madison, WI
- Fermilab
  - Batavia, IL
- University of Michigan
  - Ann Arbor, MI
- Miami University
  - Oxford, OH
- Princeton University
  - Princeton, NJ
- John Hopkins University
  - Baltimore, MD
- Jefferson Labs
  - Newport News, VA
- Indiana University
  - Bloomington, IN
- Sandia National Laboratories
  - Albuquerque, NM
- Texas Tech University
  - Lubbock, TX
- University of Houston
  - Houston, TX
- University of Central Florida
  - Orlando, FL
- Albany Research Center
  - Albany, OR

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THE MODEL INSTITUTIONS FOR EXCELLENCE INITIATIVE AT THE UNIVERSITY OF TEXAS AT EL PASO

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Women in Science & Engineering (WiSE)

Provides financial support, counseling services, and peer mentoring to SEM women

- Expanding Your Horizons Conference
- Virtual Development Center (IWT & HP)
- 7 Habits of Highly Effective People™ Workshop
- Support Meetings
WiSE Impact

Since Spring 2001, WiSE has awarded stipends to 60 women pursuing degrees in science, engineering and mathematics. Thirty-three (33) of them are engineering majors and twenty-seven (27) are science majors. There are no stop outs.

- Seven (7) engineering students have graduated
- Three (3) of them are enrolled in a graduate program

- Two (2) science students have graduated
- One (1) of them is enrolled in a graduate program
Center for Effective Teaching and Learning

- Provides leadership in teaching excellence at UTEP and in the region
- Mentors new faculty and encourage senior faculty to stay focused on their teaching
- Trains graduate teaching assistants and undergraduate peer leaders in the art of teaching
- Supports scholarship of teaching
CETaL Services

Teaching-Learning Seminars
Course Planning
Individual Consultations
Classroom Observations
Research and Publication Support
Faculty CETaL Workshop Attendance: 1998-2001

- Engineering: 74%
- Business: 61%
- Science: 76%
- Liberal Arts: 41%
- Health: 69%
- Education: 51%
Faculty CETaL Workshop Attendance: 2001


- 14.6% of all participants are from College of Science
- 11.0% of all participants are from College of Engineering
Curriculum Enhancement Program (CEP)

Impacts the success rates of gateway SEM courses by

- improving the efficiency of content delivery
- introducing peer leaders in the classroom
SEM Gateway Courses

Target: 80% success rate (ABC)

• Modular Pre-Calculus
• University Seminar Gateway
• General Chemistry
• Mechanics
• Fields and Waves
• Introduction to Engineering
• Reverse Engineering

• Cooperative Learning
• Active Learning
• Workshop Lessons
• Inquiry Based Learning
• Inquiry Based Learning
• Cooperative Learning
• Active Learning

New Environmental Science BS Degree (Fall 2001)
General Chemistry

2 lectures per week (144 students)

Workshop Session
- Problem Solving
- Wet Lab Activity
Anticipated Degree Production

- Engineering
- Computer Science
- Mathematics
- Physical Science
- Biology

Year 1995: 286
  - Engineering: 175
  - Computer Science: 35
  - Mathematics: 21
  - Physical Science: 12
  - Biology: 8

Year 2000: 272
  - Engineering: 131
  - Computer Science: 35
  - Mathematics: 21
  - Physical Science: 12
  - Biology: 8

Year 2005: 413
  - Engineering: 200
  - Computer Science: 35
  - Mathematics: 21
  - Physical Science: 12
  - Biology: 8

Year 2010: 541
  - Engineering: 300
  - Computer Science: 35
  - Mathematics: 21
  - Physical Science: 12
  - Biology: 8

Year 2015: 618
  - Engineering: 300
  - Computer Science: 35
  - Mathematics: 21
  - Physical Science: 12
  - Biology: 8
Project Timeline

Phase I: Development & Scale Up
- '95

Phase II: Integration & Acculturation
- '00

Phase III: Dissemination of Model
- '03

Assessment

Institutional Study

Complete Institutionalization
For more information

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