A Commitment to Fostering Diversity
The College of Earth and Mineral Sciences
2004-2009
Mid-term Review

The College of Earth and Mineral Sciences (EMS) is committed to fostering diversity, and promoting a climate and a support structure that allows all members of the community to succeed. The strength of this commitment is demonstrated by three interrelated strategic objectives that are critical for the continuing excellence of the College:

- To Create the Most Student-Centered College in Penn State history
- To Develop a Diversity and Climate that will Empower Future Generations of Scholars
- To advance the Capabilities and Reputations of the College's Departments and Institutes.

The challenge of developing a diverse climate that will empower future generations of scholars is both substantial and compelling; maintaining course during a period of budgetary restraint and interim leadership requires even greater commitment.

In this review, readers will discover the highlights of our progress at this mid-point in the implementation of the *Framework to Foster Diversity at Penn State (2004-2009)*. By no means, is this review inclusive of all efforts. Members of our Diversity Council contributed more than 150 pages of accomplishments, and yet to be accomplished goals, of their academic departments, research institutes and the College. In addition, each lauds the strides that their unit or the College has made in addition to those initiated through the strategic planning process. We must acknowledge the synergy and the growth that is a hallmark of our continuing efforts to build a diverse and equitable environment for all members of the College.

Challenge 1. Developing a Shared and Inclusive Understanding of Diversity

The College has continued to make progress in meeting this challenge; however, we are far from exceeding it. Defining our goal is not as difficult as the ongoing process of disseminating the information through the College and beyond to our alumni, industry partners, government agencies and so on. In an age of communication, the bombardment we all feel daily numbs us and we become selective listeners and readers. However, we continuously strive to take action and develop behaviors demonstrating our shared and inclusive understanding.

- EMS' definition of diversity is a stated goal. As noted in the Feedback document, it is clear and consistent with Penn State's goals. The College continues efforts to share both understanding and practice to all our communities.

- In the fall of 2005, the College held an "All Hands Meeting" inclusive of all staff and faculty through which the State of EMS from 1999-2005 was reported. The four areas targeted were Resources that Drive Excellence, Undergraduate Programs, Diversity and Graduate Education and Research. The presentation is attached to this update for your review as Appendix document "A." The presentation highlighted the importance of diversity to the College and showed data that illustrated some of our progress over the last ten years. The report was also presented to alumni at the Obelisk Society Dinner (the College's major alumni event of the year) and was posted on the College website.

- The alignment and reporting structure for the Director of Diversity Enhancement Programs has been changed. The new title, "Executive Assistant to the Dean for Diversity Enhancement Programs", now reports directly to the Dean, and is a member of the Dean's Executive Council (composed of department heads and institute directors). This change now clearly demonstrates the alignment of this office with College governance and its integration into the core of the College's leadership.

- In February 2007, the Executive Assistant to the Dean will move into the Dean's suite of offices, physically demonstrating the connection to the office of the Dean.

- These changes as well as the understanding that more ownership of diversity initiatives lie in the departments and with individual faculty have led to significant culture and climate change in the past two years. The role of the Executive Assistant to the Dean for Diversity Enhancement increasingly is one of facilitating achievement rather than initiating programs. An example is Dr. Tanya Furman, Associate Director of the Alliance for Earth Science, Engineering and Development in Africa (AESEDA), who received the 2005 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. Furman has unified her efforts, stretching beyond her research norms and utilizing existing programs such as Nittany Science Camp for Girls, GUTS, SEEMS, and

SROP in ways that not only make sense, but have also been the basis for building collaborative partnerships with other institutions that now use her models.

- The College's Diversity Council is co-chaired by the Dean and the Executive Assistant to the Dean for Diversity Enhancement Programs. Each academic department and institute has a representative. The Council is made up of faculty and staff. In producing this document, each member reviewed their unit's progress as well as that of the College. Through this group information is disseminated, advice and guidance are provided and the group serves as a sounding board.

- The College's new web presence is in its final reviews before going live. The College's diversity efforts, resources and services will be more prominent and accessible.

- Seven EMS faculty members, from Geography, Geosciences, Energy and Geo-Environmental Engineering and Materials Science and Engineering, completed a multicultural teaching academy, led by Dr. Beverly VanDiver, which addressed multicultural education, identity, social justice education, curriculum design for addressing diversity and social justice, instructional strategies for teaching diverse contents. The session used case studies and role playing. The results include revised course plans that reflect and integrate diversity issues. In April of 2006, the Montgomery and Marion Mitchell Award for Innovative Teaching was presented to Deryck W. Holdsworth, Professor of Geography and Director of Peter R. Gould Center for Geography Education and Outreach. In his acceptance speech, Dr. Holdsworth praised the Multicultural Academy for providing the tools to introduce the historic interpretation of 19th century minstrel shows as documentation of shifts in the urban landscape.

- Measures to gauge success and shortcomings in this area continue to be a challenge.

- Web redesign and development have taken longer than anticipated.

Challenge 2. Creating a Welcoming Campus Climate

The commitment of the College to achieving this goal has been demonstrated in the actions of our Department Heads and Institute Directors, as well as our Deans. Additionally, individual faculty members make ripples that touch many.

- The Departmental of Materials Science and Engineering, through the interdisciplinary Materials graduate program, brought two students from Jackson State University into their PhD program providing support and aid in their retention. Unfortunately, a tragic automobile accident in November took both these talented young women from us.

- The Department of Geosciences entered into collaboration with Fort Valley State University (FVSU) to bring students from an accelerated undergraduate Bachelor of Science program into an intensive two-year program in Geosciences On graduation, the students will have earned a BS from FVSU in either Math or Chemistry as well as a BS from PSU in Geosciences. A similar agreement is expected in the Department of Energy and Geo-Environmental Engineering in the next 2 years. Significant resources of money, energy, and time have been invested in this important strategic initiative.

- Faculty members accompanied the Executive Assistant to the Dean for Diversity Enhancement to national conferences (Society for the Advancement of Chicanos and Native Americans in Science and American Indian Science and Engineering Society) where they fully participated in the conference proceedings.

- Faculty members and the Associate Dean for Graduate Education and Research participated in the May 2006 Northeast Alliance Science Day, hosted by Penn State, as presenters, panelists and judges.

- Faculty members traveled to the University of Puerto Rico-Mayaguez for their Northeast Alliance Science Day. While participating in this event, a faculty member recruited and identified support for a new graduate student. Other faculty members traveled to UMASS-Amherst to share in the experience of the Northeast Alliance.

- Fort Valley State University has hosted eight of our faculty visiting on separate occasions including as guest lecturer. This is an on-going relationship.

- North Carolina A&T University's Ronald McNair School of Physics and the Africa Array project are building a strong base for both research and education.

- Each summer, 12 members of the faculty and 12 graduate students head SEEMS research teams. Individual faculty members receive no compensation. Participating graduate students receive $500. At the conclusion of SEEMS 2006, five faculty immediately volunteered to participate in SEEMS 2007.

- The maintenance of a positive climate for all is an on-going commitment. The college-wide ombudsman, departmental advocates and sexual harassment officers aid greatly in this effort. There is a faculty ombudsman as well as a staff ombudsman.

- A Graduate Student Council (GSC) has been created by the Office of the Associate Dean for Graduate Education and Research supplying a needed unified voice for our graduate students. The GSC in turn, led to the creation of an annual graduate research exhibition as well as a reception acknowledging all the awards earned by our graduate students each year.

- The Executive Assistant to the Dean for Diversity Enhancement Programs is an integral part of our first year orientation experience, TOTEMS and provides a *Valuing Diversity* session in EMSC 100S, our first year seminar.

- The Ryan Family Student Center, which includes advising and tutoring services, the CAUSE classroom, the First Year Seminar room, and computer support complex, has created a living room for our undergraduate students. These facilities and resources invite students in--and allow them to find a place and people who will listen and help when needed.

Challenge 3. Recruiting and Retaining a Diverse Student Body

The energy and spirit of the College in this area has been demonstrated thus far in a number of ways. Outreach activities exist in each academic department as well as in the research institutes.

- AESEDA has been recognized by the CIC as a best practice in discipline based recruitment and retention strategy.

- In 2003, the College initiated the Summer Experience in Earth and Mineral Sciences (SEEMS) program. For the past three summers, the participants of the Upward Bound Math and Science Program have conducted faculty directed research: 12 experiences, each two afternoons per week for five weeks. Only four students have selected EMS majors at Penn State, however, this year is the first year that the UBMS students have never known a summer without SEEMS. Our hopes remain high that SEEMS will become an increasingly valuable recruitment activity for underrepresented students. The College will supply scholarship dollars to support these students.

- Materials Science and Engineering has created a hands-on program teaming staff and faculty increasing their undergraduate enrollment by 33% since 2002.

- In the summer of 2005, we brought seven Summer Research Opportunities Program (SROP) students to Penn State. Four of the participating students were funded by faculty. In summer 2006, we brought 13! Of the 13, eight students were funded by their faculty mentors. Since 2002, 1/3 of our SROP participants have matriculated into our graduate programs.

- Faculty members have continued to visit and build collegial relationships at the University of Puerto Rico at Mayaguez, Jackson State University, and North Carolina A&T University.

- Our ongoing relationship with Howard University has been strengthened with the collaboration of the Howard University Science, Engineering and Math (HUSEM) program, bringing together the PREF (Pre-First Year in Engineering and EMS) students and providing an interactive experience on campus -- showcasing interdisciplinary research as well as social interaction. The partnership also includes bi-annual visits to Howard by Executive Assistant to the Dean for Diversity Enhancement Programs and faculty members.

- Our presence and visibility at AISES and SACNAS continues to grow as we engage EMS faculty members as judges and mentors. At SACNAS 2006, CEKA sent a staff member who constructed and demonstrated a Geo-Wall as part of the EMS/PSU exhibit. The Geo-Wall is a three-dimensional projection system where viewers can see the location of earthquakes below the earth's surface. The system also displays three-dimensional images of the Antarctic Ice Sheet and other

glaciers. These images illustrate current and predicted future responses to global warming.

- The re-envisioning of the Bunton Waller Graduate Award in EMS has allowed the College to not only increases the number of Bunton Waller Graduate Awards, also but engage the departments of each BW in the first year, leading to greater success and retention. The Office of the Associate Dean for Graduate Education and Research was the leading force for this change and supplemented awards to allow this to occur.

- In 2000, there were six historically underrepresented graduate students. In 2004, there were 13 historically underrepresented graduate students. In 2005, there are 29 historically underrepresented graduate students. The departments are investing their time, attention and resources to make this happen.

- Departments are also investing their time, attention and resources to recruit and retain underrepresented undergraduates. In 2000, there were 35 historically underrepresented undergraduates. In 2004, there were 47 and in 2005, there were 52.

- The success of EMS' student centered efforts was highlighted in a recent study from the *Supplement to Completion Rates by Academic Ability and Ability to Pay, June 2006*, produced by the Office of Planning and Institutional Assessment. EMS graduation rates are much higher than PSU overall graduation rates for low income students in both top and bottom quintiles of ability. EMS' level of accomplishment is based on our commitment to student learning demonstrated by student center tutoring, strong cohorts of students, the time faculty spend with students, and trustee fellowship dollars for every eligible EMS student. Appendix "B" illustrates the relevant data.

Challenge 4. Recruiting and Retaining a Diverse Workforce

Locating and recruiting faculty and staff from underrepresented groups is a challenge for EMS. Our energies remain committed to correcting these past trends, and under-representation across the disciplines at the faculty level highlights the ongoing need for development, support and nurturing of young faculty.

- In collaboration with the Office of Affirmative Action, EMS has sponsored professional development courses in Understanding Diversity for the past three years.

- The College of Earth and Mineral Sciences was the pilot for "Hire Power,' the University's best practices for improving diversity of the candidate pool for open positions.

- Both the Staff Advisory Committee and Administrative Assistant meetings focus efforts on the improvement of all aspects of the EMS working environment.

- Since 2004, the College has added 25 new members of the faculty in the ranks of department head, professor, assistant professor, instructor, research assistant and/or research associate. In that group, 4 are African American, 2 are Hispanic American and 16 are women.

Challenge 5. Developing a Curriculum that Supports the Goals of our New General Education Plan

EMS continually distinguishes itself as an innovator in this area. The College has adopted four avenues to foster competencies in intercultural and international values through our curriculum and experiential learning.

1. Integration of Diversity into the Curriculum:

- We introduced two new courses—Earth 111 (GN;US) Water: Science and Society and EMSC 101 (US;IL) Resource Wars.

- We revised a number of courses to include US and IL content, such that in the previous report we listed 6 GI courses, whereas we now have 13 IL courses, 11 US courses, and 14 courses that are both IL and US.

- We have established an exchange program with the University of Southampton. In this program, students complete all but one of the courses required for the Marine Science Minor. This is an inter-college minor with the Eberly College of Science, under the direction of Dr. Lee Kump, Geosciences.

2. Capstone Experiences:

- Since 1995, a total of 376 students have participated in Center for Advanced Undergraduate Studies and Experience (CAUSE) funded experiences—including, for example, studying Global Changes in Local Places (featuring Lancaster County), Appalachia: Economics, Health and the Environment, The Natural Hazards of New Zealand, Geo-Archaeology of Ancient Egypt and Greece, and Sustainable Energy Systems in Europe.

CAUSE has completed two additional two-semester long undergraduate research seminars that included travel abroad to Africa.

- In the spring and summer 2005, the AESEDA-CAUSE experience studied *Environmental Justice in South Africa* and included a three week field trip to Cape Town, Namaqualand, and Kwa-Zulu Natal. PSU students were joined in the field by faculty and students from the University of Cape Town. An SROP student also joined this group as part of her SROP experience. Students lived with African families in Namaqualand and stayed in a Zulu cultural village in Kwa-Zulu Natal.

- Dr. Petra Tschakert and Dr. Chris Benner, both with the Geography Department, are currently leading a two-semester AESEDA-CAUSE course entitled "Globalization and Sustainable Development in Africa". The course enrolls 14 advanced undergraduate students from various EMS departments and throughout

the University (Geography, Meteorology, Environmental Systems Engineering, Health & Human Development, Microbiology), including five African-Americans. The Penn State students are in email contact with 14 Ghanaian students from the Regional Institute of Population Studies at the University of Ghana who will also participate in a three-week practical research experience in Ghana from December 22, 2006 to January 14, 2007.

3. Service Learning:

- Geog 298H: *Experiences in International Service-Learning HOINA, India*: *Making a Difference in a Globalizing World*. This year-long course included a spring semester seminar on globalization, preparing students to work in two orphanages in Southern India during the summer, and then a fall capstone course focused on the integration of their experiences; this is a Schreyer Honors College course where Geography graduates lead both the seminar and the practical research experience in India (Deryck Holdsworth, faculty-of-record);

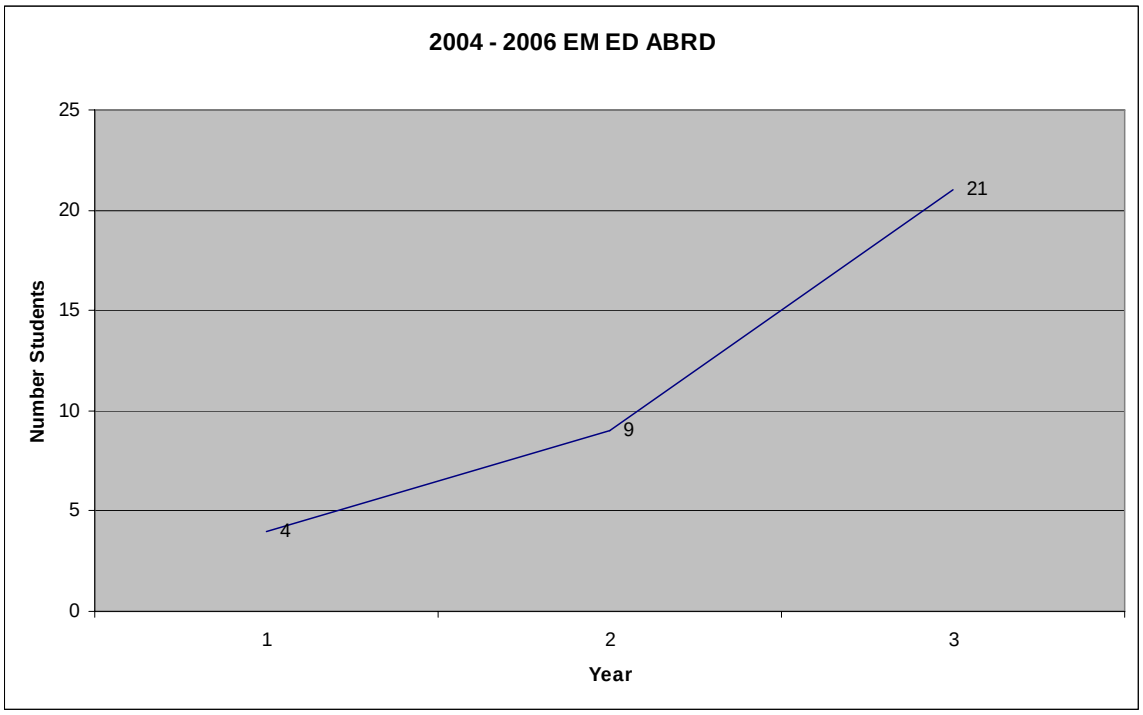
- Dr. Lakshman Yapa's "Rethinking Urban Poverty: Philadelphia Field Project" is a one-year service learning course incorporating issues of race, class, and poverty. This includes one semester of critical reading on urban poverty in the U.S., a five week community-based living and research experience in West Philadelphia, and a third semester of reflection, writing, and sharing material with the community. This project won the University Outreach Award in 2000, the National Multicultural Society Award in 2002, and The President's Award for Excellence in Academic Integration of Teaching, Research and Service. The project has been running continuously since in 1998.

- Since 2004, the College of Earth and Mineral Sciences Undergraduate Student Council has participated in THON raising in excess of 20,000. While this is not a course, the experience fosters leadership skills and camaraderie not only in those students who participate but for all students in the College. Last spring, our THON child lost his battle with cancer. An entire bus of our students traveled two hours to attend the memorial.

4. International collaborative teaching projects and programs (examples)

- Dr. Lakshman Yapa is in the process of establishing a service learning course in Sri Lanka at a local university with curriculum based on the Philadelphia Field Project model.

- Now in its second year of operation, the International Internship in Materials has seven students who have completed research internships in the U.K., France, Germany, and Italy. Currently, we have one visitor from Germany and two of our students are in Europe -- one in the U.K. and one in Switzerland. Next spring, four more students will have this unique educational experience. Scholarship funding for this program is provided by the Bayer Foundation.



This graph illustrates the increase in study abroad participants in EMS since 2004

Challenge 6. Diversifying University Leadership and Management

The College has made significant strides in this area, however, we have not yet arrived and the road is uneven. The Executive Council of the College, our leadership body, now includes two African-Americans, one of whom is a Department Head, and the other an Institute Director, and three women--an Institute Director, the Chair of the EMS Faculty Advisory Committee, and the Executive Assistant to the Dean for Diversity Enhancement. In addition:

- The new Associate Head of Geography is a woman.

- The Executive Assistant to the Dean for Diversity Enhancement Programs is a member of the search committee for the new Dean of the College.

- Drs. Tanya Furman and Michael Adewumi are CIC Fellows. Dr. Adewumi was also a University Administrative Fellow.

Challenge 7. Coordinating Organizational Change to Support Our Diversity Goals

- Diversity continues to be one of the three major College-wide strategic objectives and we endorse the commitment of the previous Dean that Diversity initiatives and programs will continue to be a required part of individual unit strategic plans for all departments and institutes within the College.

- The realignment of our development priorities to match the diversity plan continues to bring success with increased levels of support for diversity-related initiatives. This has resulted, for example, in scholarship support for the Geosciences – Jackson State initiative, support for the SEEMS program and SROP activities. We also received a recent $1.3 million endowment pledge for the Alliance for Earth Science, Engineering and Development in Africa. All of these activities were initiated and developed by staff and faculty – rather than the Dean's office, indicating that diversity efforts are becoming an integral part of College activities.

- The College has instituted a system of rank-balance for major committees (including the five-year Faculty Performance Evaluation). This increases the number of women and members of under-represented groups involved in the decision-making process.

Appendix A

The College of Earth and Mineral Sciences

State of the College: 1995 - 2005

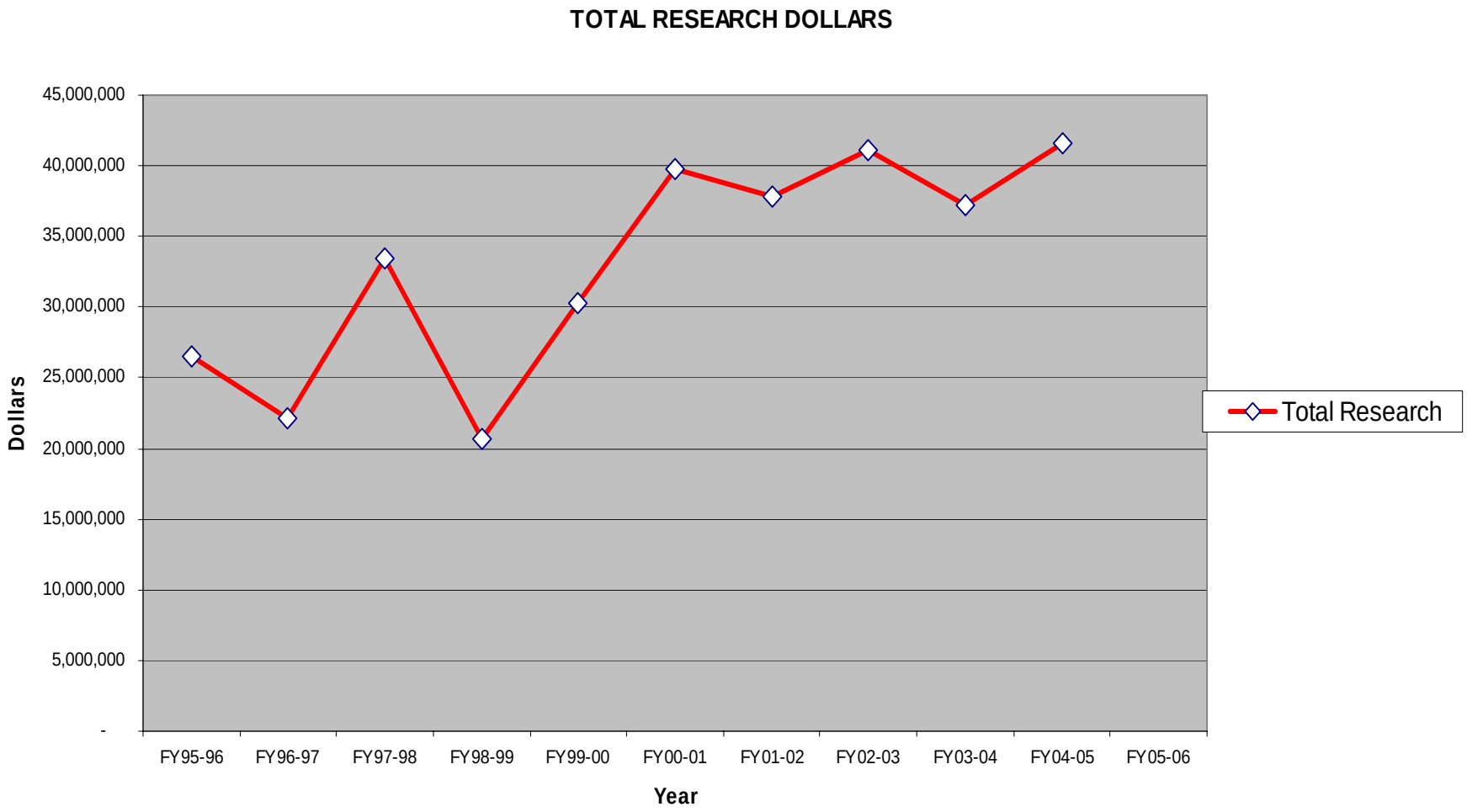
Areas of Focus

- Resources that Drive Excellence
- Undergraduate Programs
- Diversity
- Graduate Education and Research

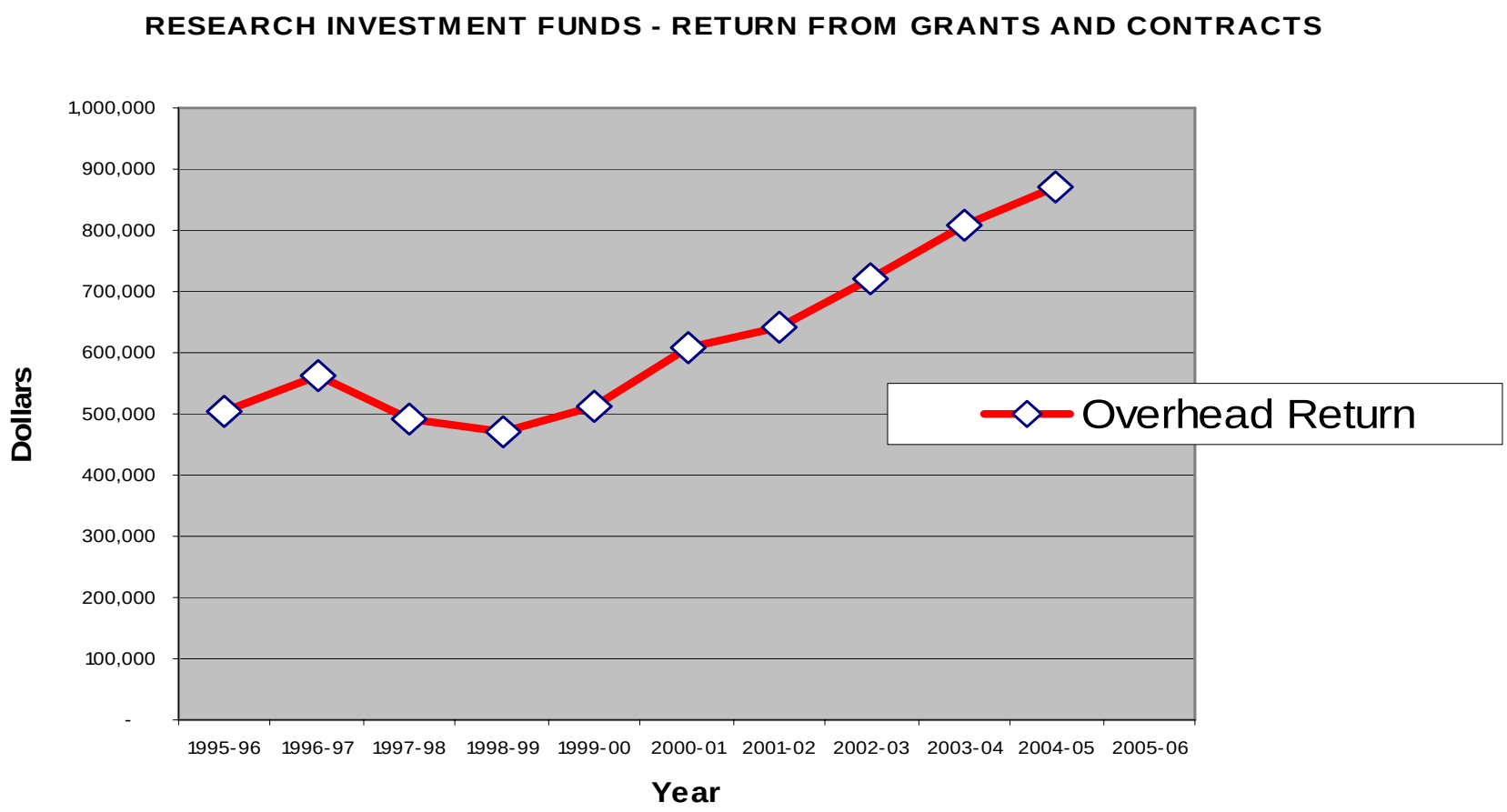
Part 1: Funds Supporting EMS

- Research Dollars
- General Funds
- Development

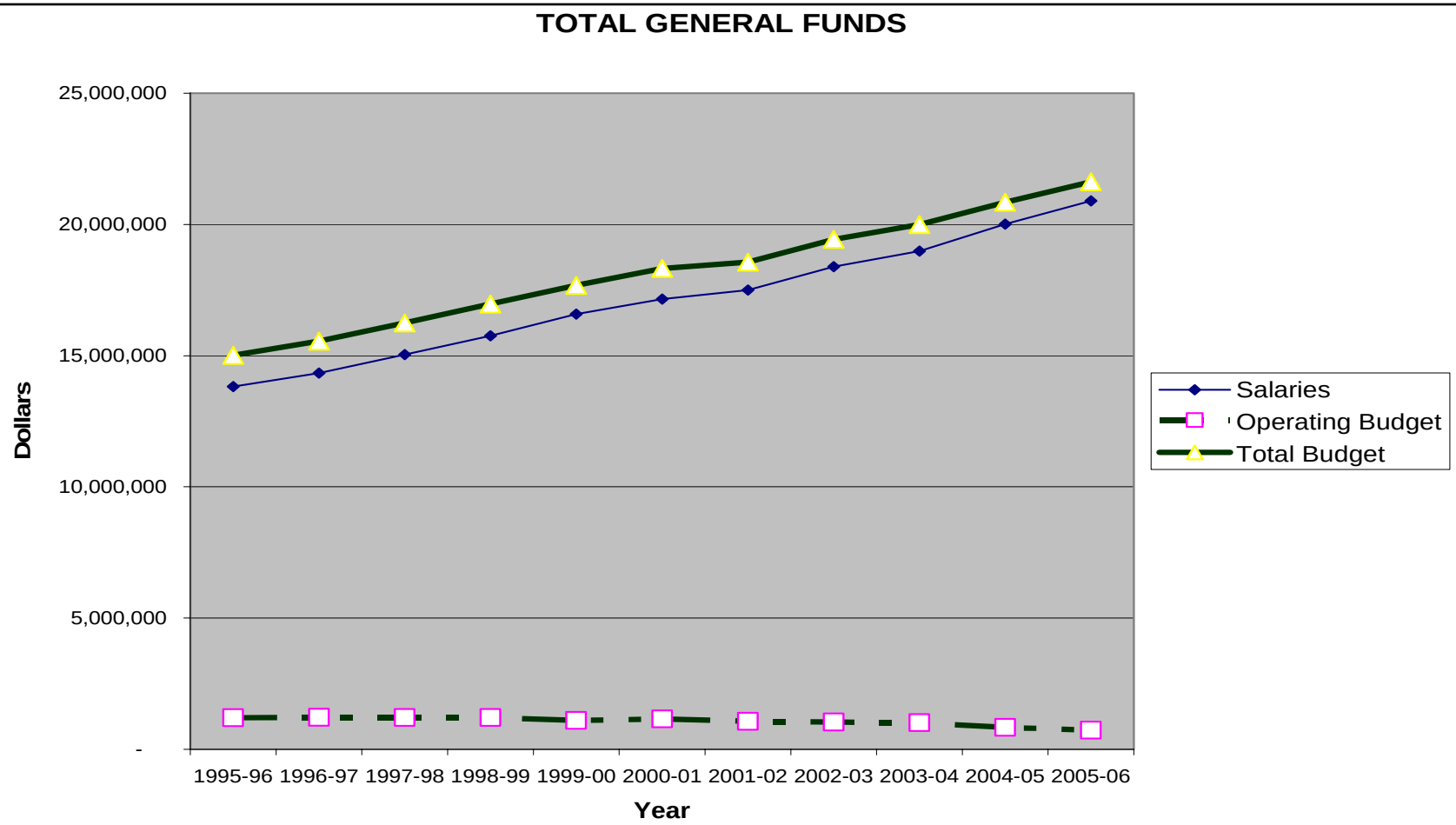
Total Research Dollars



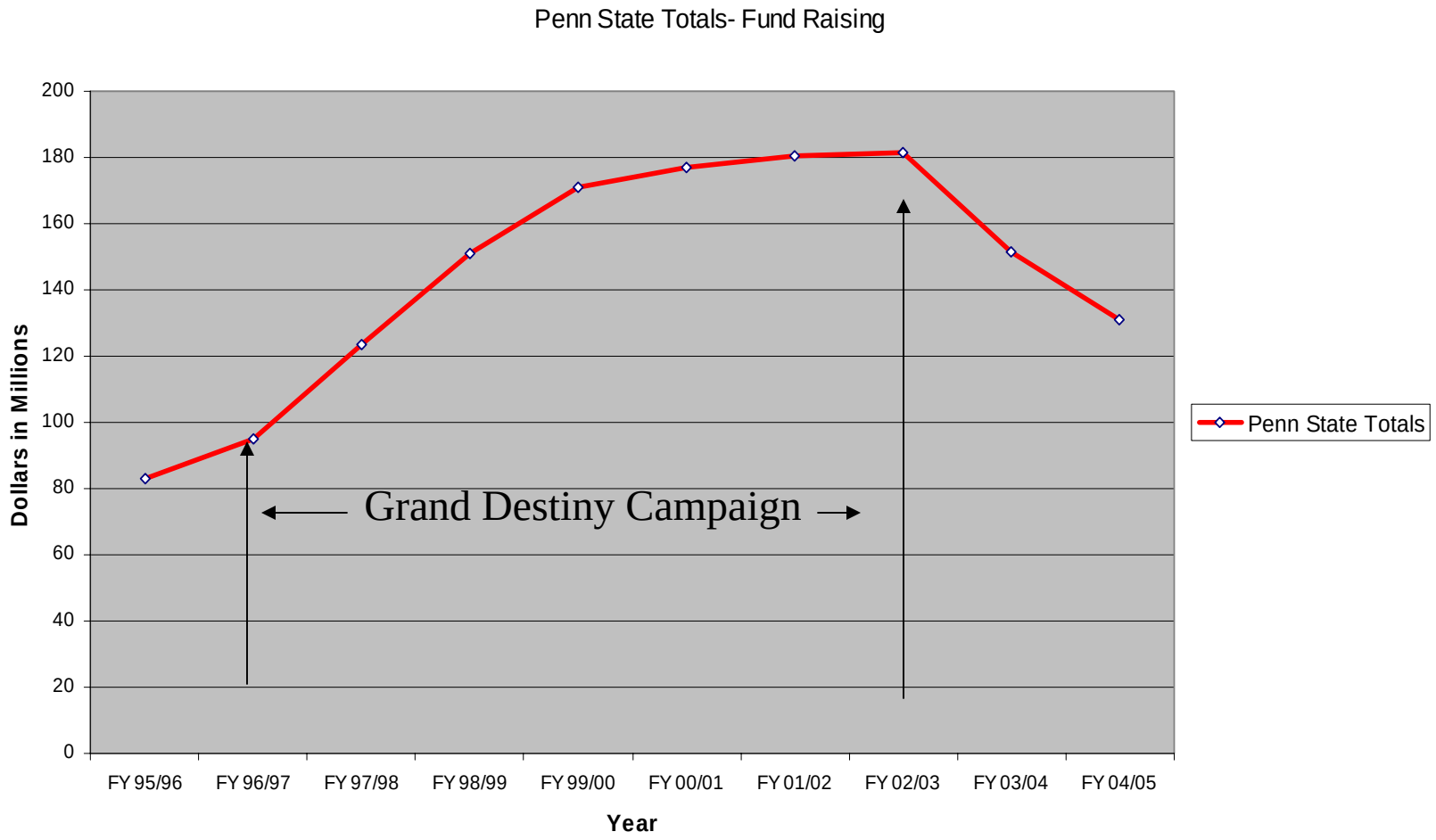
Total Indirect Returned to EMS



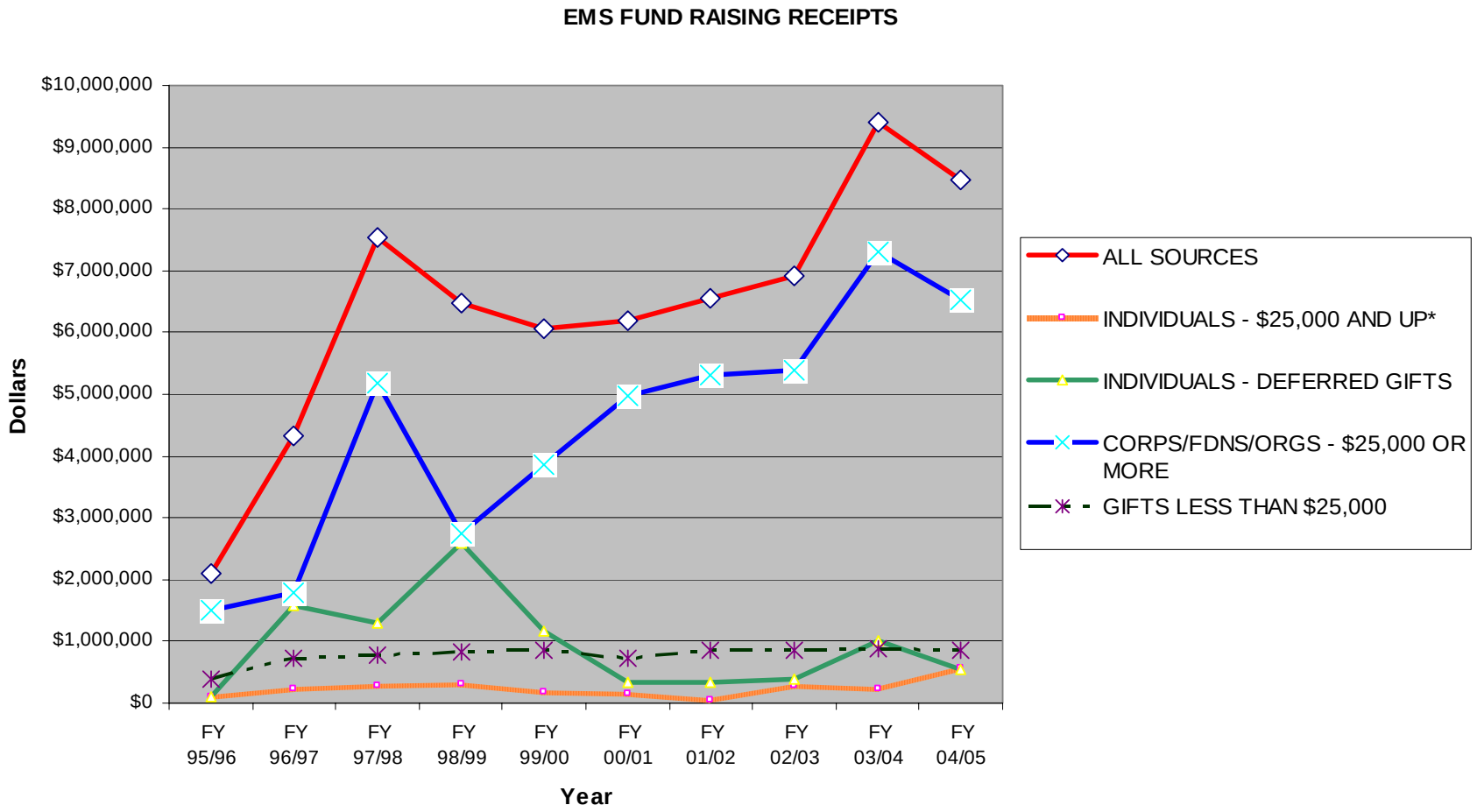
Total Funds from Central Administration



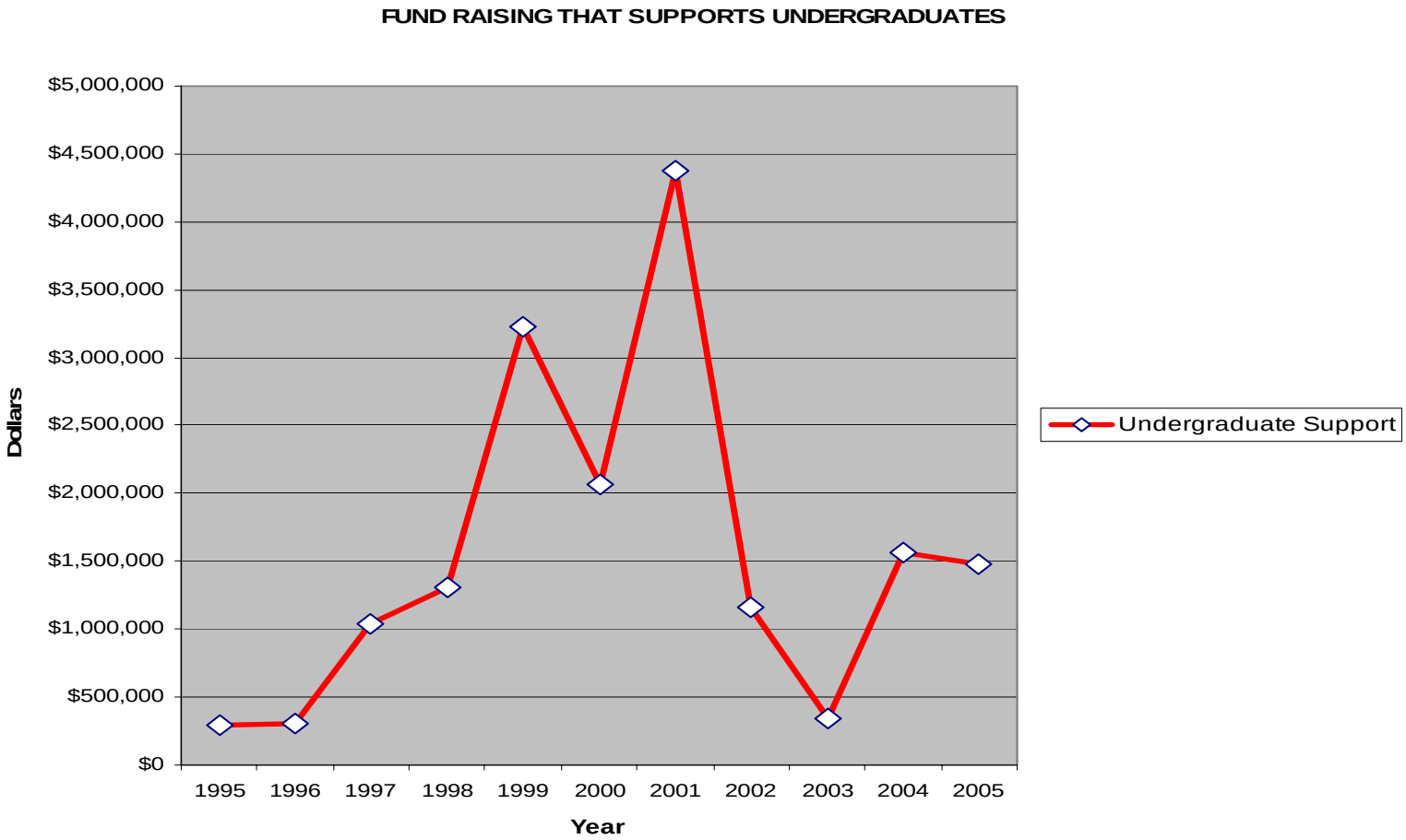
Penn State Fund-Raising



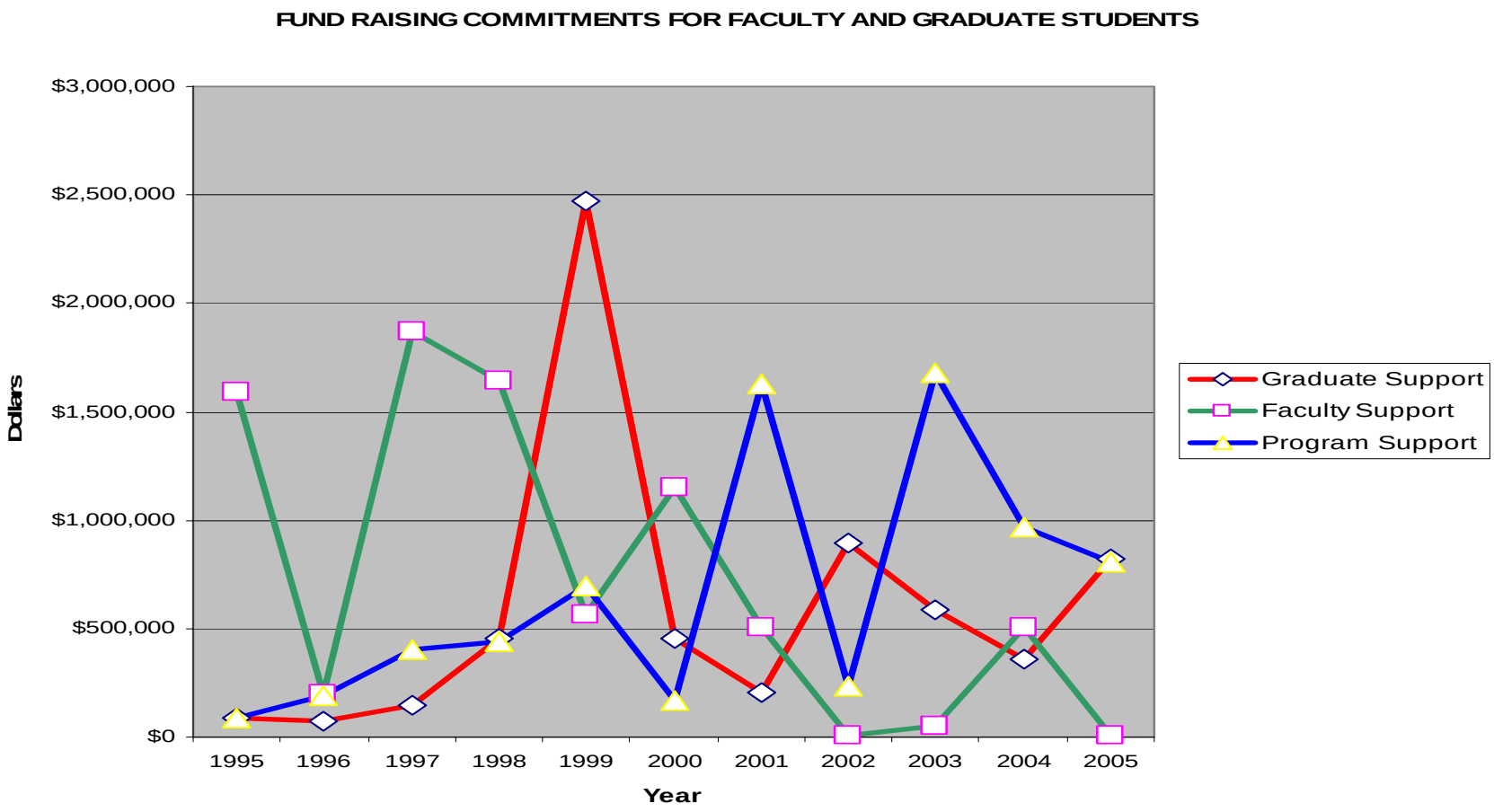
EMS Fund-Raising



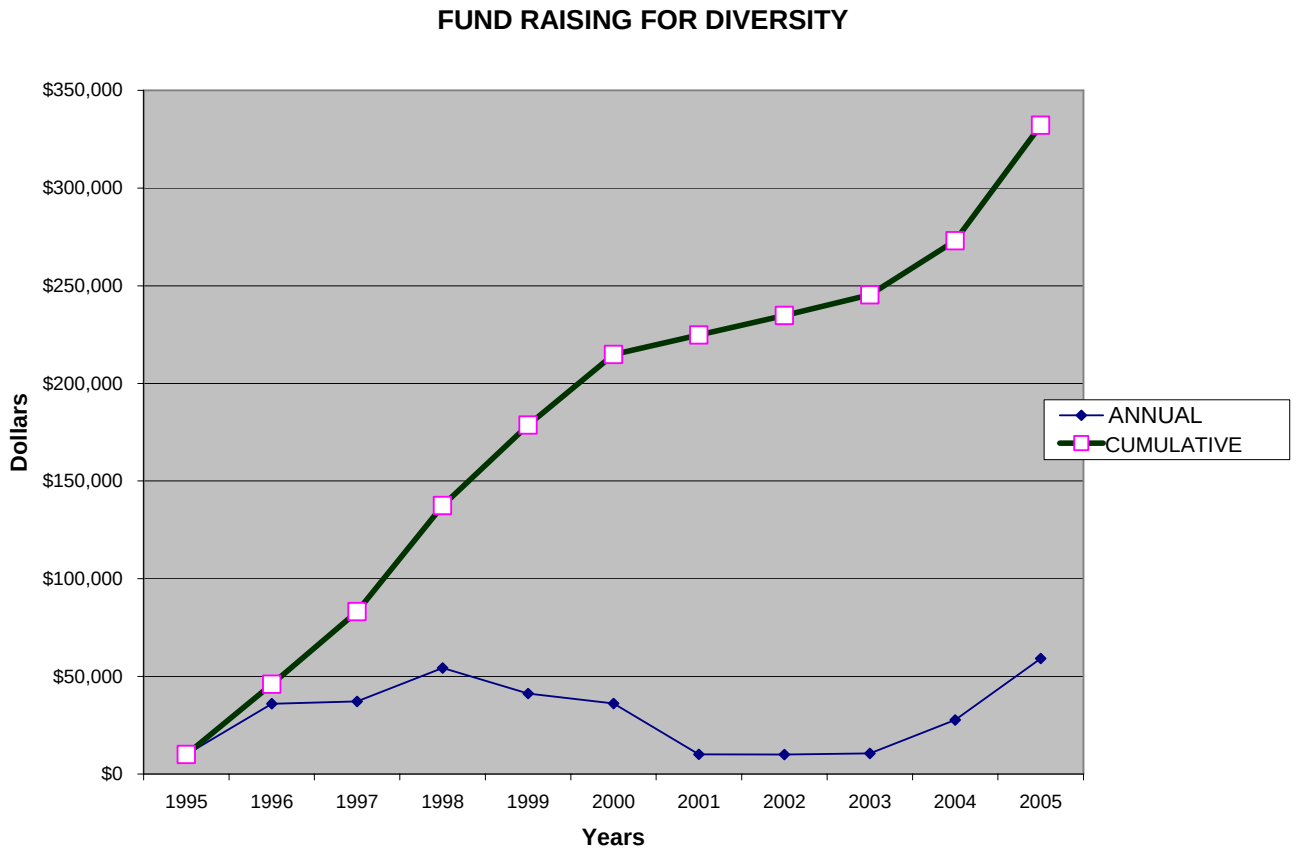
Supporting Undergraduates



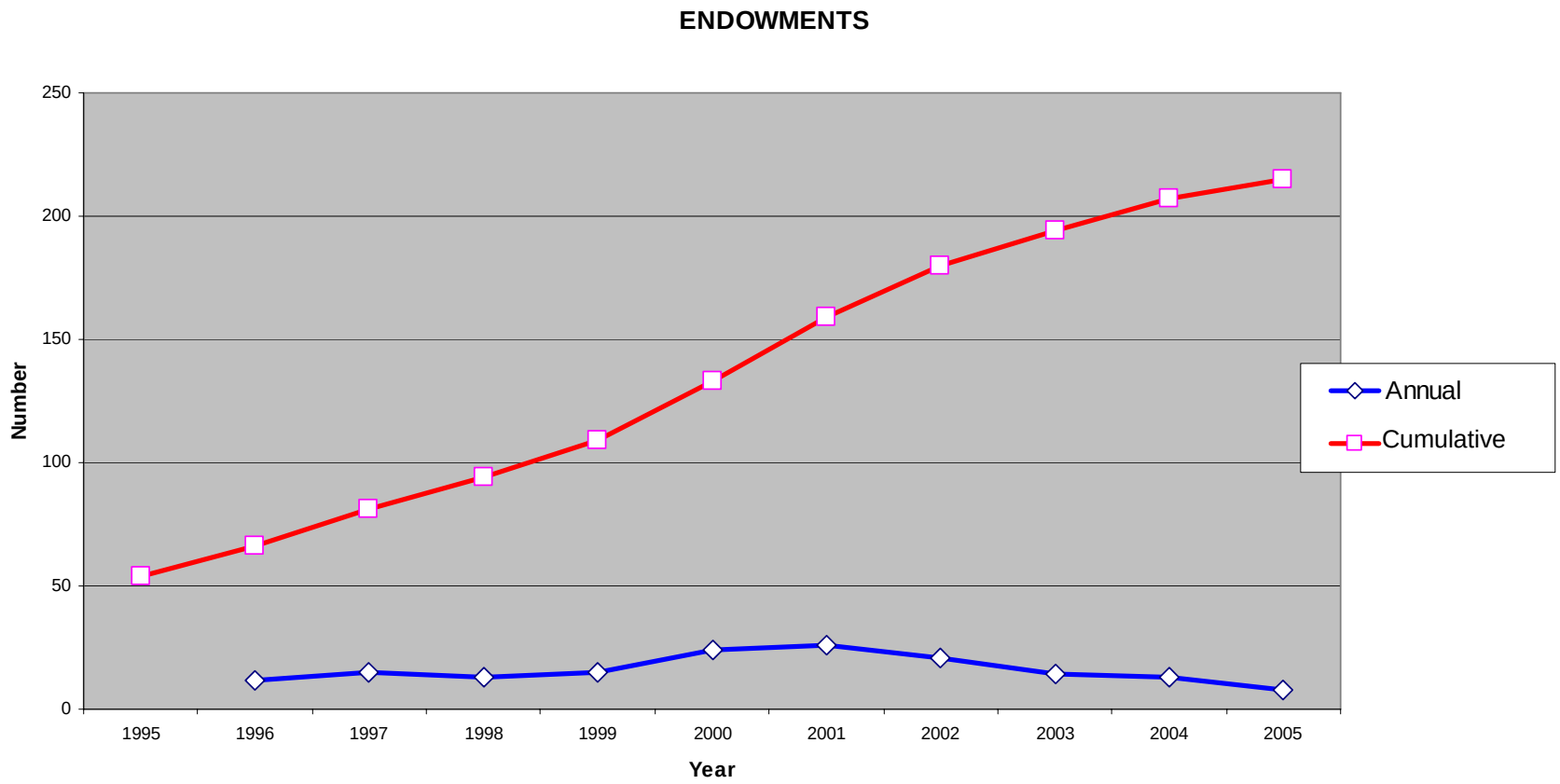
Commitments for Faculty, Programs, and Graduate Students



EMS Diversity-Related Fund-Raising



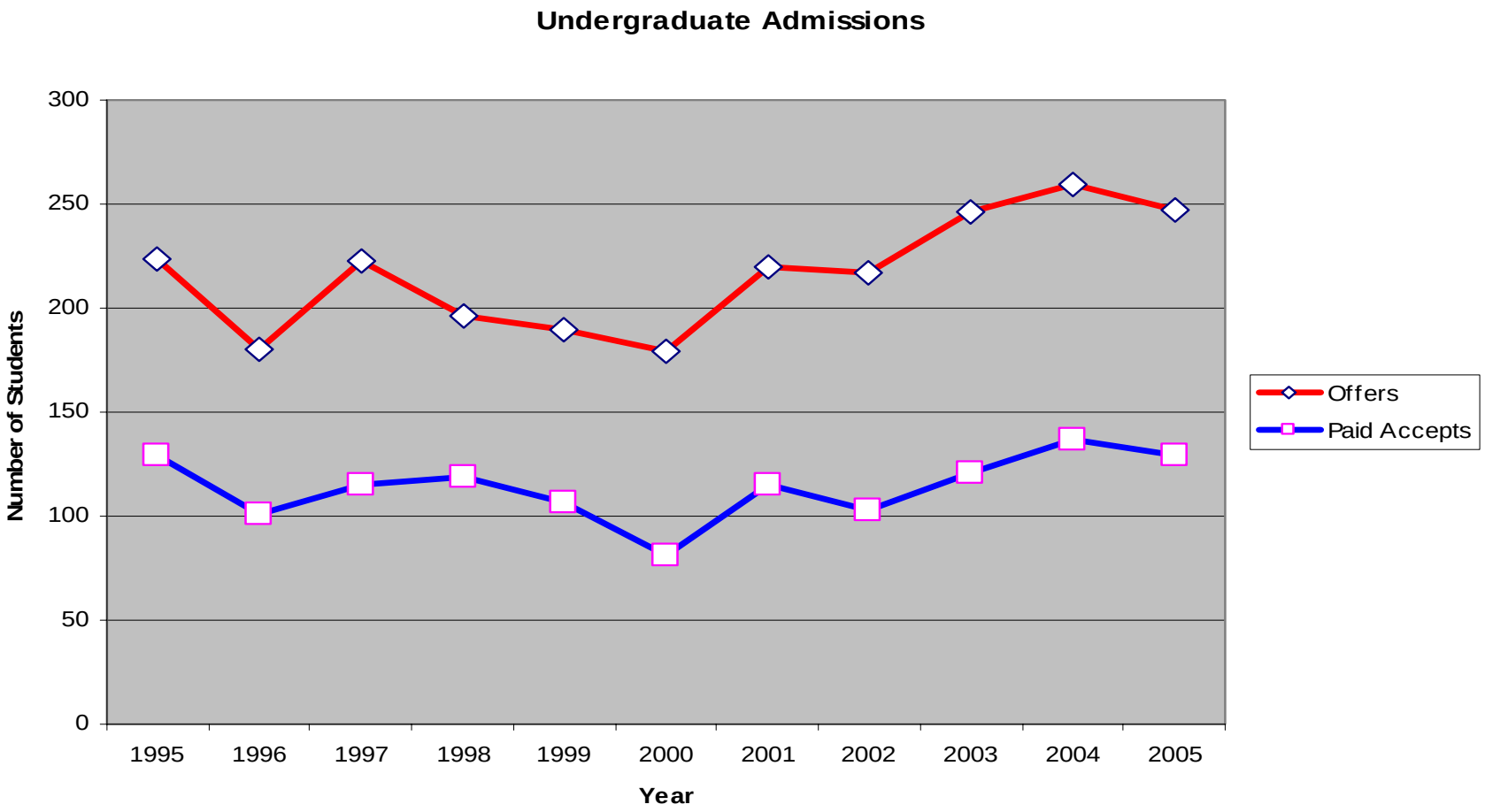
Growth in EMS Endowments



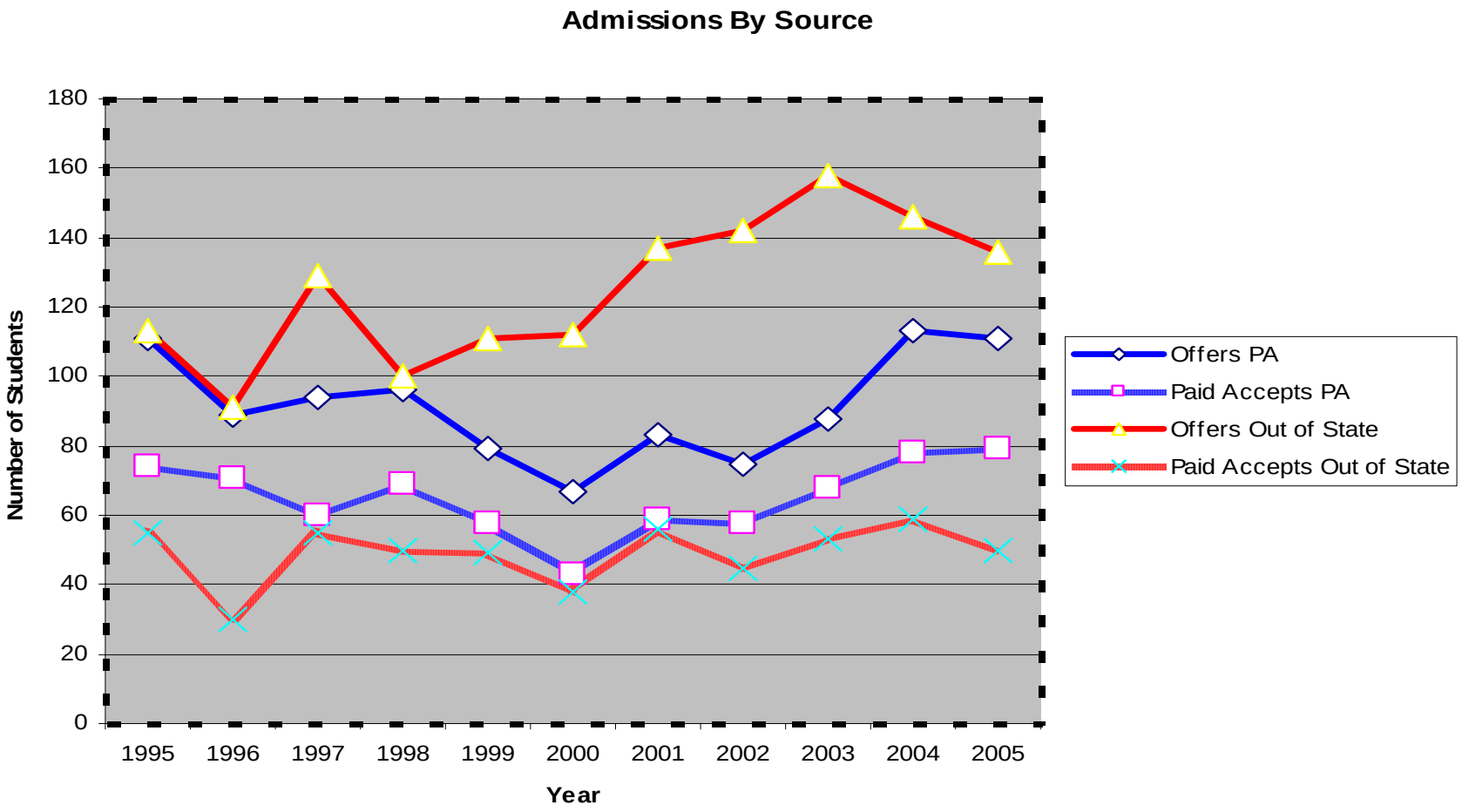
Part 2: Undergraduate Programs

- Admissions
- Student Quality Measures for Admissions
- EMS Majors
- Credit Hour Generation
- Student Evaluations
- Distinctions and Honors

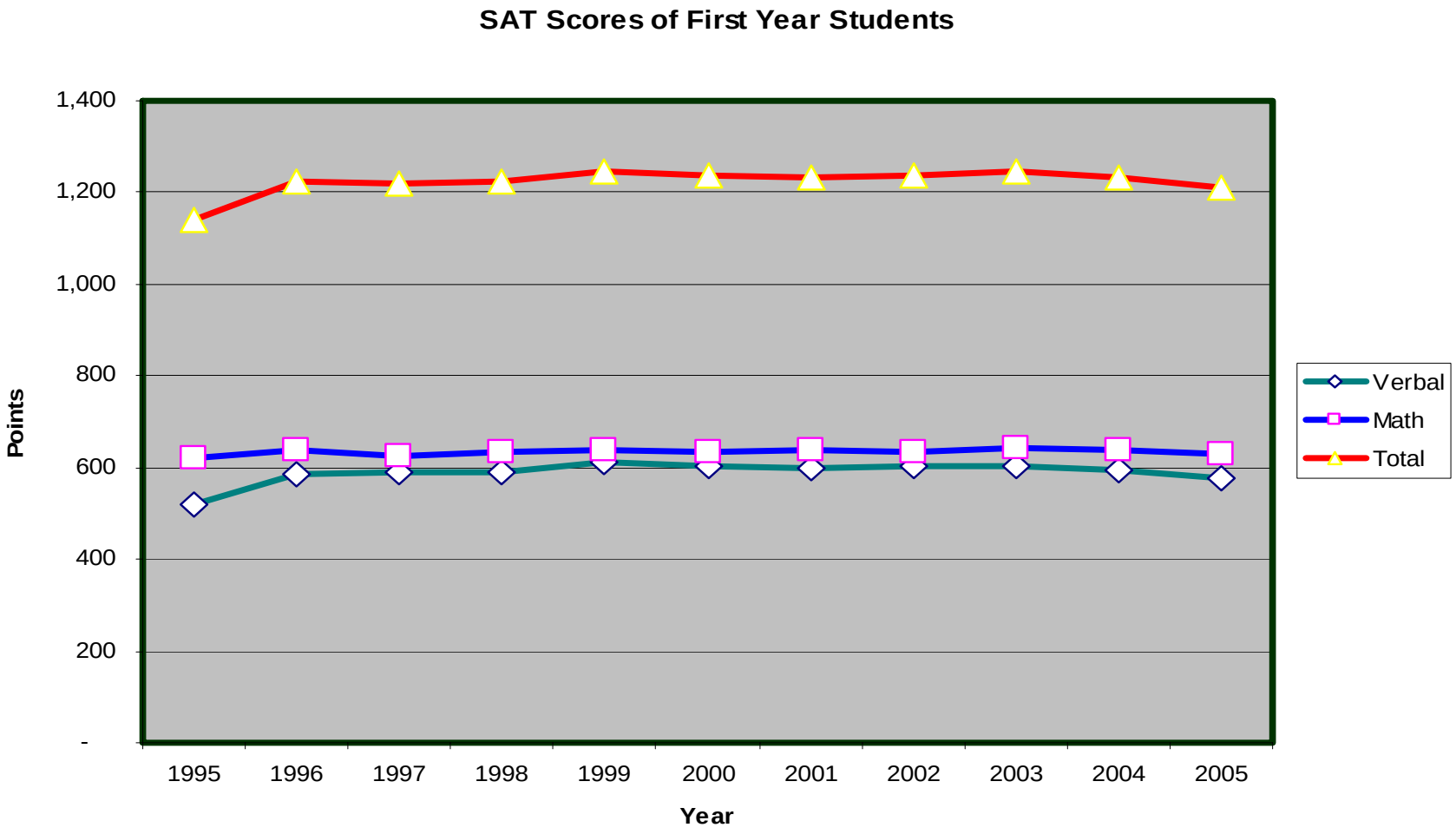
Undergraduate Admissions



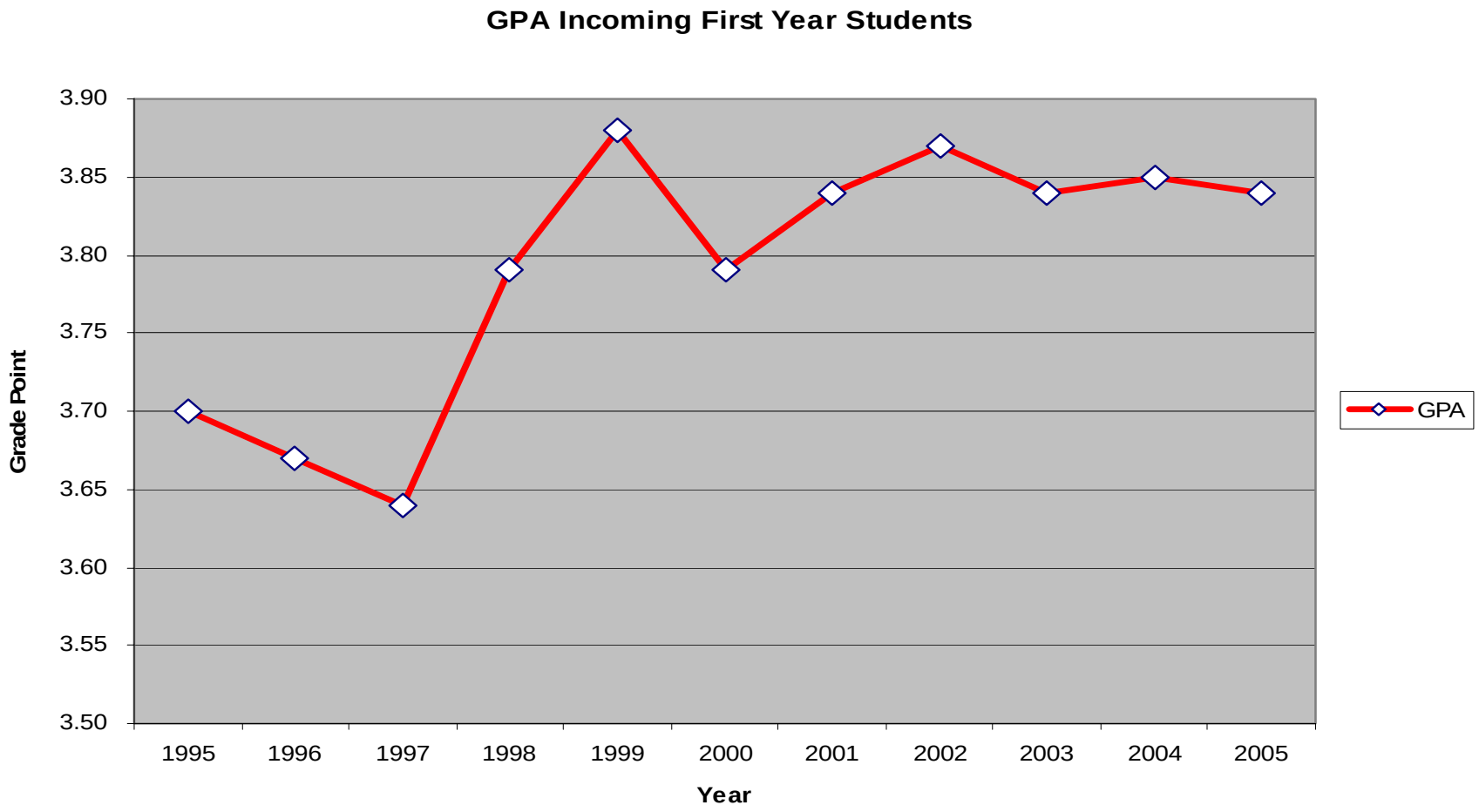
In State versus Out of State



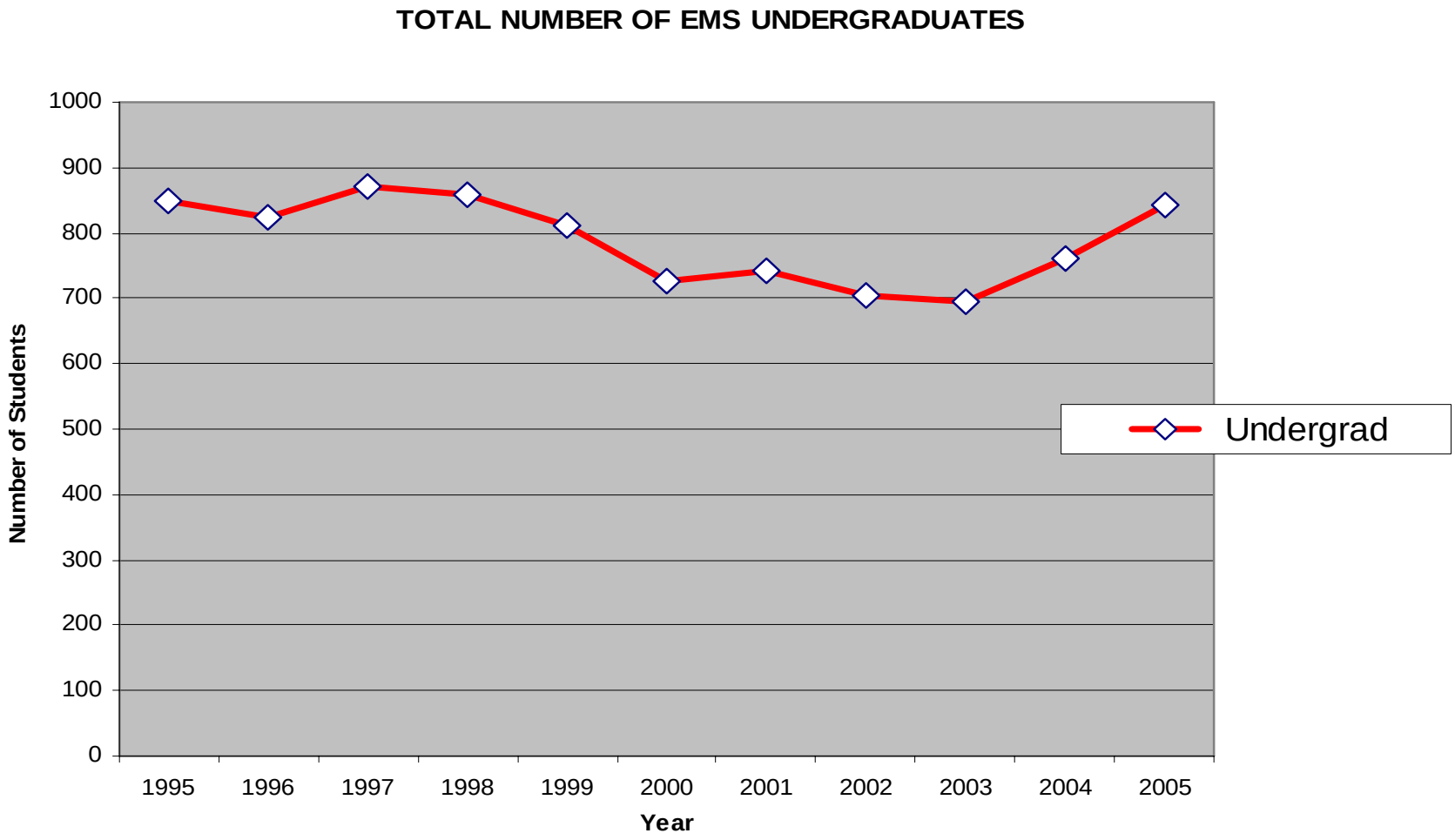
SAT Scores


SAT Scores of First Year Students
Points
1,400
1,200
1,000
800
600
400
200
-
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Year
Verbal
Math
Total

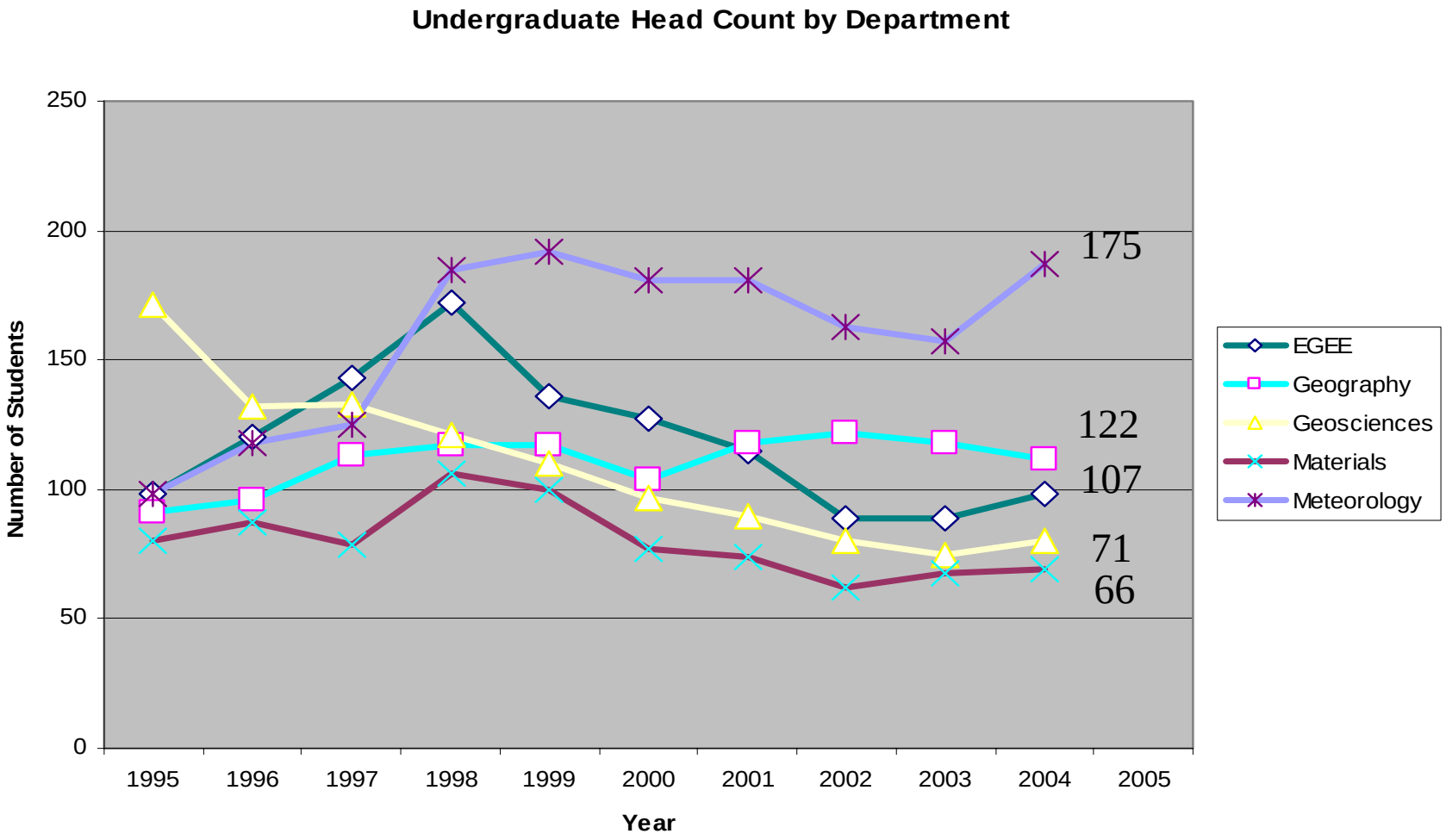
Incoming GPA



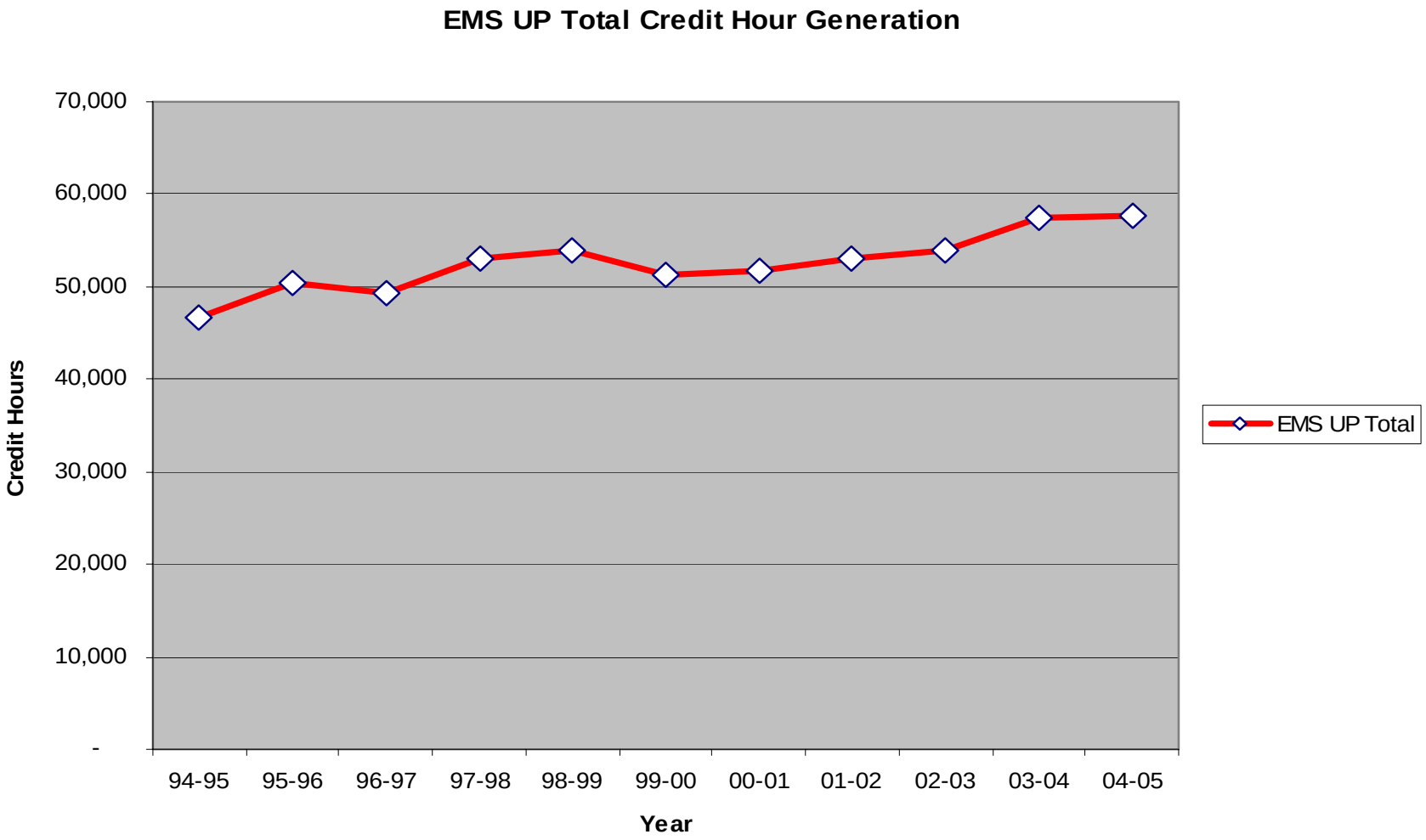
Total Number of EMS Undergraduates



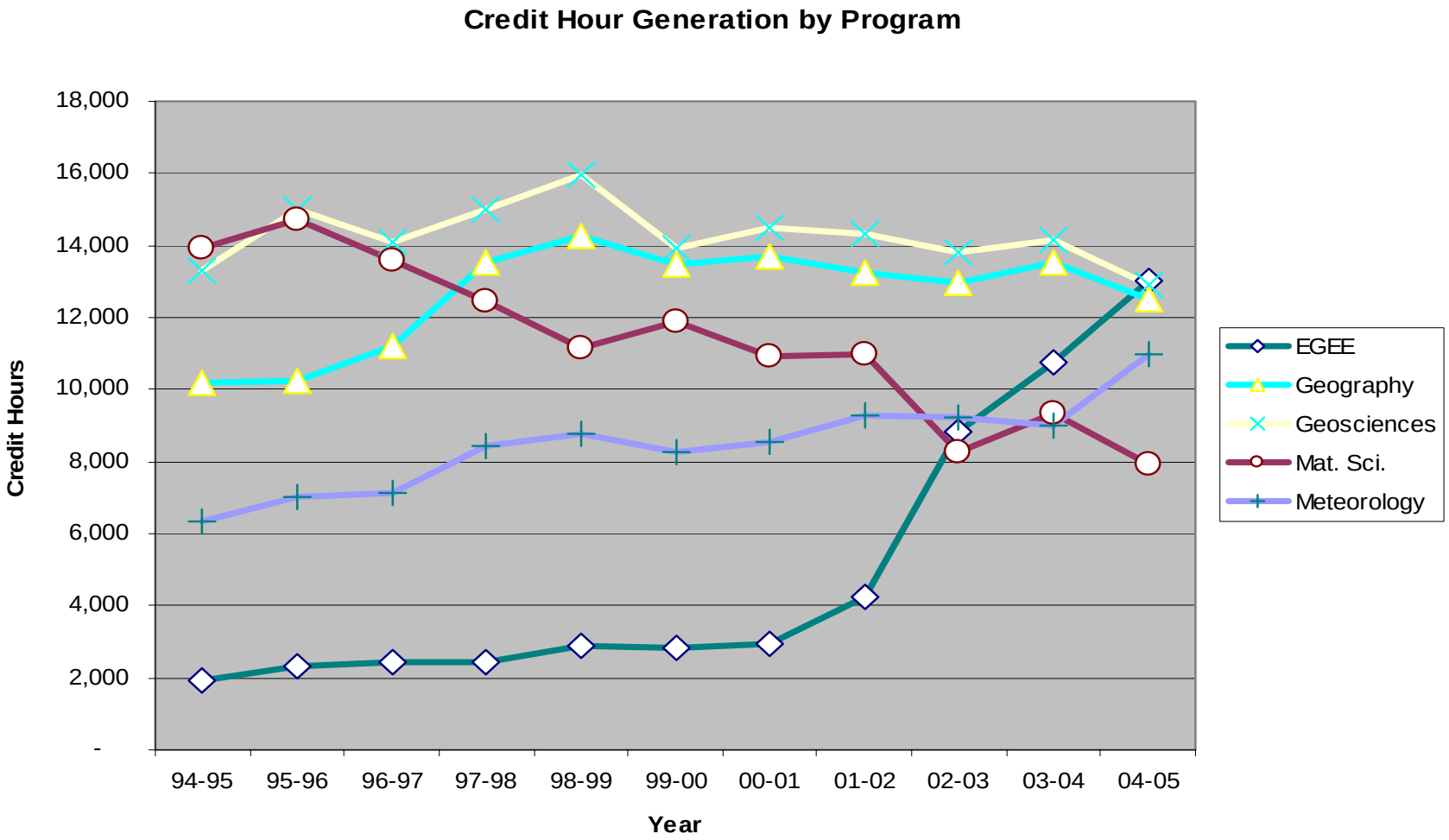
Undergraduate Numbers by Department



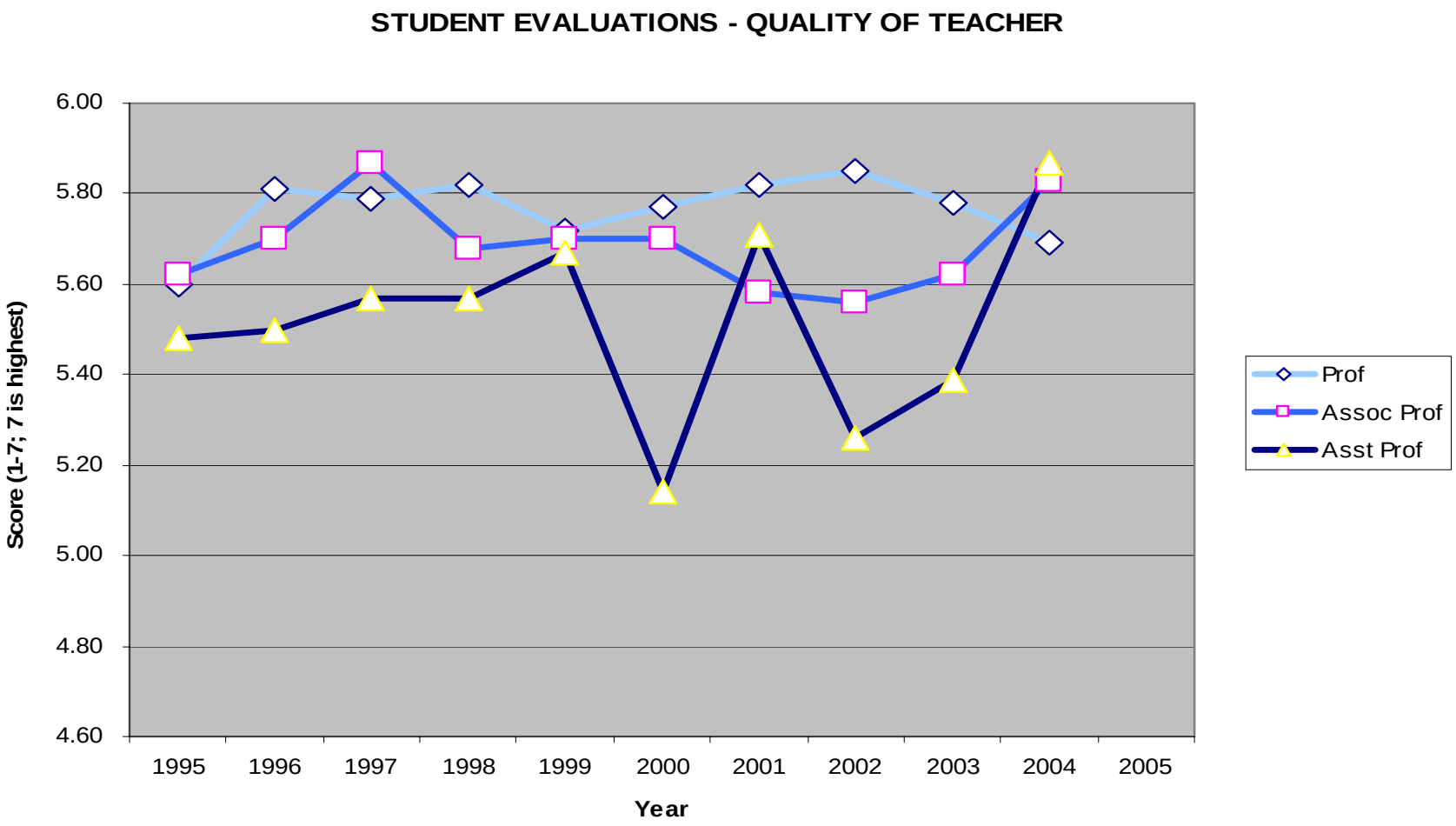
EMS Credit Hour Generation



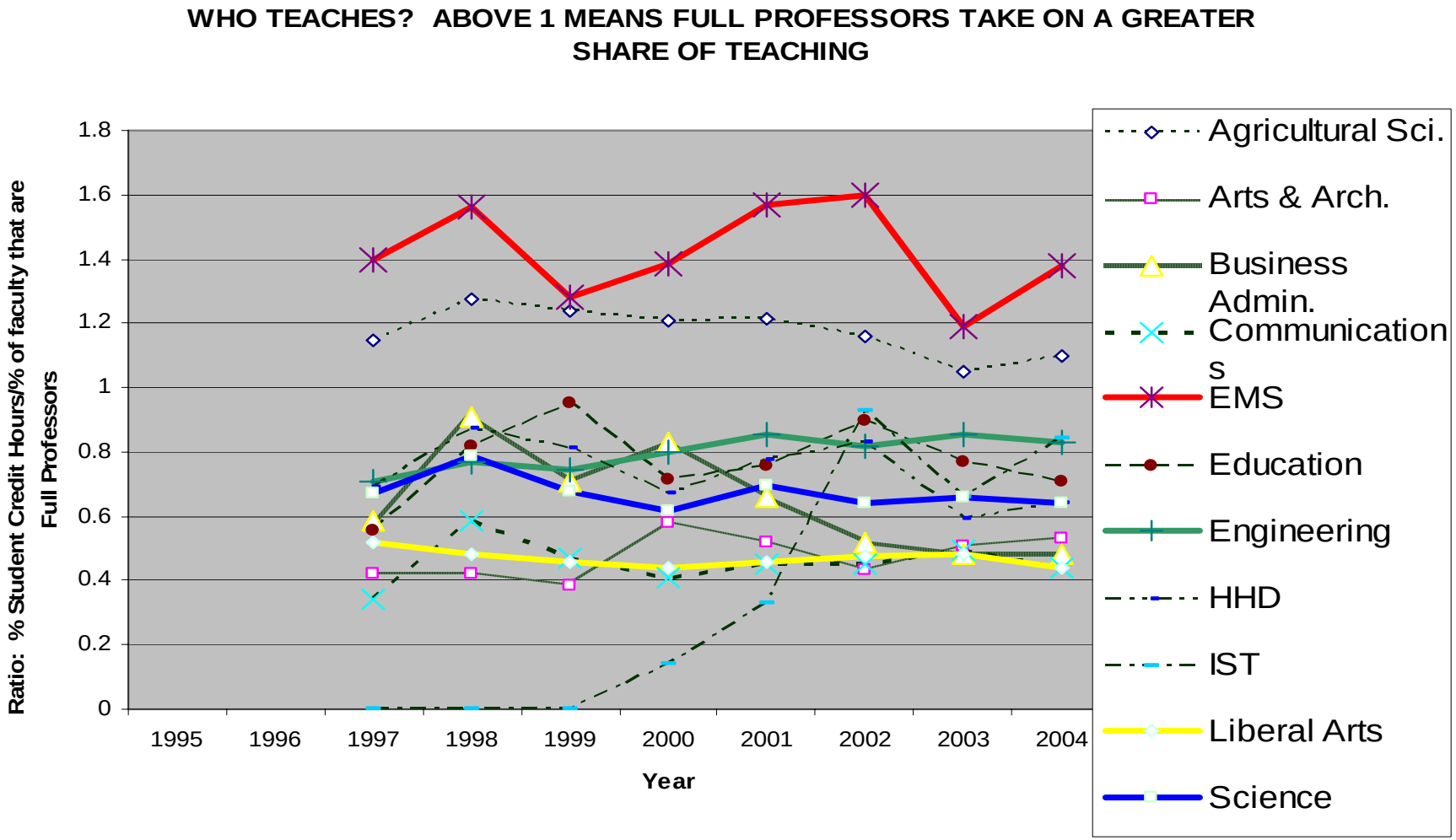
Credit Hour Generation by Department



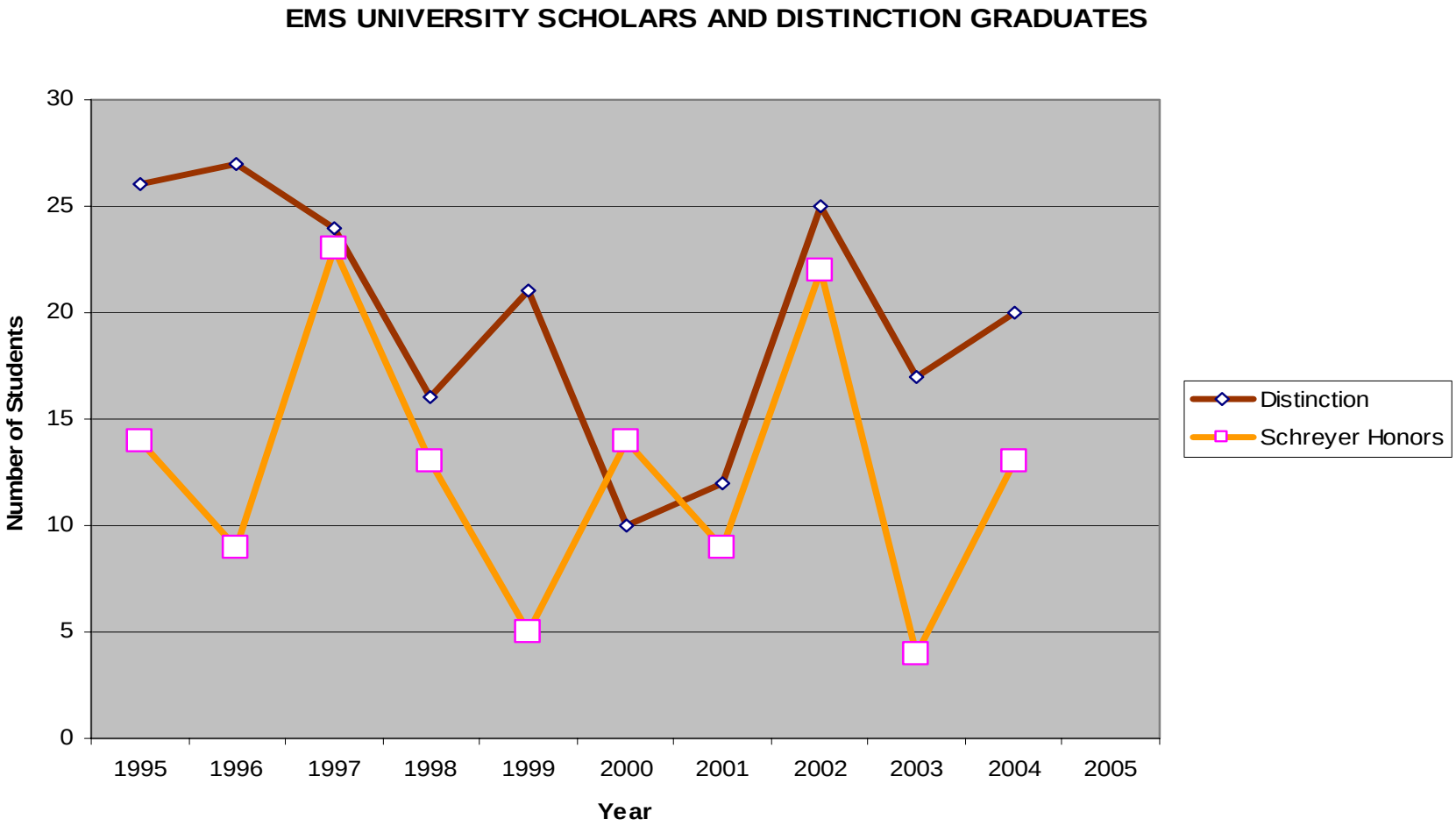
SRTE: Teacher Quality



Full Professors in the Classroom



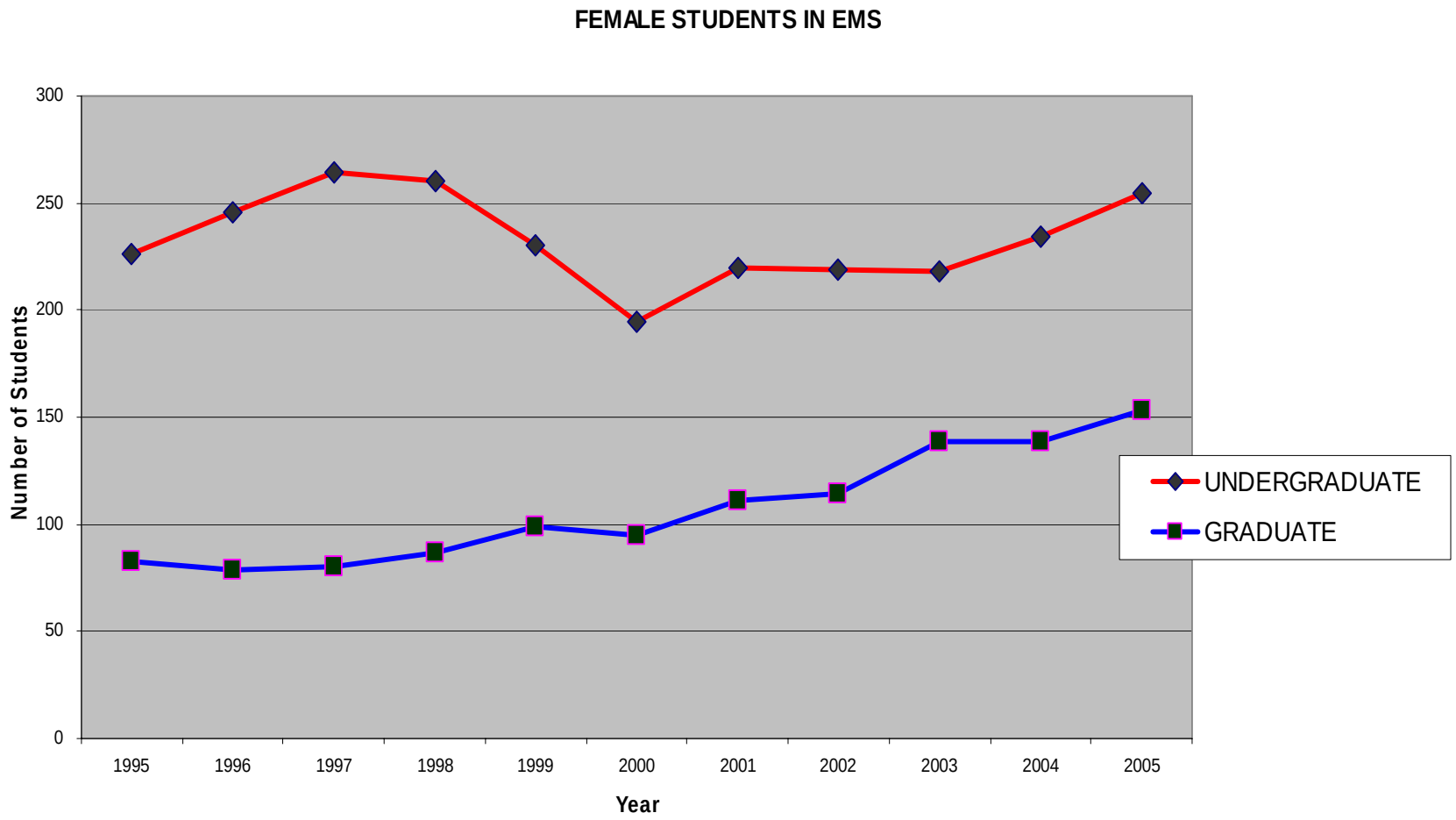
Distinguished Undergraduates



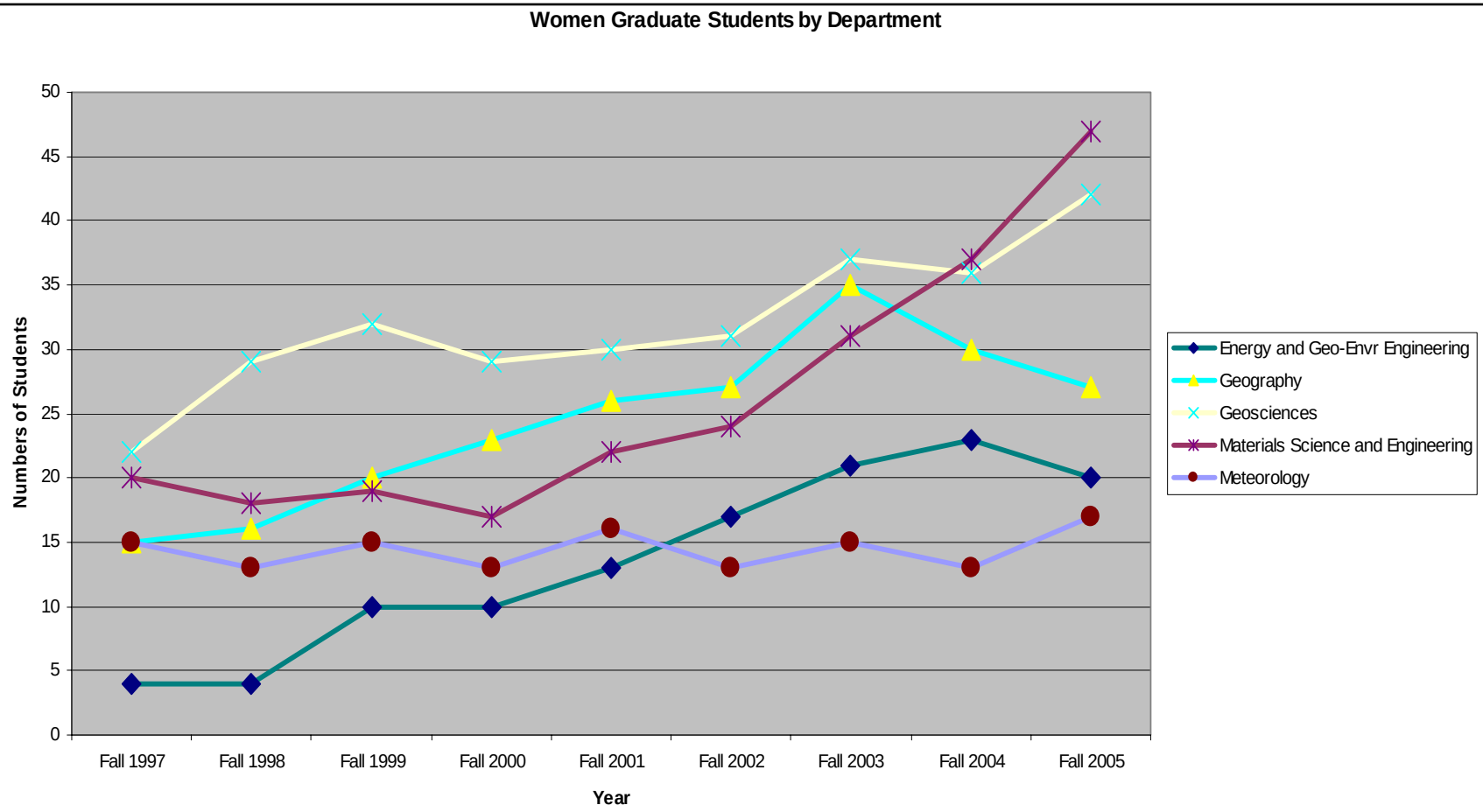
Part 3: Progress Towards Diversity

- Female Students
- Female Tenure-Track Faculty
- Under-represented Students
- Under-represented Faculty

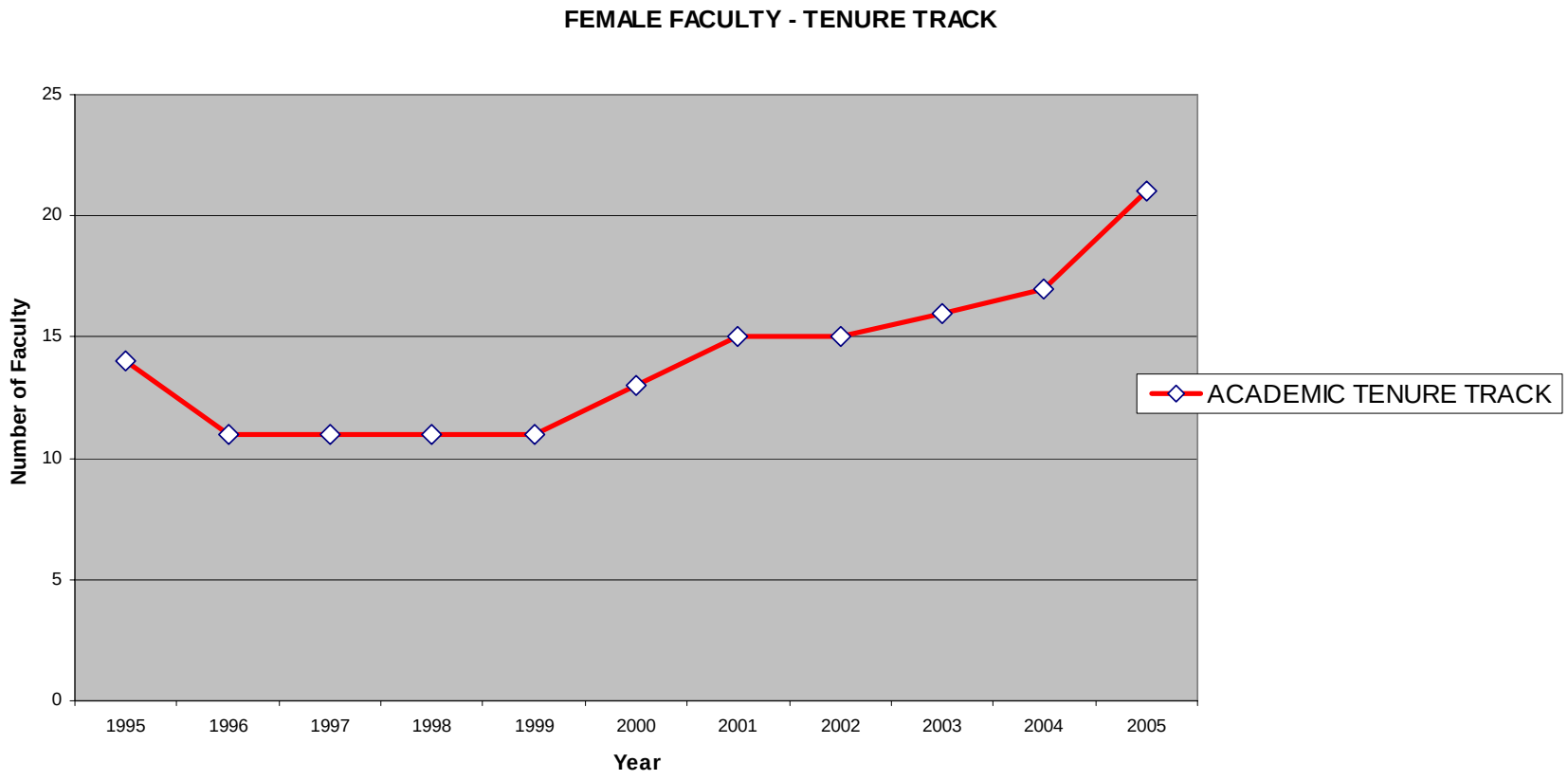
Female Students in EMS



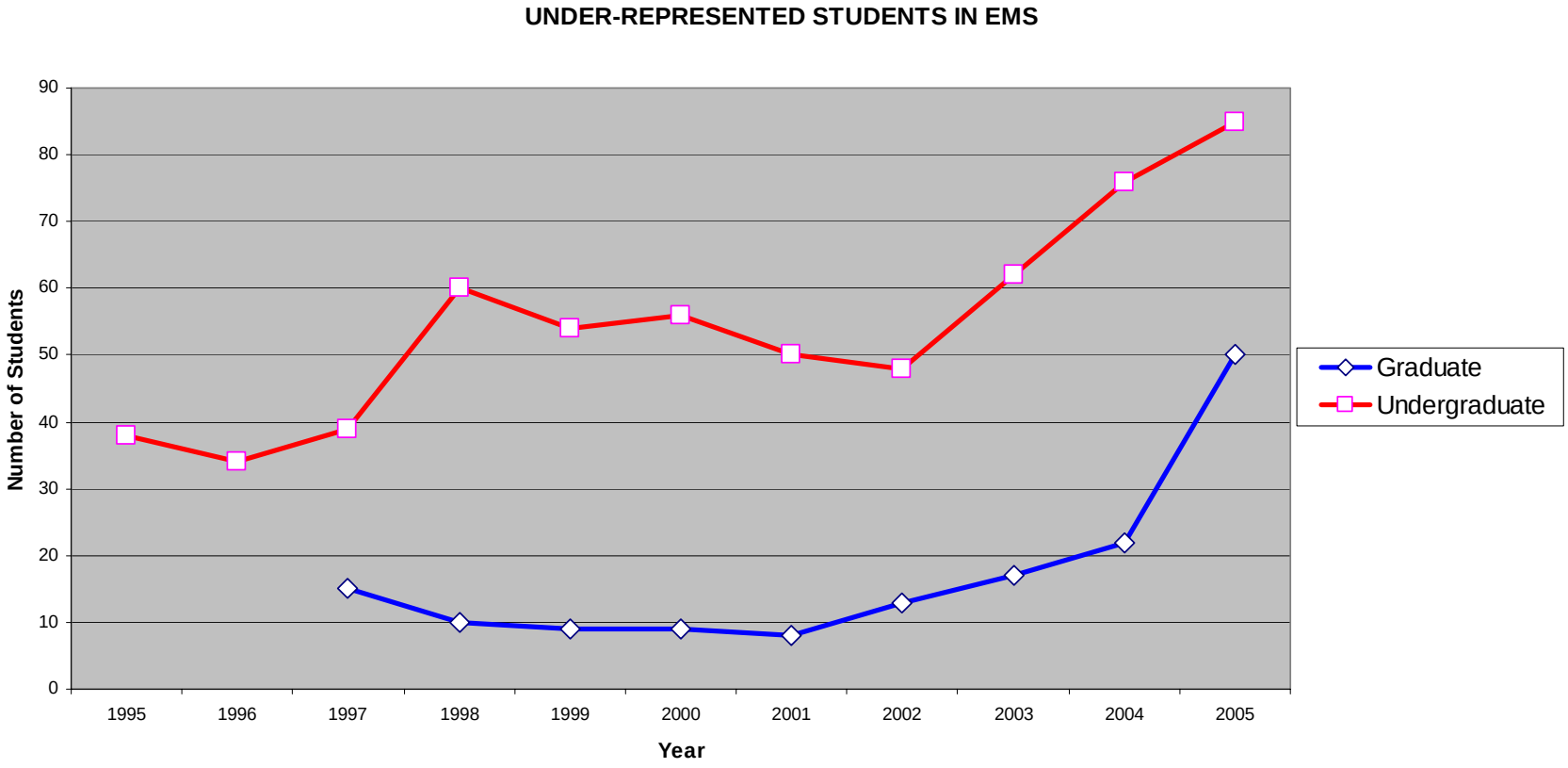
Women Graduate Students by Department



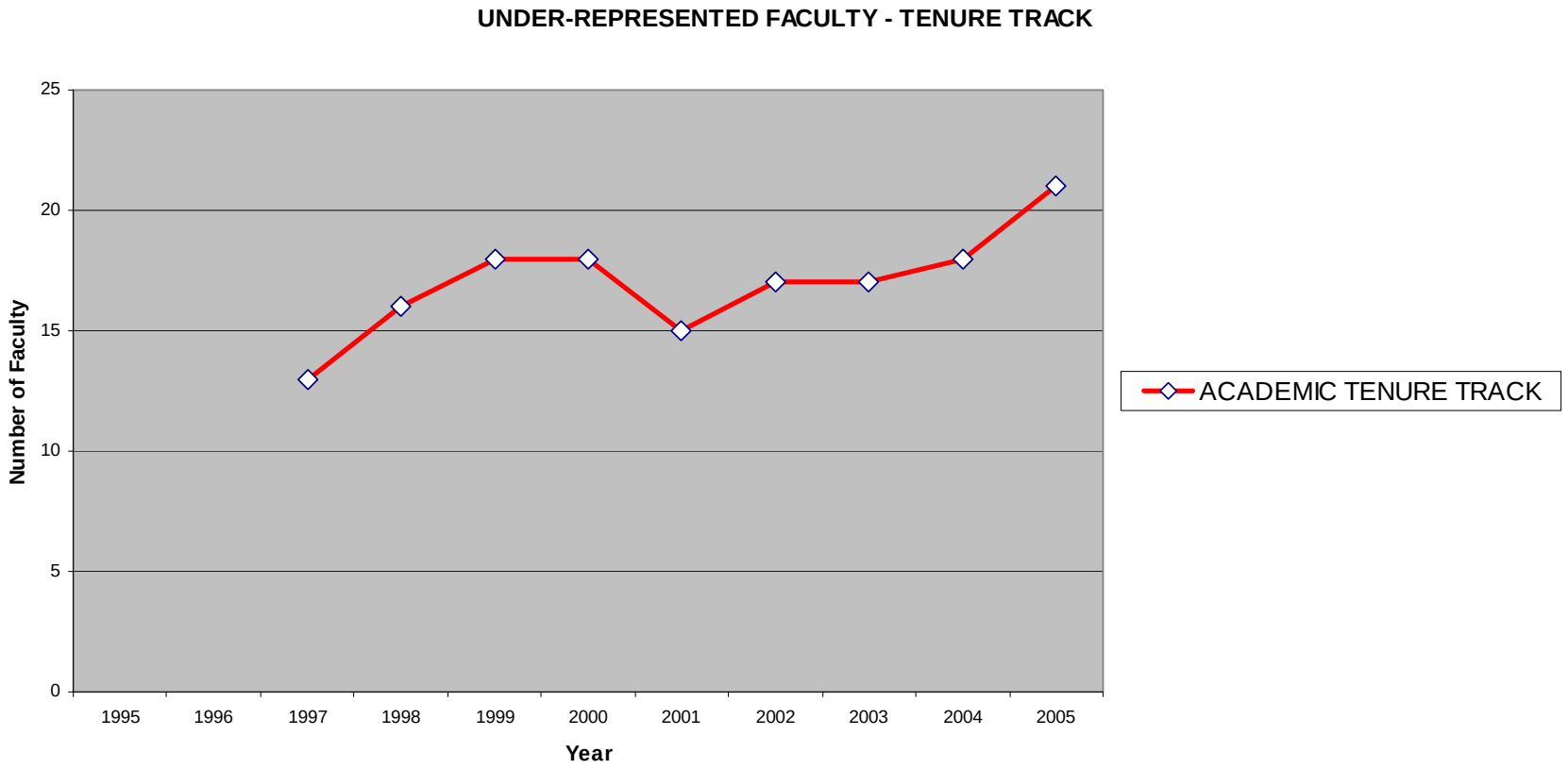
Tenure Track Female Faculty



Under-represented Students in EMS



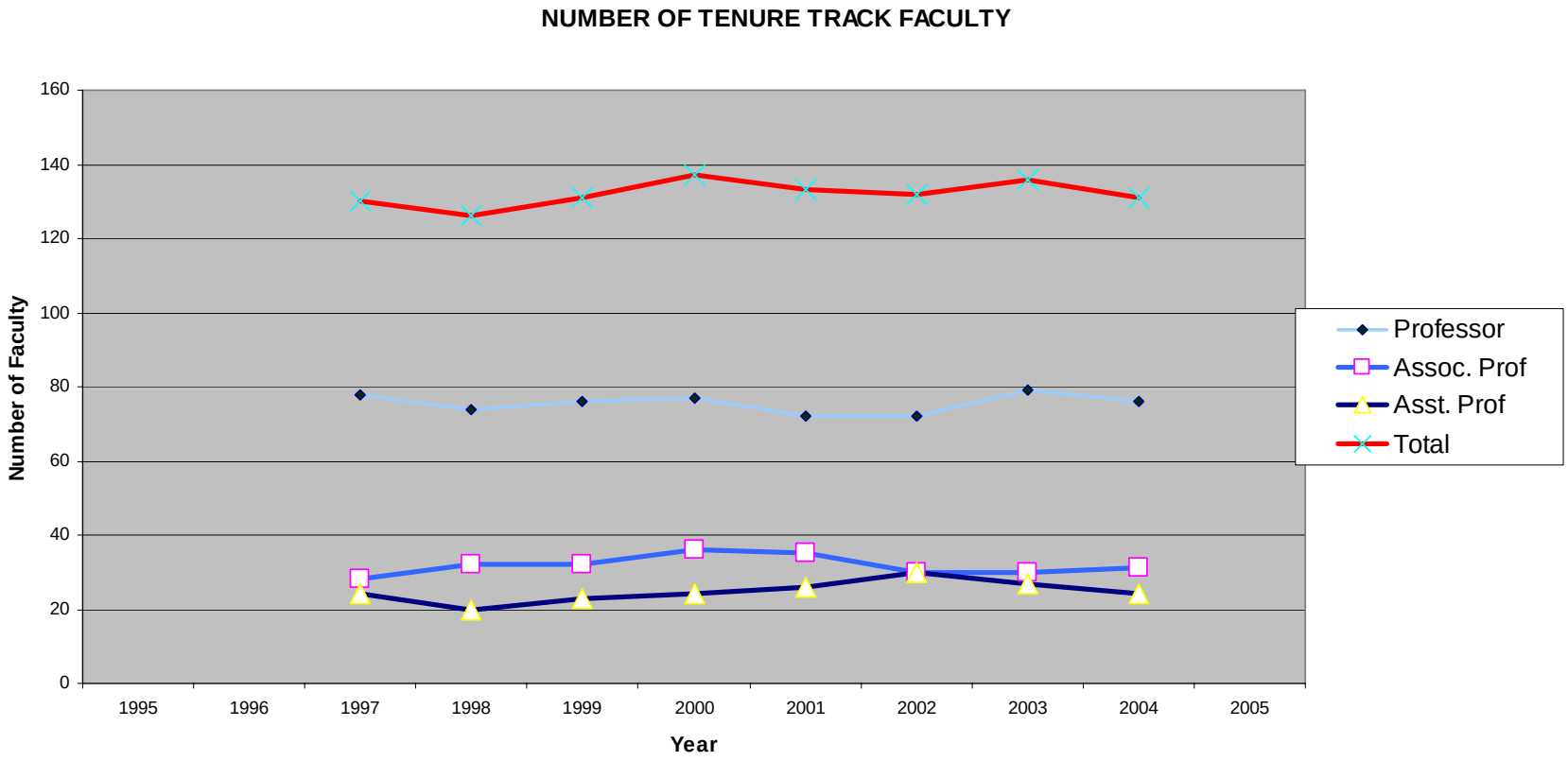
Under-represented Faculty in EMS



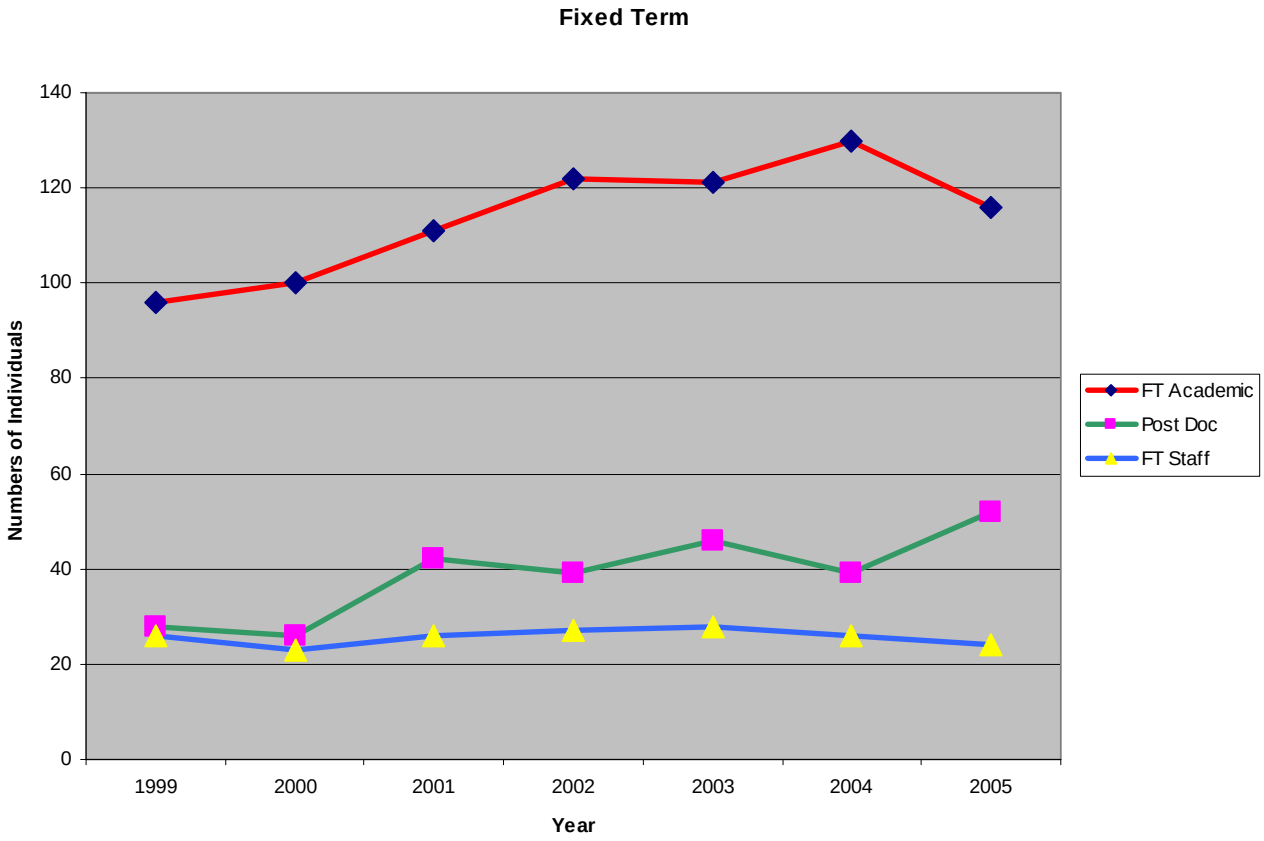
Part 4: Graduate Students and Research

- Number of Faculty
- Research dollars
- Yield on grants
- Graduate Student Enrollment
- Graduate Student Characteristics
- Time to Degree

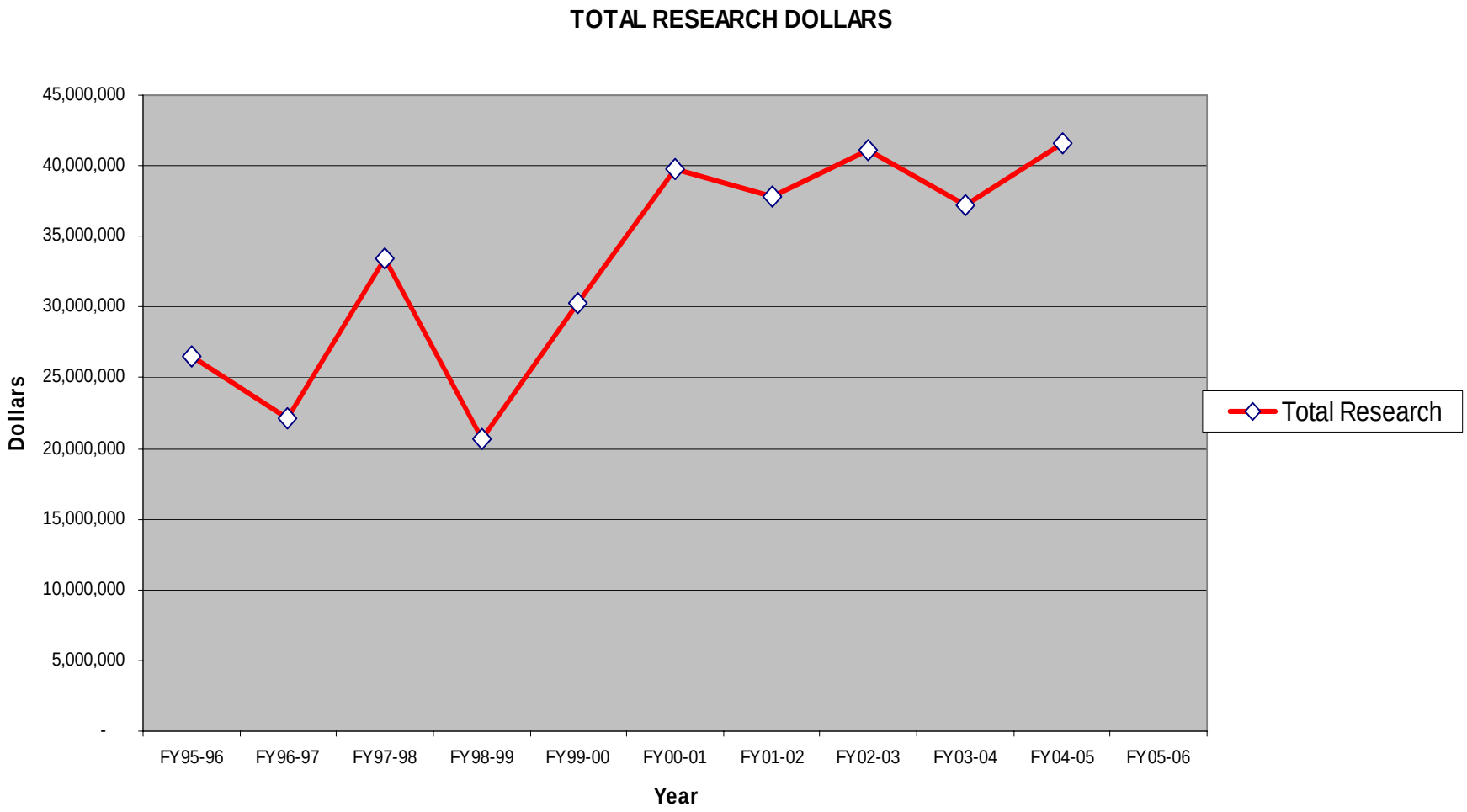
Numbers of Tenure-Track Faculty



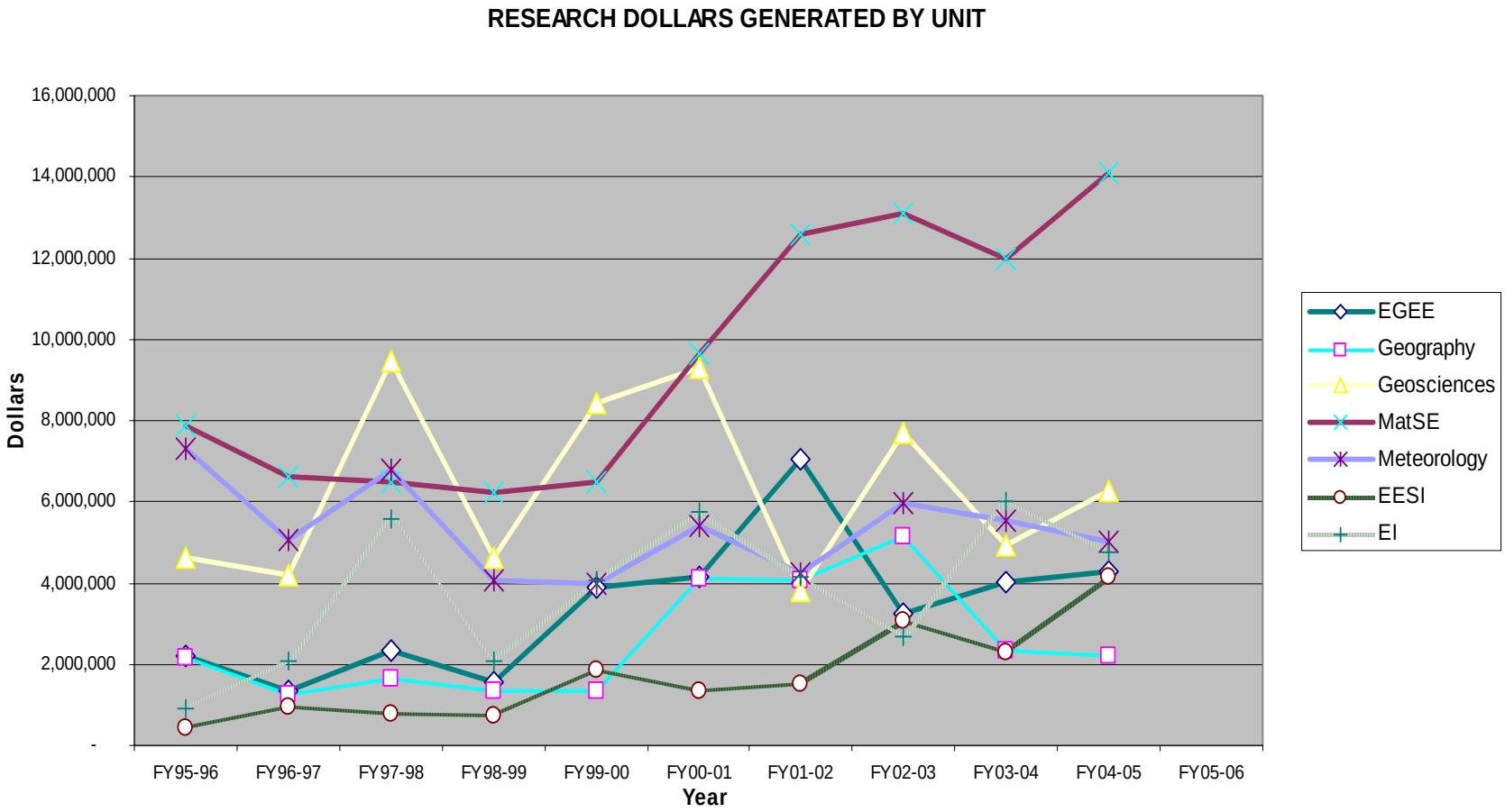
Number of Fixed-Term Appointments



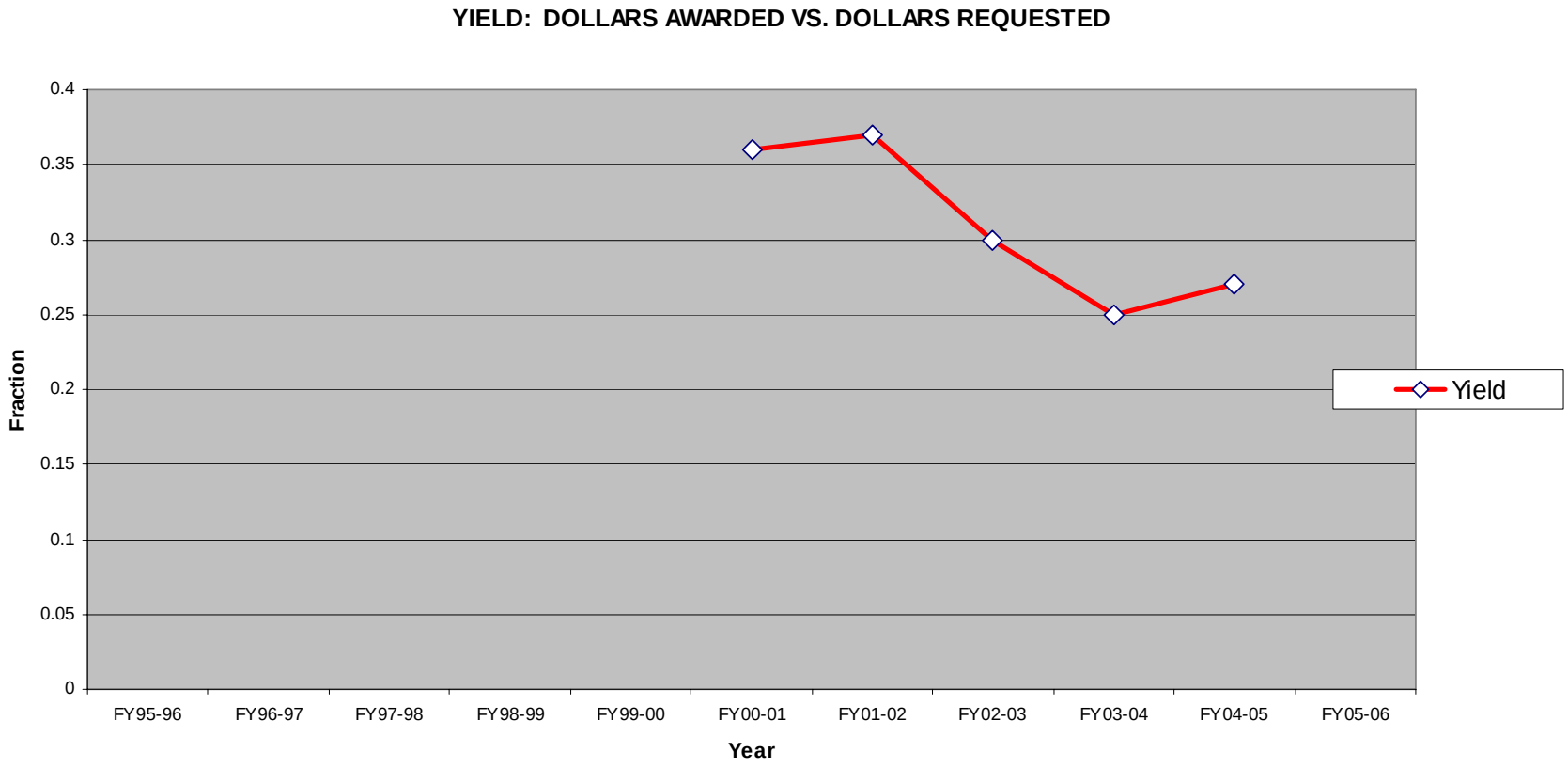
Total Research Dollars



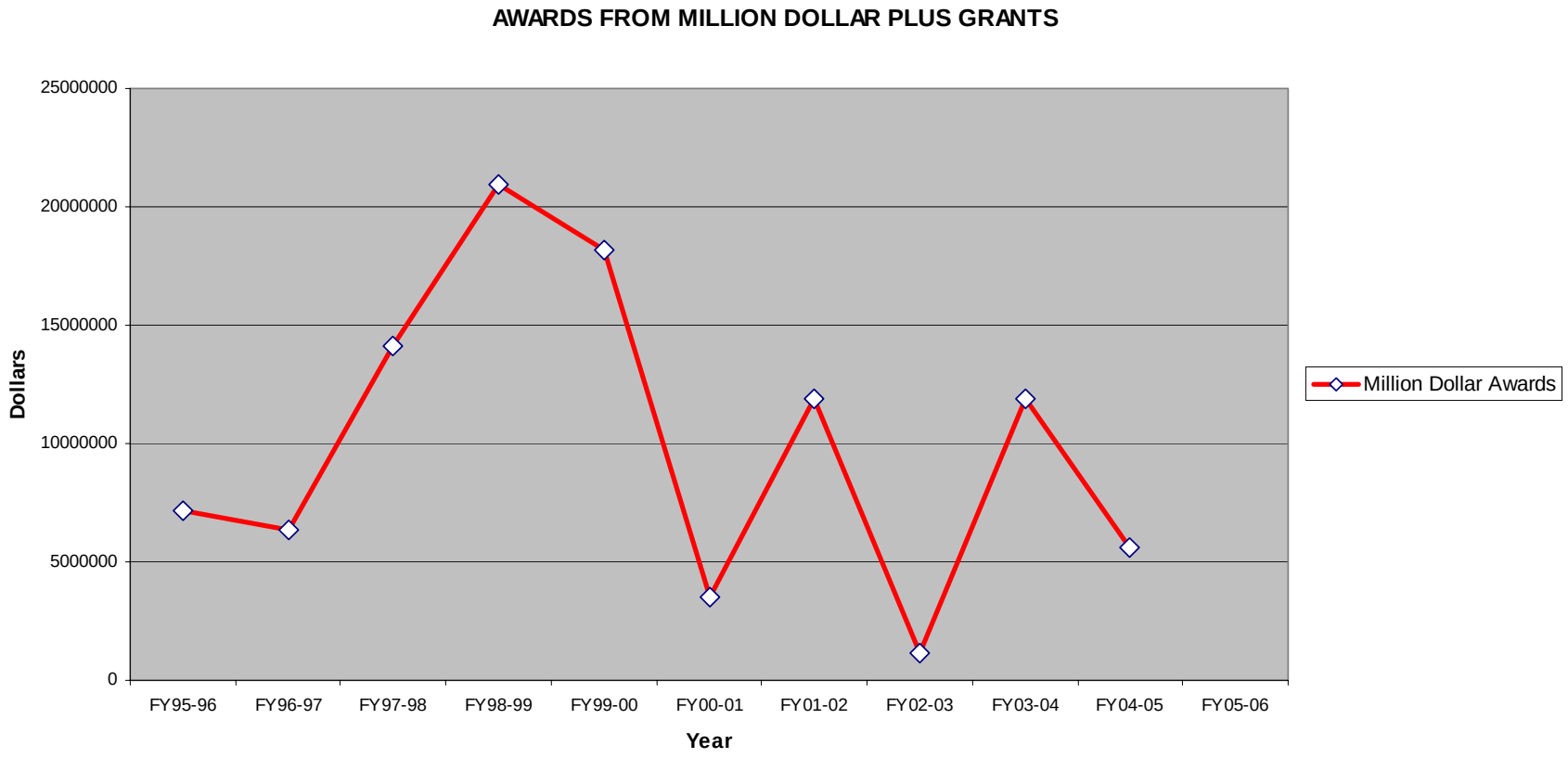
Research Dollars by Unit



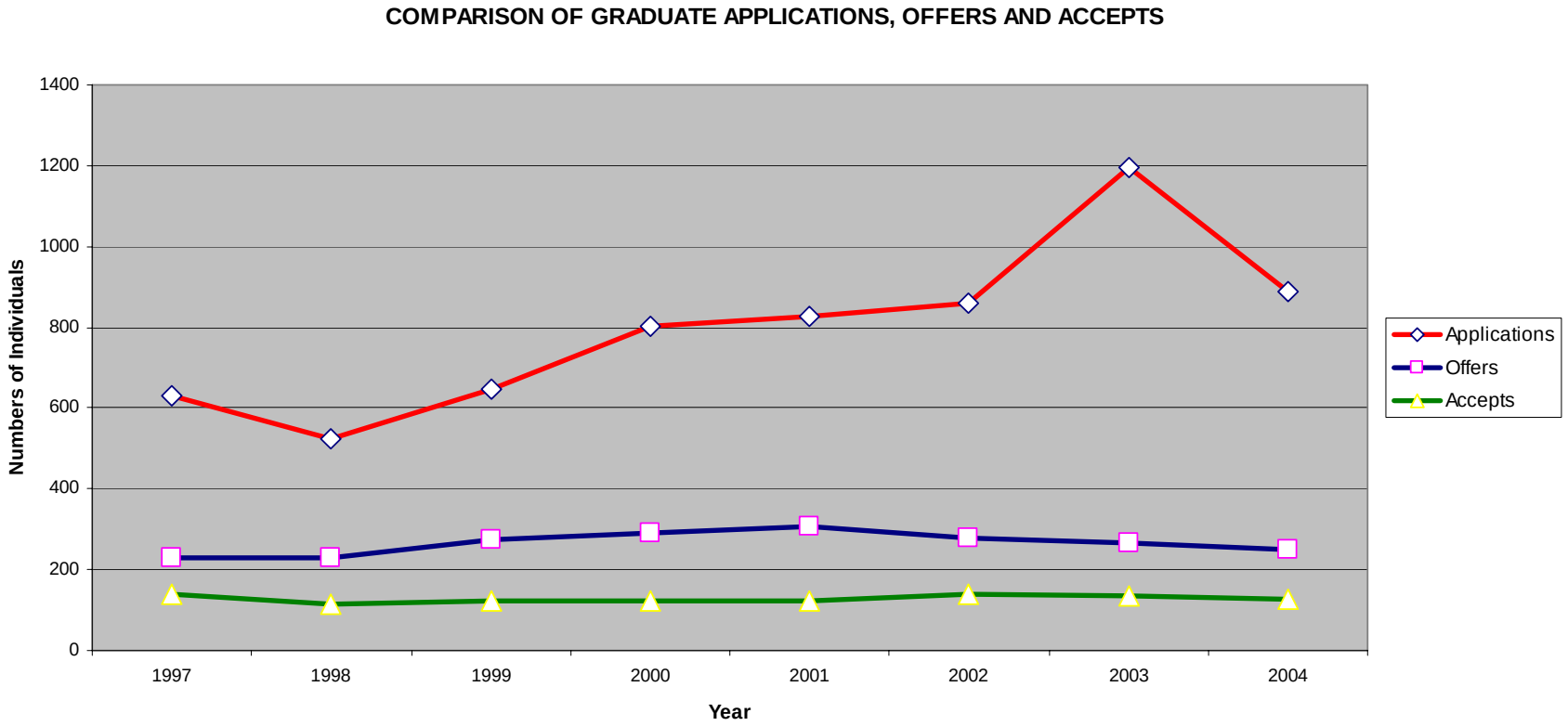
Yield on Grant Requests



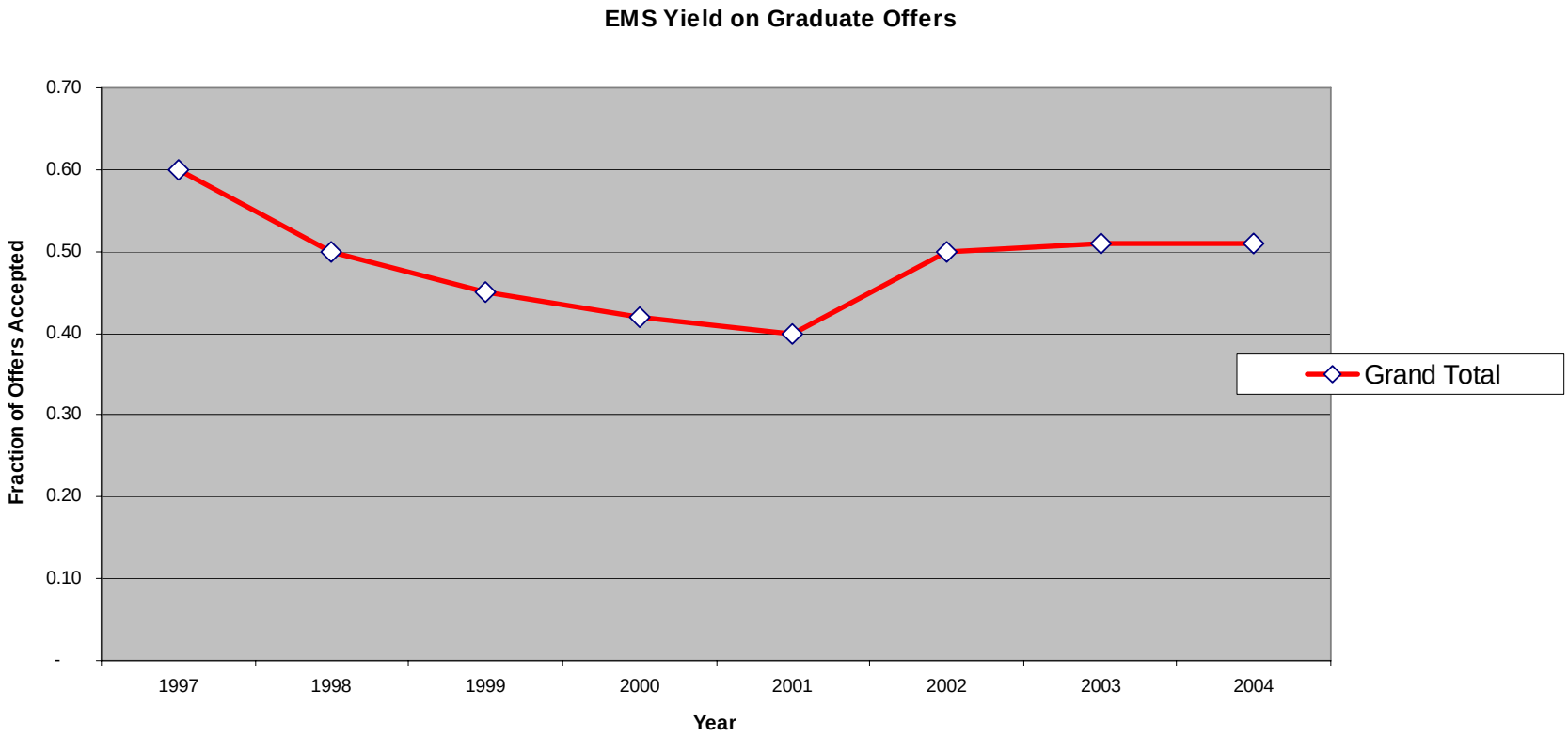
Million Dollar Grants



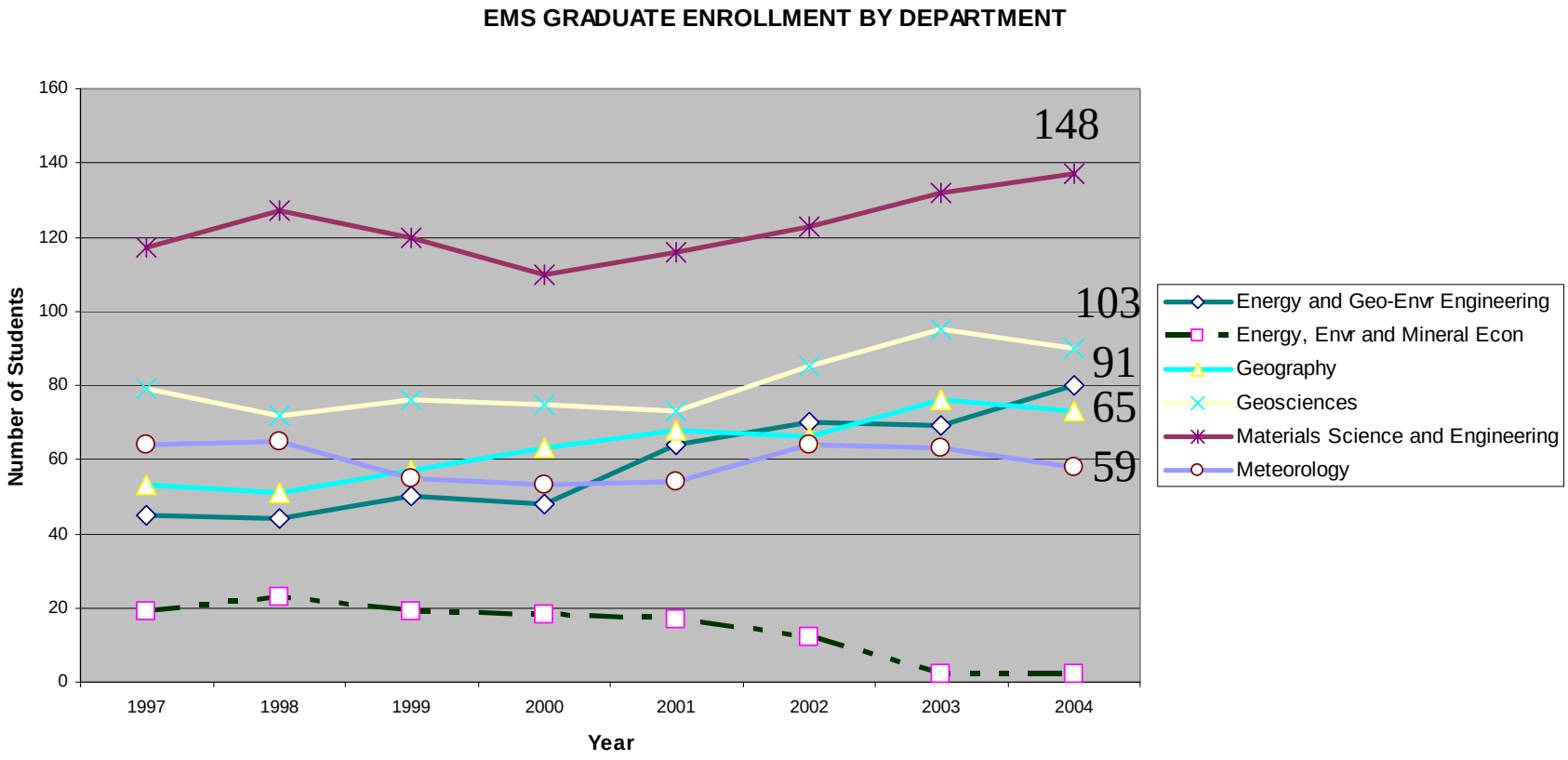
Graduate Applications, Offers, Accepts



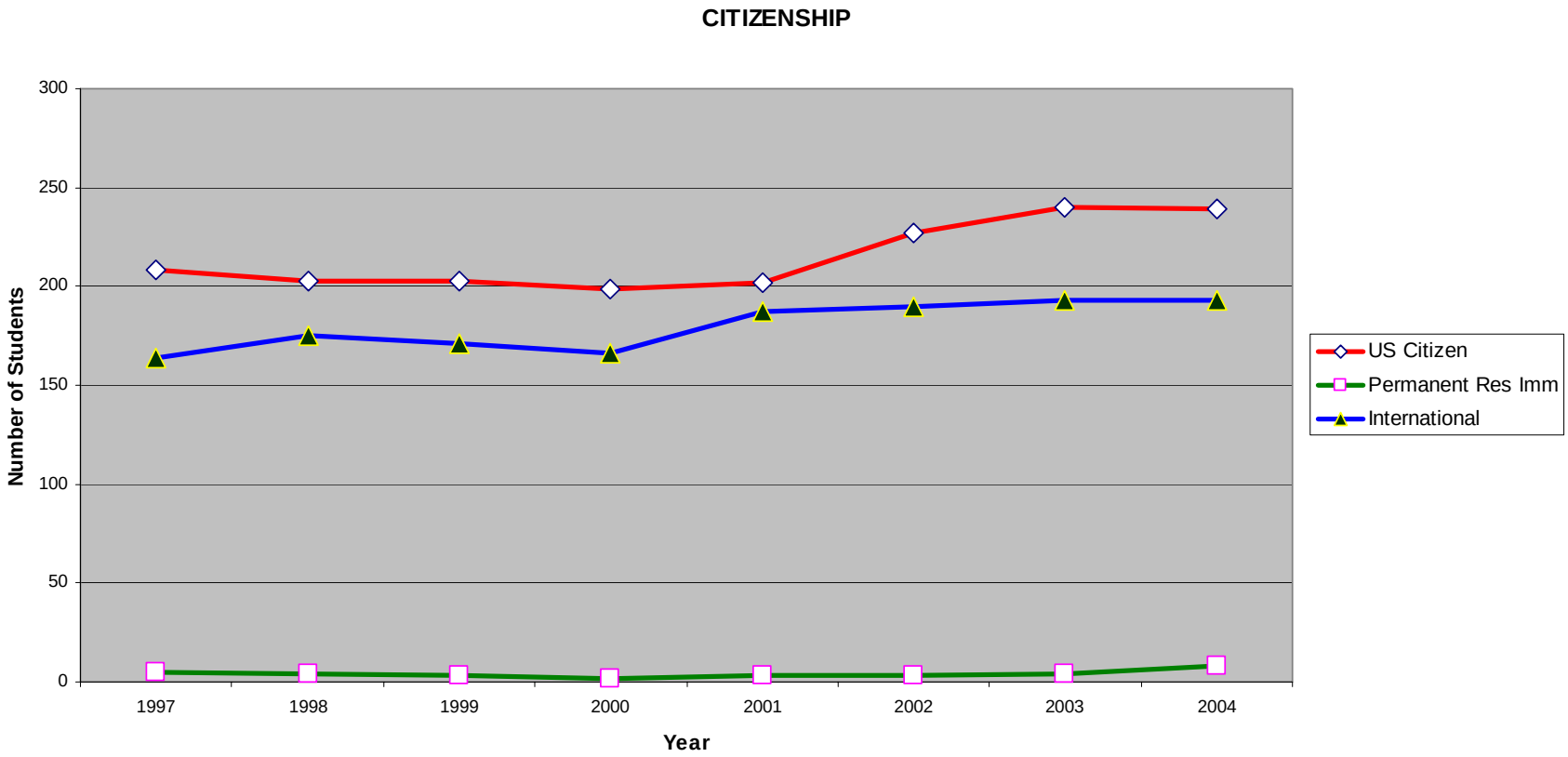
Yield on Offers

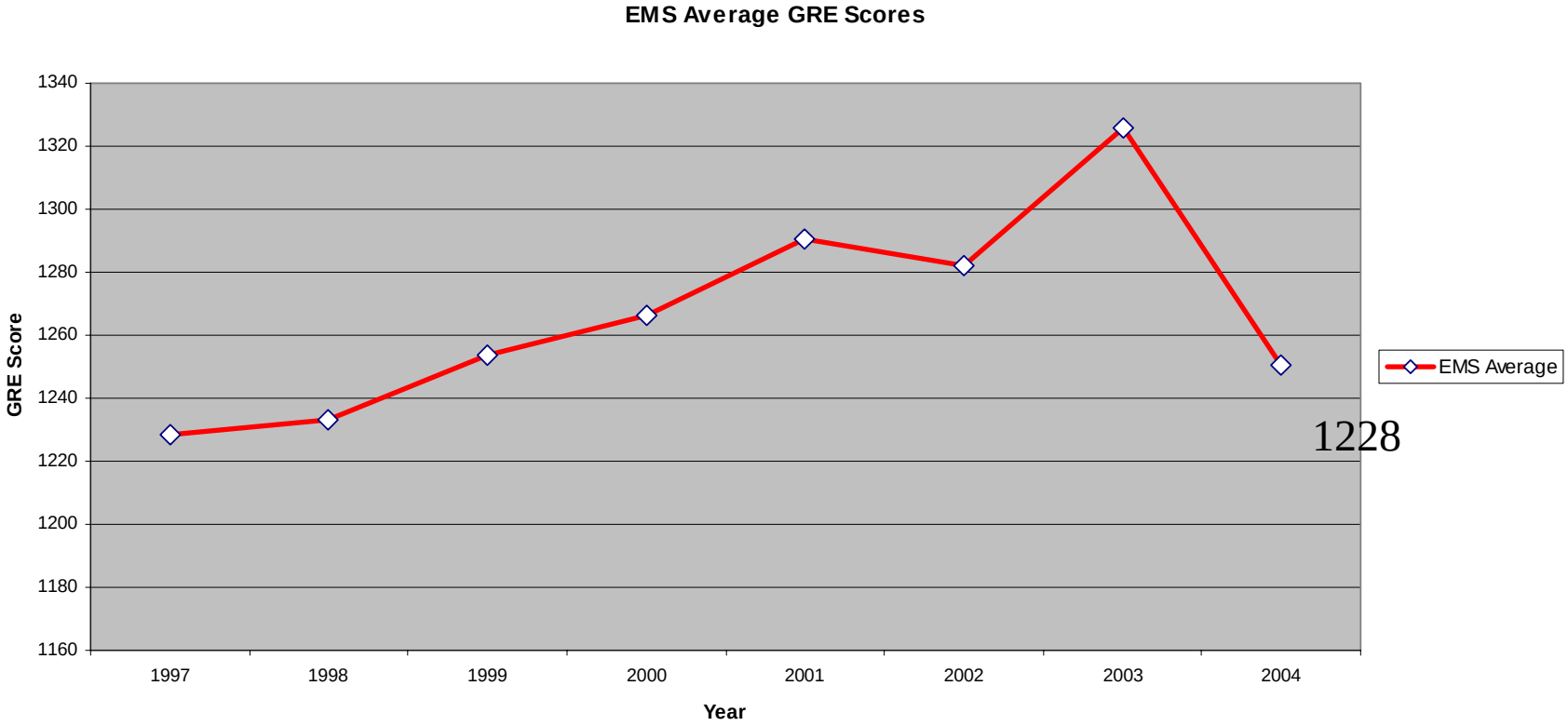


Graduate Enrollment by Department

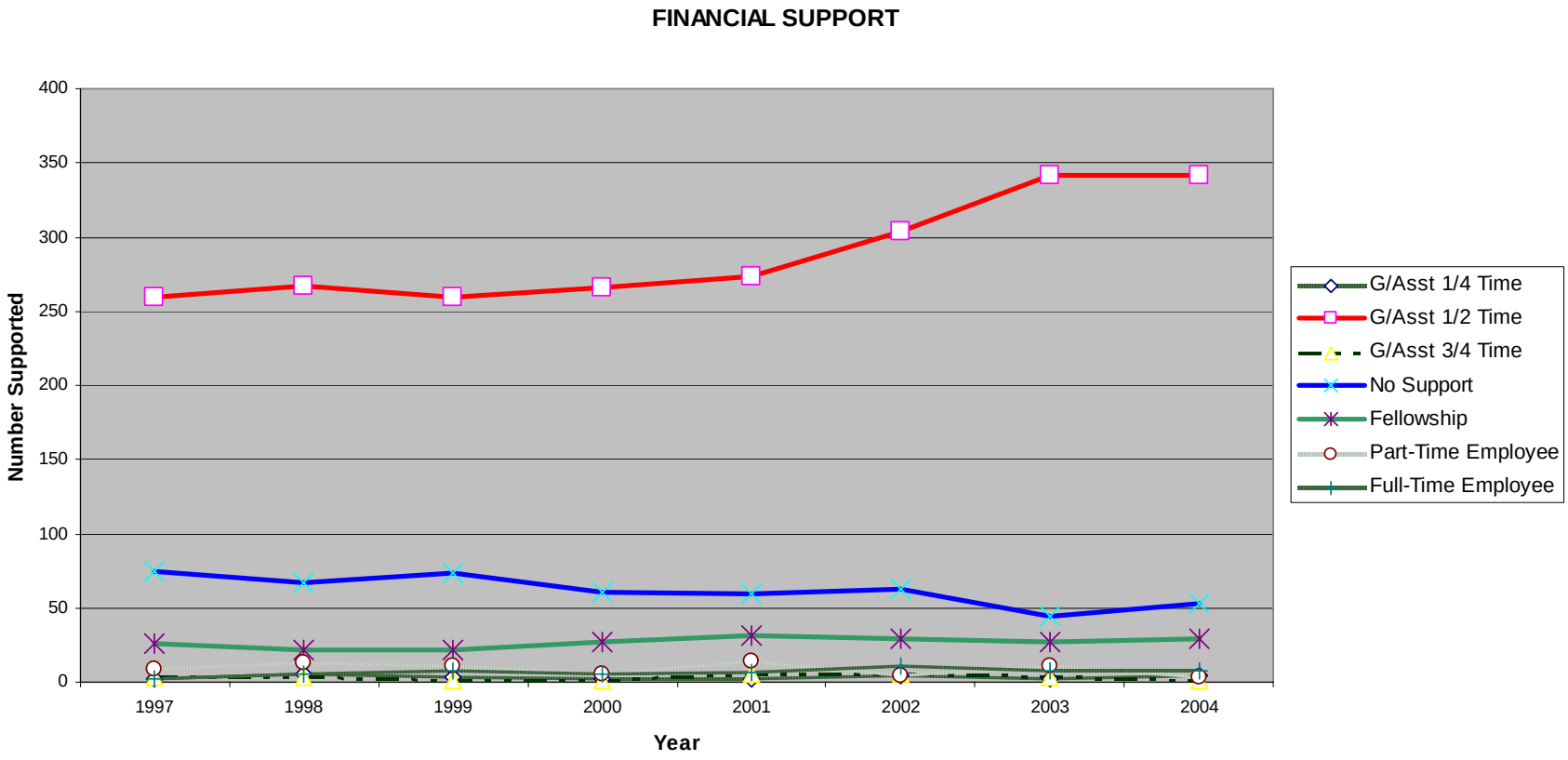


Citizenship

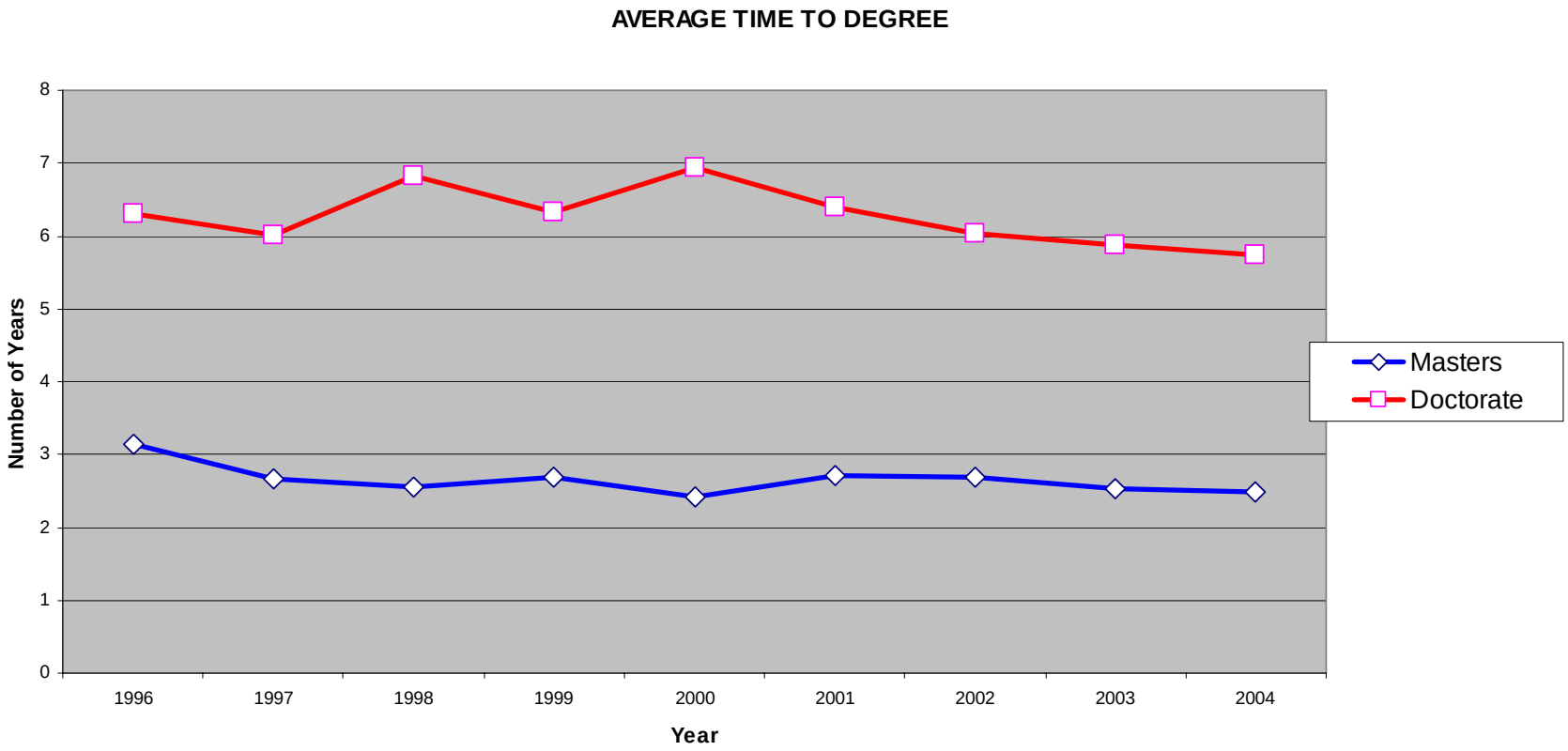



EMS Average GRE Scores
GRE Score
1340
1320
1300
1280
1260
1240
1220
1200
1180
1160
1997
1998
1999
2000
2001
2002
2003
2004
Year
EMS Average
1228

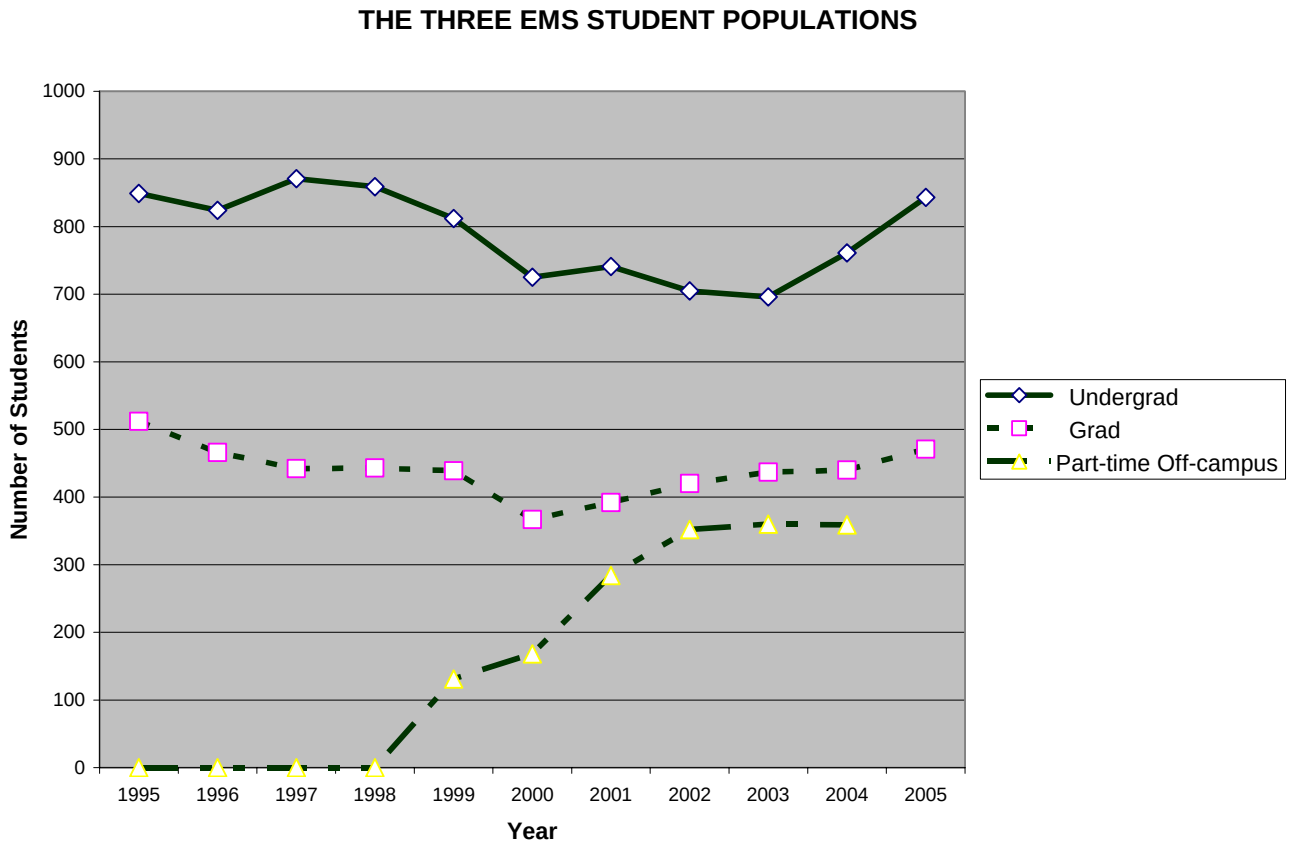
Financial Support



Time to Degree



In addition – a changing EMS student population



Conclusions

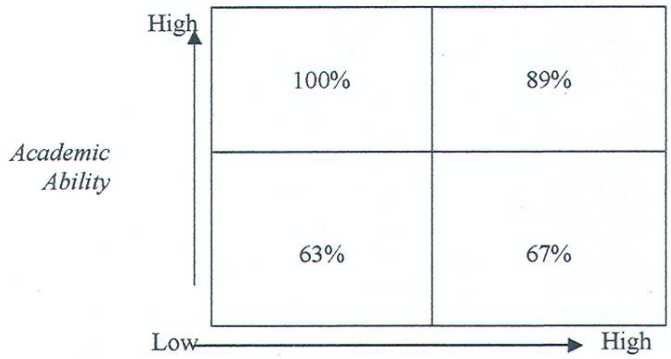
- Good Development Successes – Need Endowment Focus
- Continuing Strong Research Grants and Contracts – Focus on Large Grants
- Don’t Expect Growth in Central Funds
- Undergraduate Programs are Turning Around – Still Mixed Messages; Need to Get the Attention of More Students
- EMS Should be Proud of our Teaching Commitment
- Kudos on Diversity Progress
- Strong Graduate Programs - ? On GRE Drop
- Faculty are Working Harder to Garner Grants

Appendix B

COLLEGE OF EARTH AND MINERAL SCIENCES

Supplement to *Completion Rates by Academic Ability and Ability to Pay, June 2006*
Office of Planning and Institutional Assessment

1. Fall 1999 Cohort Six-Year Completion Rates by Academic Ability and Household Income – Highest and Lowest Quintiles Only



For University Park, non-University Park, and total percentages see Figure 1 in full report.

2. Household Income and Six-Year Graduation Rate, Fall 1999 Cohort

Income Level	Income Range in Quintile	# Students	% Graduating
Not Reported		31	90%
Lowest Quintile	$ 9,310 - $ 42,679	33	70%
Second Lowest	$ 42,896 - $ 62,539	34	68%
Middle Quintile	$ 62,720 - $ 76,997	34	82%
Second Highest	$ 77,253 - $107,964	34	88%
Highest Quintile	$109,442 - $227,437	33	91%
	Total Students	199	81%

For University Park, non-University Park, and total percentages see Table 5 in full report.

3. Fall 1999 Six-Year Graduation Rates by Fall 1999 GPA and Income Quintile

Fall 99 GPA Quintile	Range	Lowest Income Quintile	2nd Lowest Income	Mid Income Quintile	2nd Highest Income	Highest Income Quintile	Number of Students
Lowest GPA Quintile	0.00 - 2.45	63%	33%	63%	67%	67%	34
2nd Lowest GPA	2.46 - 2.83	67%	40%	100%	86%	91%	36
Mid-GPA Quintile	2.85 - 3.17	43%	100%	71%	82%	100%	38
2nd Highest GPA	3.21 - 3.52	83%	100%	83%	100%	100%	27
Highest GPA	3.54 - 4.00	100%	100%	100%	100%	89%	33
Total Number of Students		33	34	34	34	33	168

For University Park, non-University Park, and total percentages see Table 6 in full report.