

Charles E. Schmidt

College of Science

Academic Program Review

2009

The Year of Science

Presented to FAU Board of Trustees

Gary W. Perry, Dean

2009 - The Year of Science

- **The 200th anniversary of Darwin's birth and the 150th Anniversary of the publication of "On the Origin of Species."**
- **The 200th anniversary of the birth of Abraham Lincoln whose contributions to science include founding the National Academy of Sciences, as well as creating the Land grant system of agricultural Colleges through signing the Morrill Act, which was very important to the development of applied biological sciences.**
- **The 400th anniversary of the publication of Johannes Kepler's first two Laws of Planetary Motion.**
- **The 100th anniversary of the discovery of the Burgess Shale by the paleontologist Charles D. Walcott.**
- **The 100th anniversary of the establishment of USDA Forest Service Experimental Forest and Ranges, the largest system of dedicated experimental sites in the US.**
- **The 400th anniversary of Galileo's first use of a telescope to study the skies.**

Components of the College

Academic Departments:

	Faculty	Majors	Grads	Total FTE
• Biological Sciences	31	1356	142	695
• Chemistry & Chemistry	21	239	41	460
• Geosciences	14	88	31	276
• Mathematical Sciences	41	81	84	676
• Physics	20	45	26	264
• Psychology	32	1092	78	669

Research Centers:

- Complex Systems and Brain Sciences (PhD & Certificate programs)
- Biological and Materials Physics (Certificate program)
- Environmental Studies (Certificate w/ Environmental Sciences Program)
- Molecular Biology and Biotechnology (Certificate program)
- Geo-Information Science (Certificate program)
- Cryptology and Computer Security (Certificate program)

Outline of presentation

This presentation will provide an overview of College trends and analyses as they pertain to the overall Strategic Plan and Goals of the University since our last program review in 2001-02.

- **Goal 1: Providing Increased Access to Higher Education**
- **Goal 2: Meeting Statewide Professional and Workforce Needs**
- **Goal 3: Building World-Class Academic Programs and Research Capacity**
- **Goal 4: Meeting Community Needs and Fulfilling Unique Institutional Responsibilities**

GOAL 1: Providing Increased Access to Higher Education

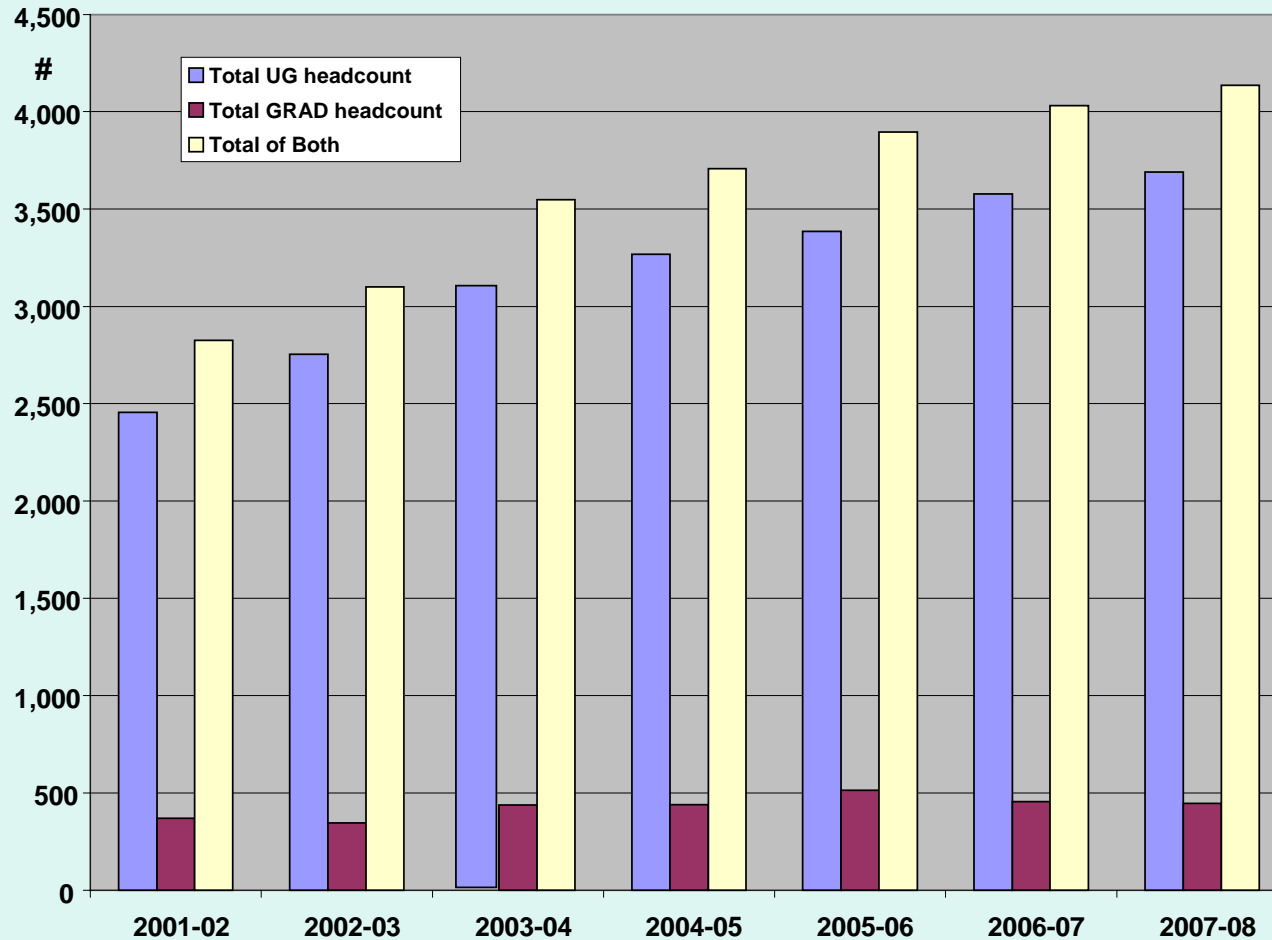
Florida Atlantic University will continue to provide access to higher education for residents of the region, the state and the nation and will respond to the competitive economic environment by increasing the number of degrees granted to students at all levels.

GOAL 2: Meeting Statewide Professional and Workforce Needs

Florida Atlantic University will commit academic and fiscal resources to meeting Florida's need for trained professionals in nursing, teaching and advanced technology. FAU will demonstrate its commitment to recruiting and preparing students in these vital professions and to identifying emerging trends in the labor force.

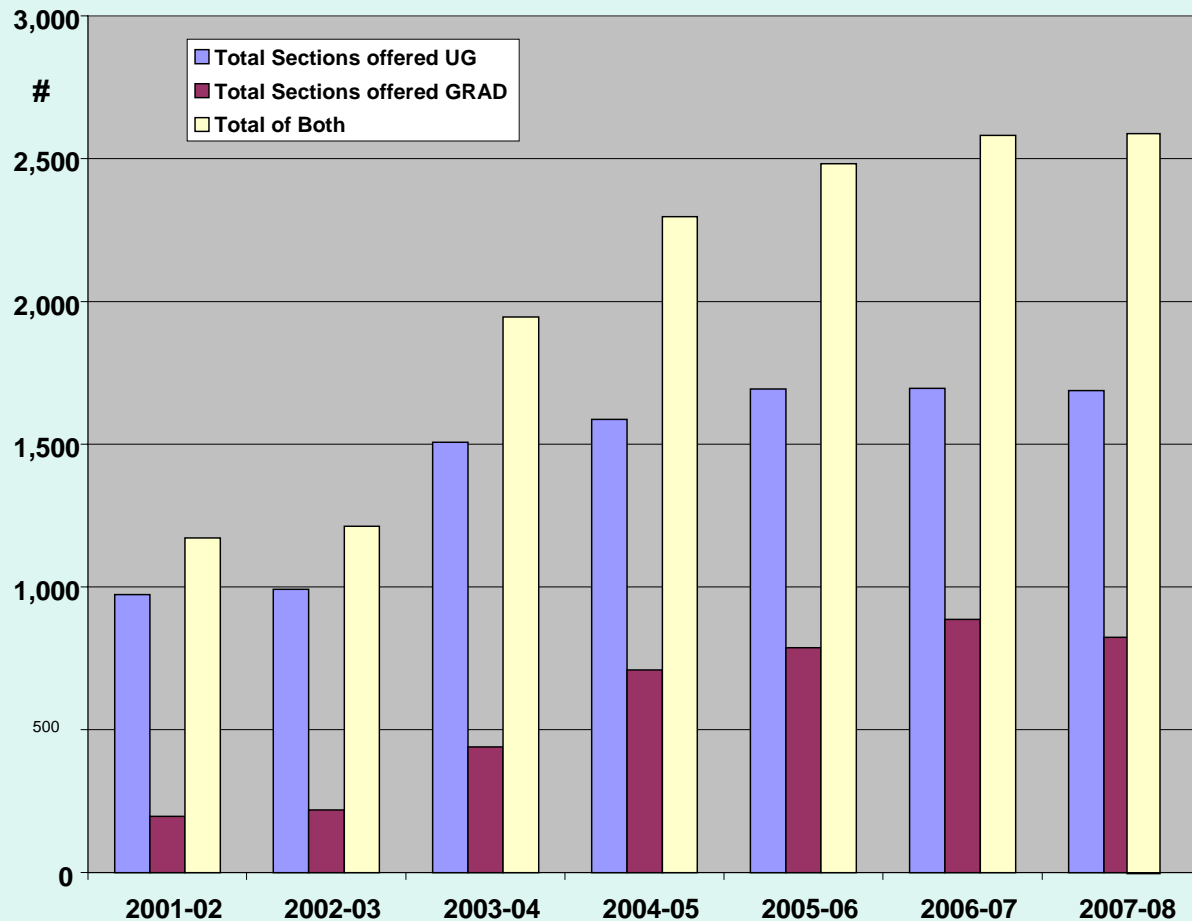
Student Headcount: Goals 1&2

The number of science majors has increased steadily since last review



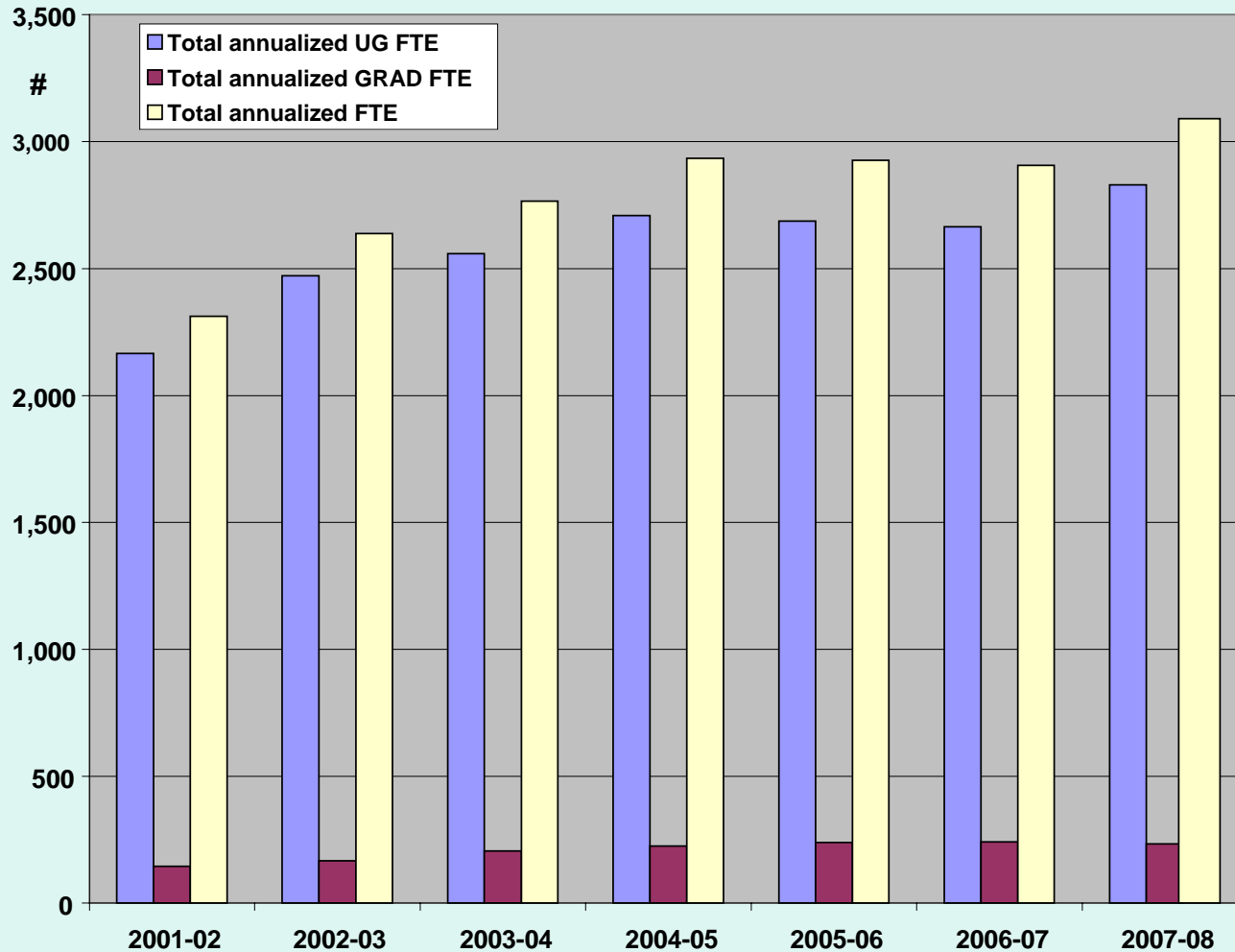
Total number of Sections: Goals 1&2

The total number of sections offered by the college has increased considerably since 2001-02 although less so in recent years



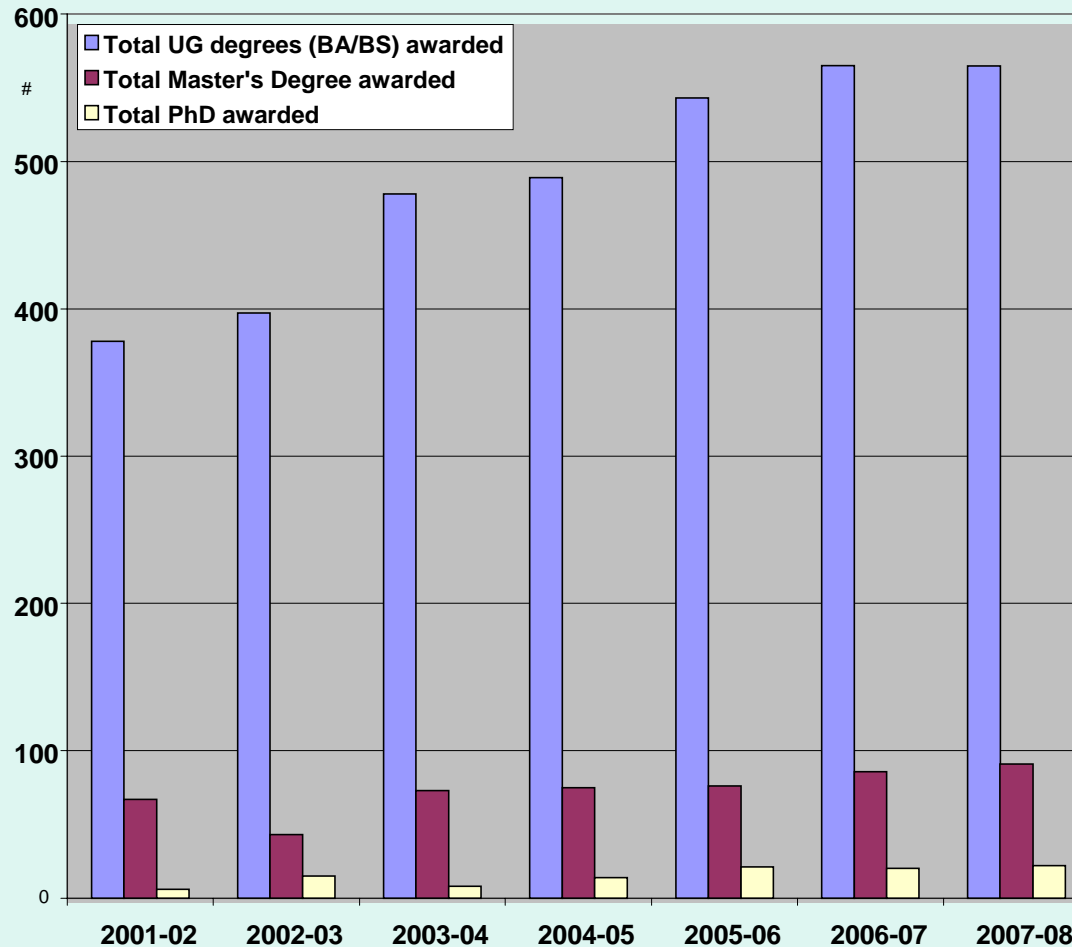
Annualized Student FTE: Goals 1&2

Total annualized student FTE has steadily increased by 26% since 2001-02



Total Degrees Awarded: Goals 1&2

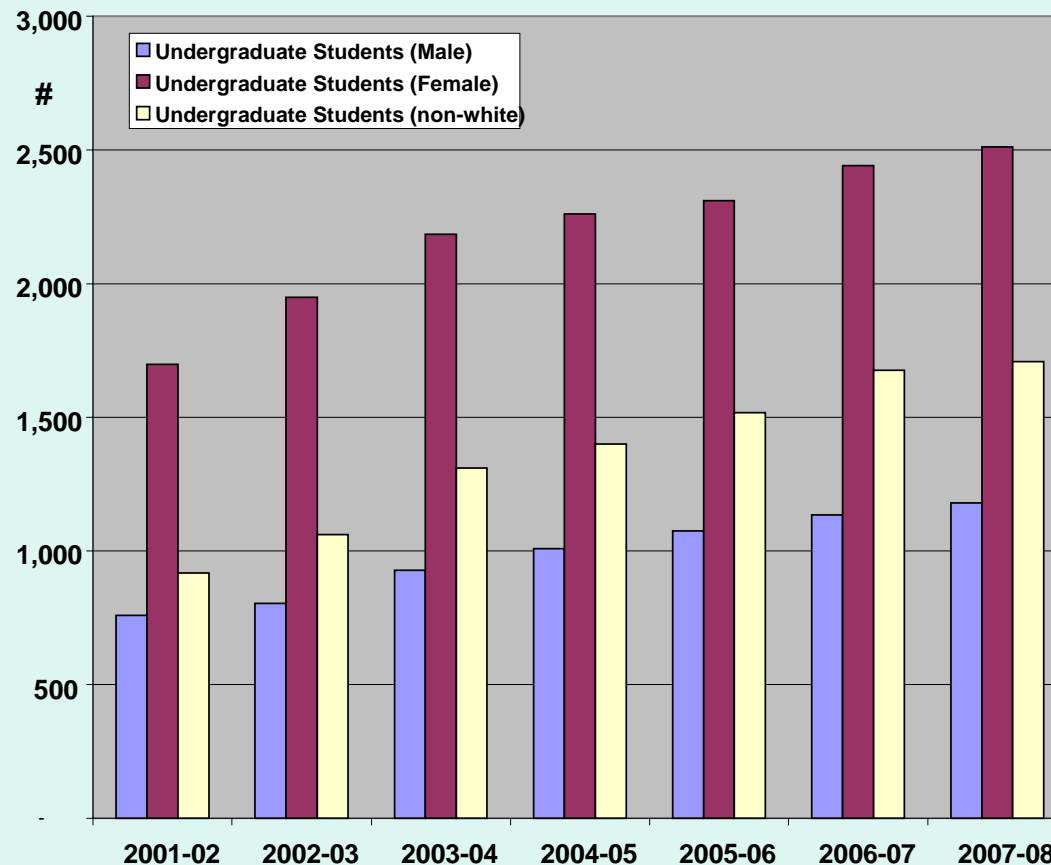
Degrees awarded by the college at all levels have steadily increased since 2001-02 (all time high of 587 in 2008-09)



Academic Program Review 2009

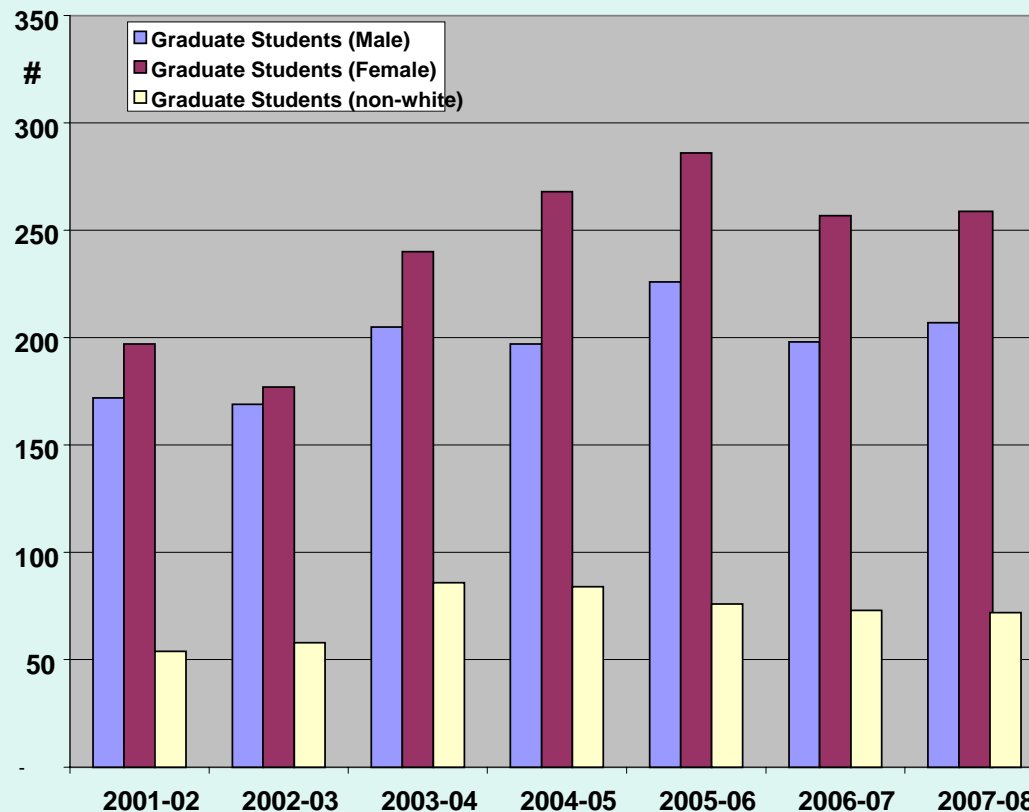
Undergraduate Student Majors by Gender and Diversity: Goals 1&2

The ratio of female to male students has remained at about 2:1, as has the ratio of white to non-white students since last review in 2001-02



Graduate Students by Gender and Diversity: Goals 1&2

Graduate students more evenly distributed between females and males with about 15% of students comprising the diversity group; small decreases in numbers over the last two years but Fall 2009 enrollment is up



Comparison with Peer Institutions: Goals 1&2

Compare favorably with peer institutions and research institutions in overall undergraduate SCH/FTE Faculty

	Undergraduate SCH/FTE Faculty*		
	FAU	Peer	Research
Biology	378	416	362
Mathematics	265	366	347
Chemistry	325	400	420
Geology	428	299	300
Physics	402	243	288
Psychology	439	403	407
Geography	664	516	326
AVERAGE	414	377	350

*Data are reduced from the National Study of Instructional Costs & Productivity ("The Delaware Study") for 2007-08

Instructional Quality from Student Perception of Teaching Analysis: Goals 1&2

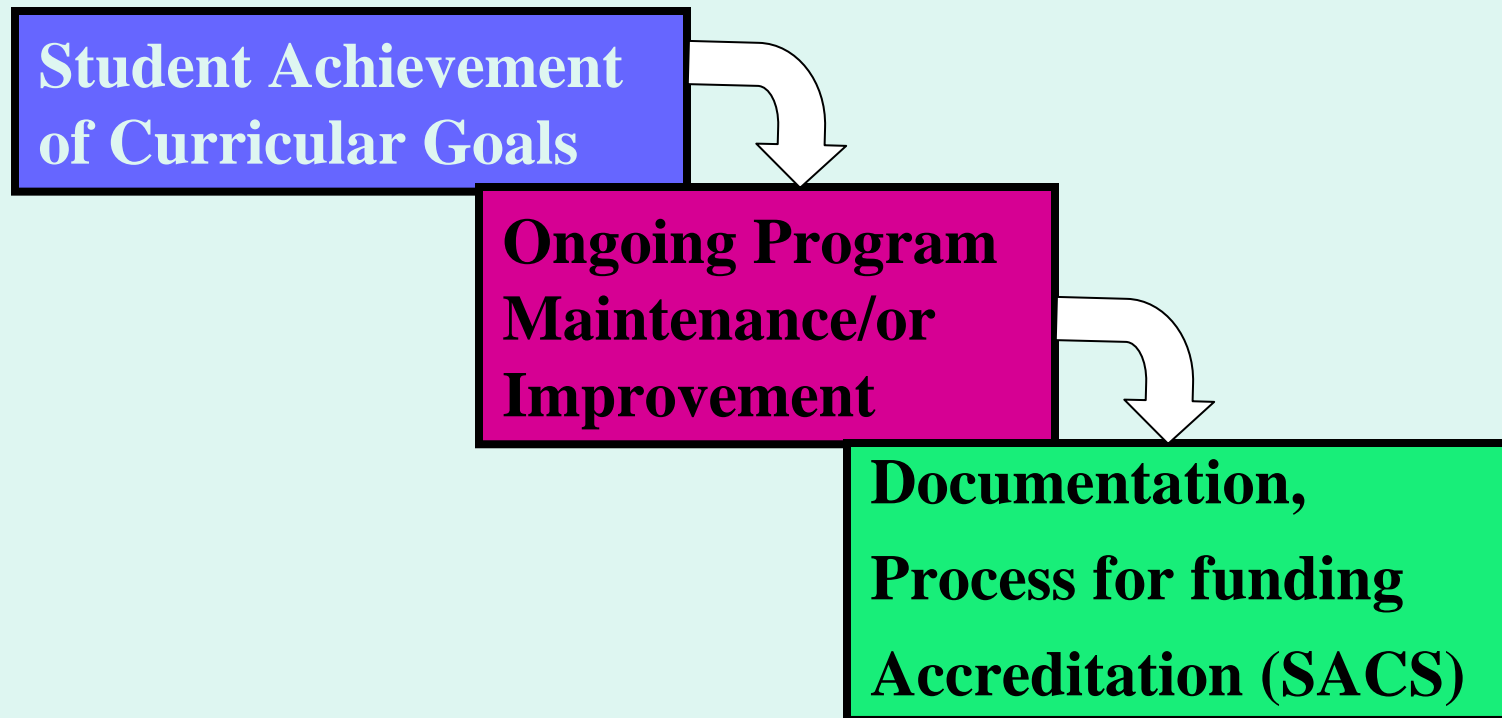
Students perceive the instruction by science faculty to be, on the whole, very good to excellent, and this has remained unchanged for the last decade

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
College*	1.7	1.8	1.7	1.7	1.7	2
University*	1.7	1.7	1.7	1.7	1.7	1.9
Range	Excellent	Very Good	Good	Fair	Poor	
	1	2	3	4	5	

*Data taken from SPOT surveys

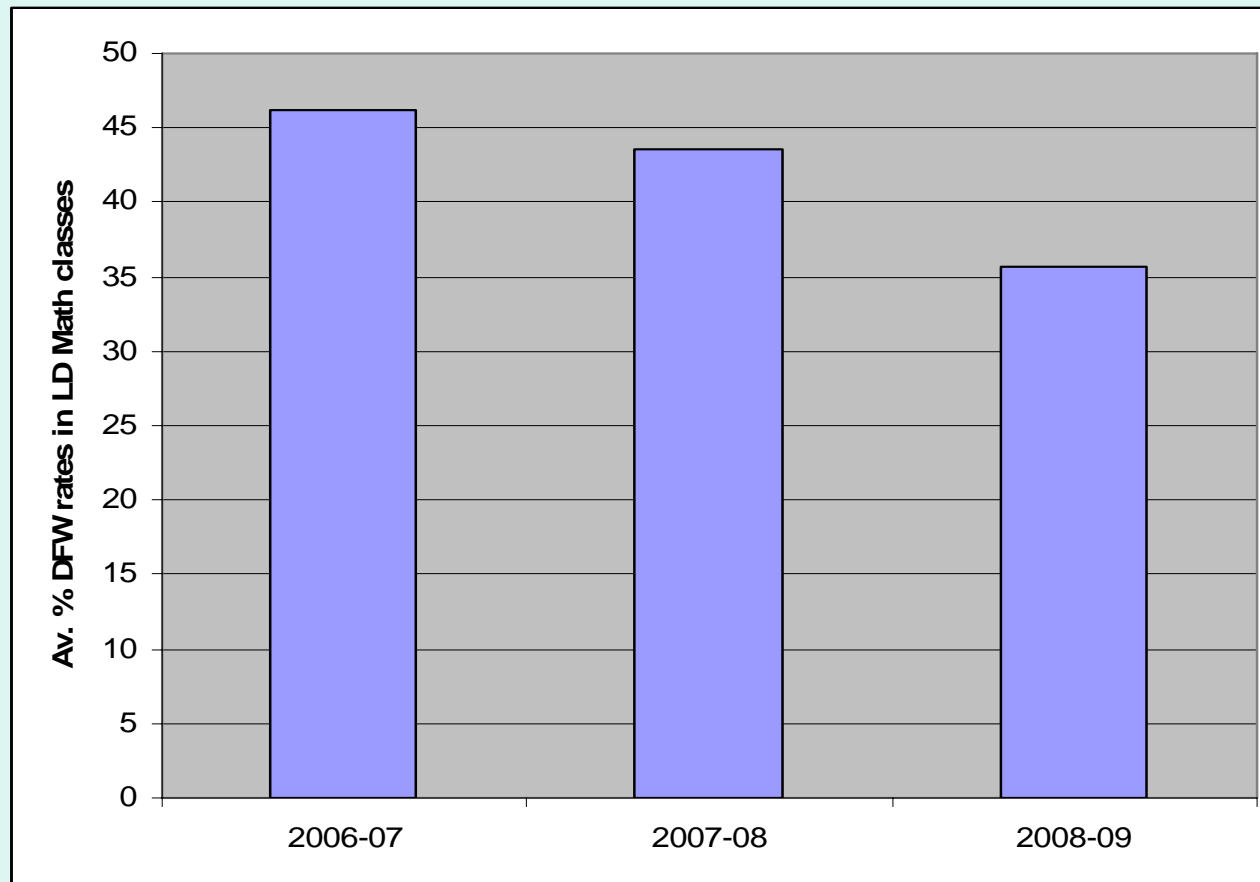
Program Assessment: Goals 1&2

“The College is currently engaged in assessment efforts for all of its undergraduate and graduate programs, as well as department-level service and research” - Dr. Jenny Peluso, College Director of Assessment



DFW Rate: Goals 1&2

*The DFW rate in lower division mathematics gatekeeper courses has dropped significantly in the last few years**

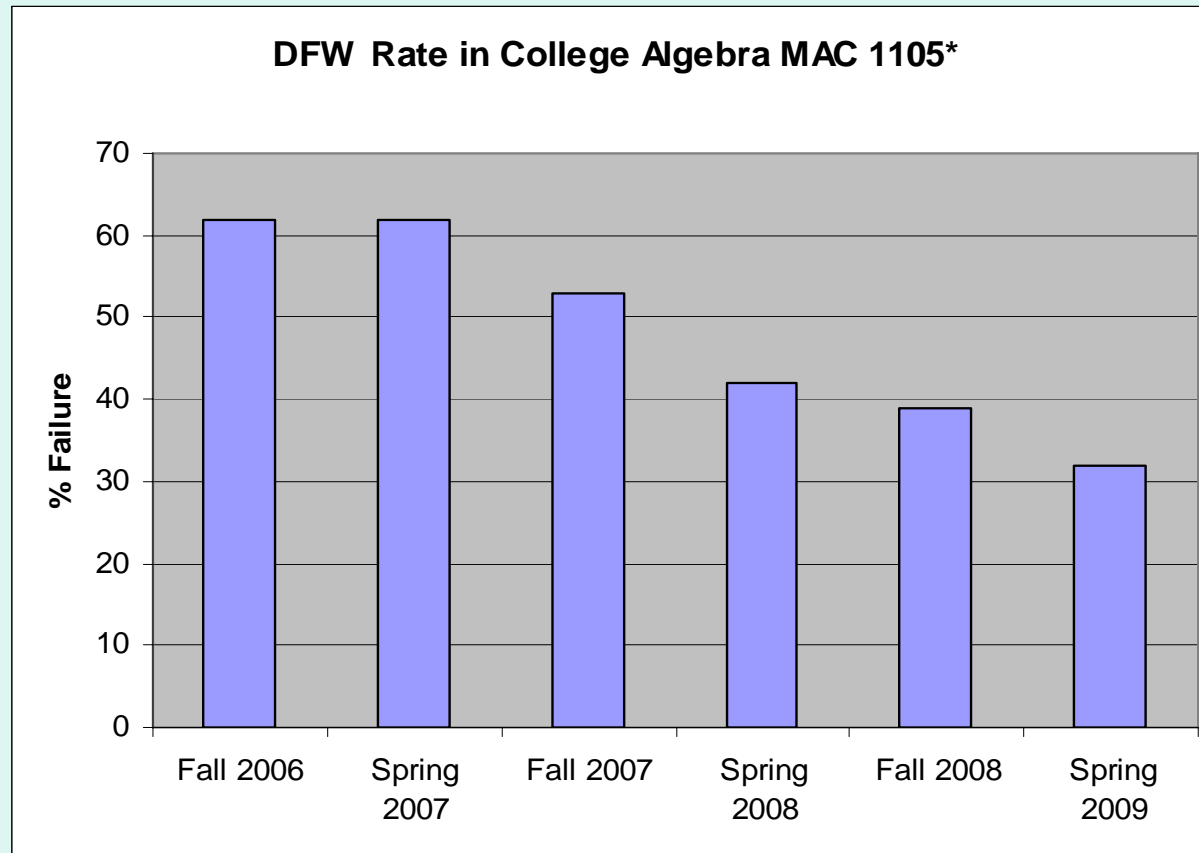


*Courtesy of Dean Ed Pratt

Academic Program Review 2009

DFW Rate in College Algebra MAC 1105

As a result of strategies such as Supplemental Instruction (SI), peer tutoring, DFW rates can be dramatically improved



*courtesy of Dean Ed Pratt

Innovative instruction: Goals 1&2

During the review period we have implemented several new and innovative programs to improve undergraduate instruction

- ***ChemBond*** – a peer led mentoring program where students mentor students. This program was started in Chemistry and decreased the high DFW rate in introductory chemistry. It also led to an increased retention rate. Funded by the NSF during the initial phases.
- ***OrgoBond*** – modeled on successful peer-to-peer mentoring in ChemBond but to get students through Organic Chemistry! (NSF funded)
- ***LifeLine*** – modeled on successful Peer Led Team Learning of ChemBond; decrease of 20% in DFW rate in introductory biology classes, as well as increased retention rates.
- ***Master Teacher program*** – each department designates a faculty member as a Master Teacher who sits in on classes and critique faculty teaching (especially younger faculty), and who also act as a resource for faculty.
- ***Undergraduate Research Mentoring (URM) program*** – this is a recent program introduced in Biology to specifically involve undergraduates in research.

NSF funded Undergraduate Research Mentoring program
Department of Biological Sciences: Goals 1&2
PIs: Dr's. Rodney Murphey and Evelyn Frazier

Current Fellows:



Rusheena Bartlett



Alexandra Busch



Leo Calle



Daren Delorio



Aruna Khan



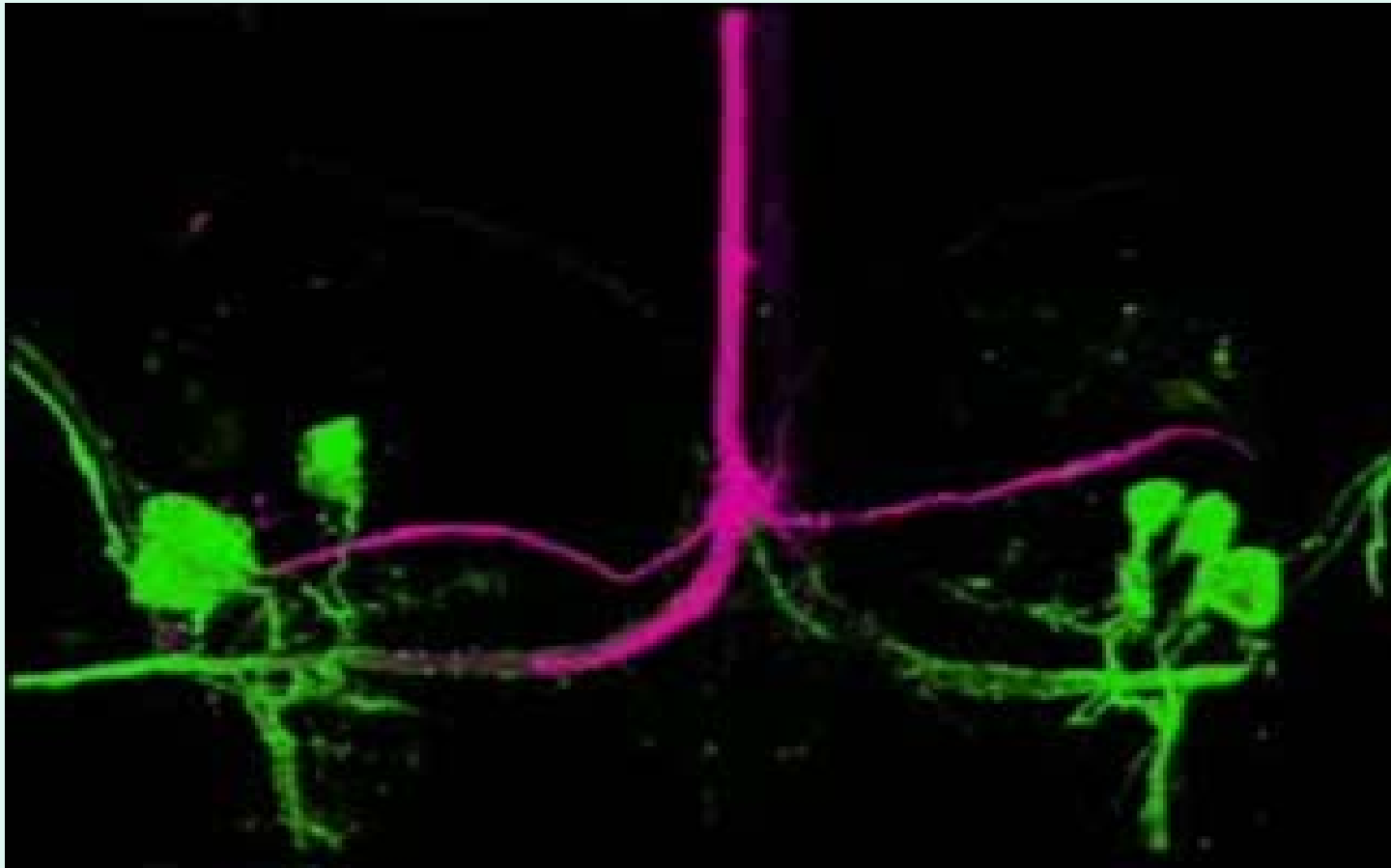
Brandon Lloyd



Daniel Rowan

Academic Program Review 2009

Fruit fly Giant nerve cell connecting with jump motor neurons that mediate escape response



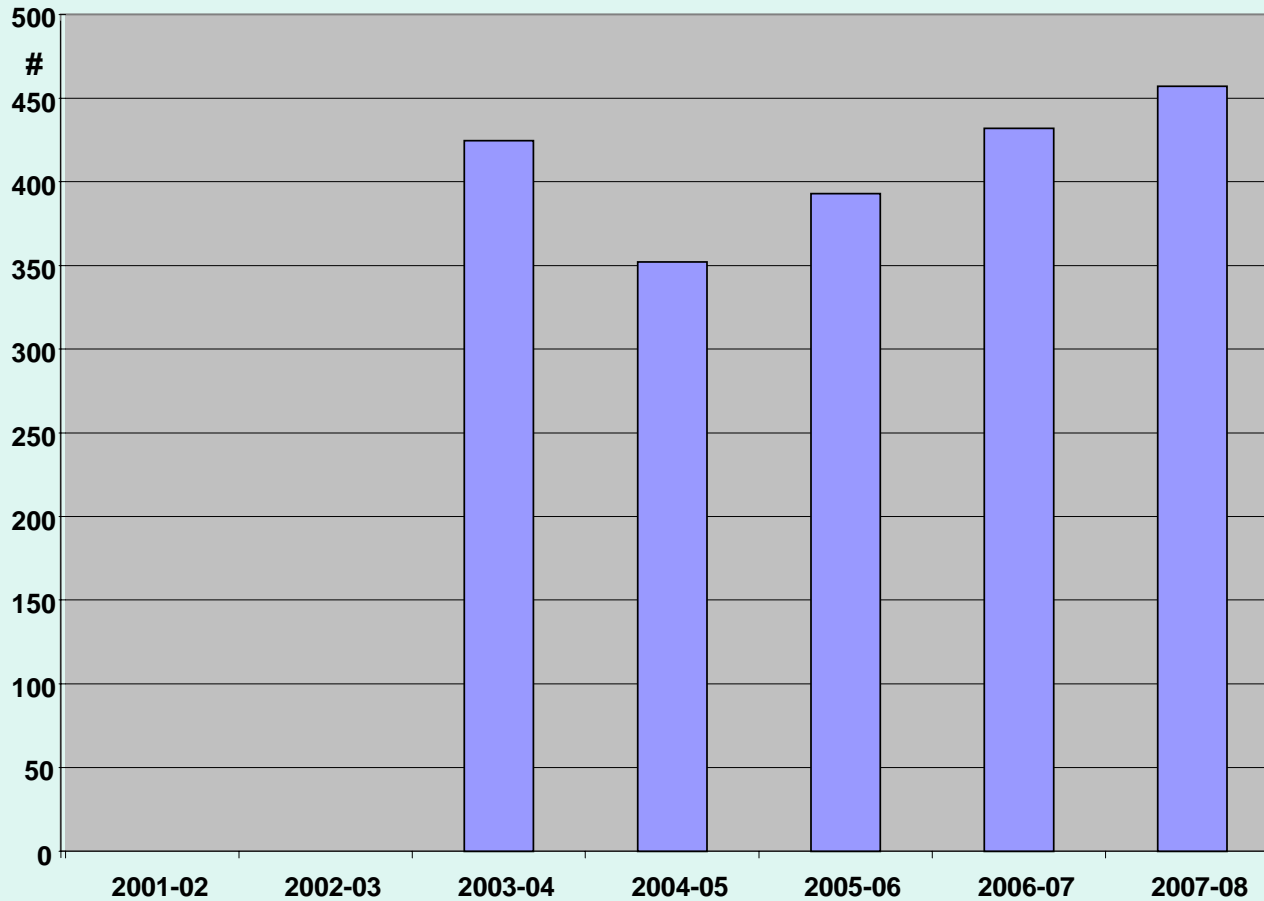
Courtesy of Dr. Tanja Godenschwege

GOAL 3: Building World-Class Academic Programs and Research Capacity

Florida Atlantic University will develop academic and research programs of the highest caliber to support Florida's strategic engagement in building an economy based on high technology and to foster a culture enriched by scholarly inquiry.

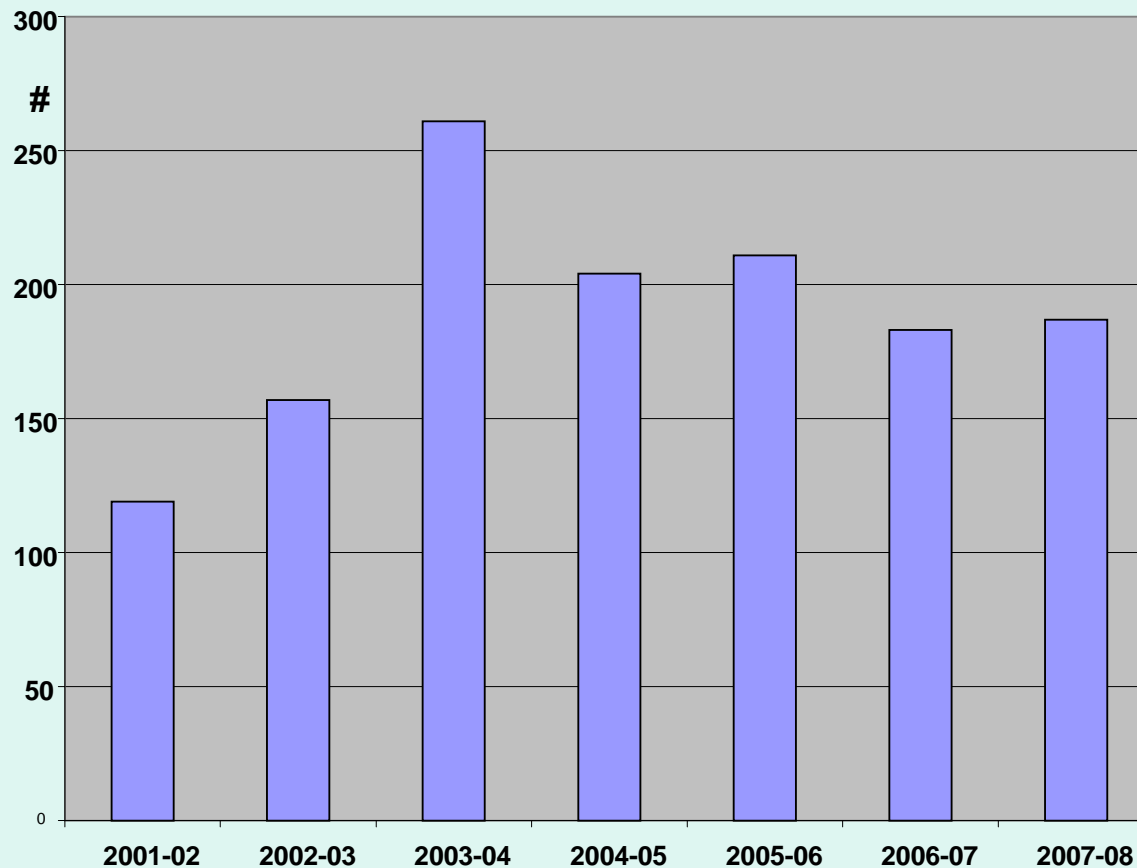
Total Number of Publications: Goal 3

Total publications in the college has continued to increase since last review



Total Number of Proposals Submitted: Goal 3

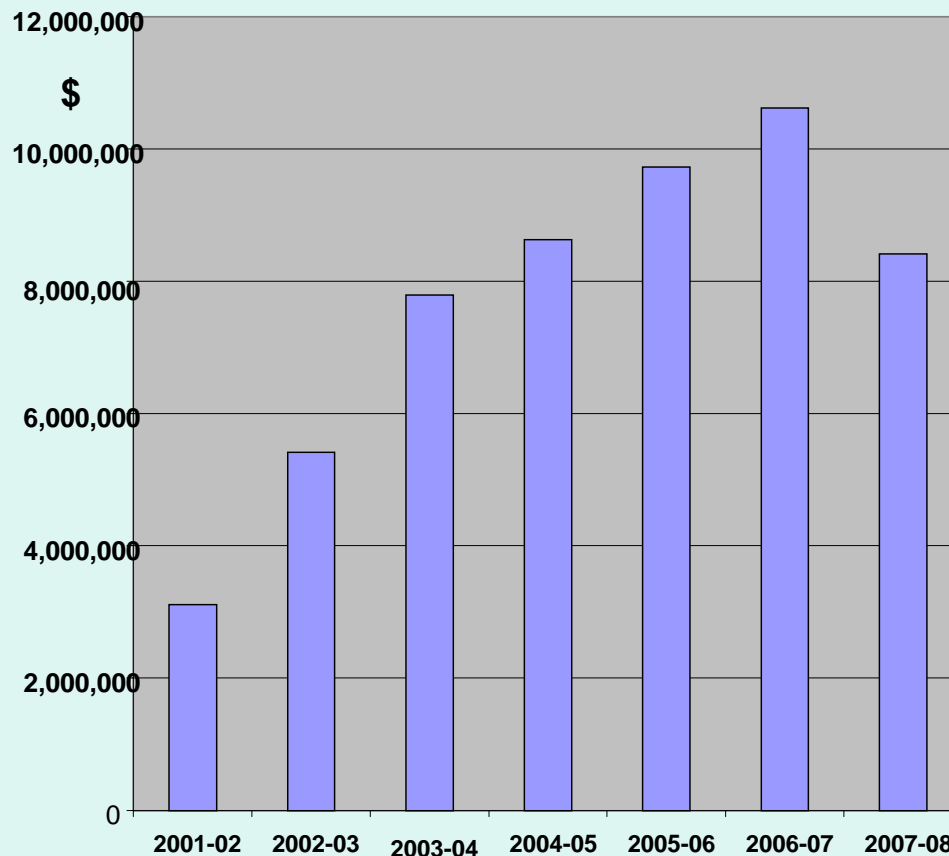
Submitted proposals have increased since last review but have remained constant in last several years with a slight decrease that reflects faculty proposals being successfully funded



Academic Program Review 2009

College Sponsored Research Dollars: Goal 3

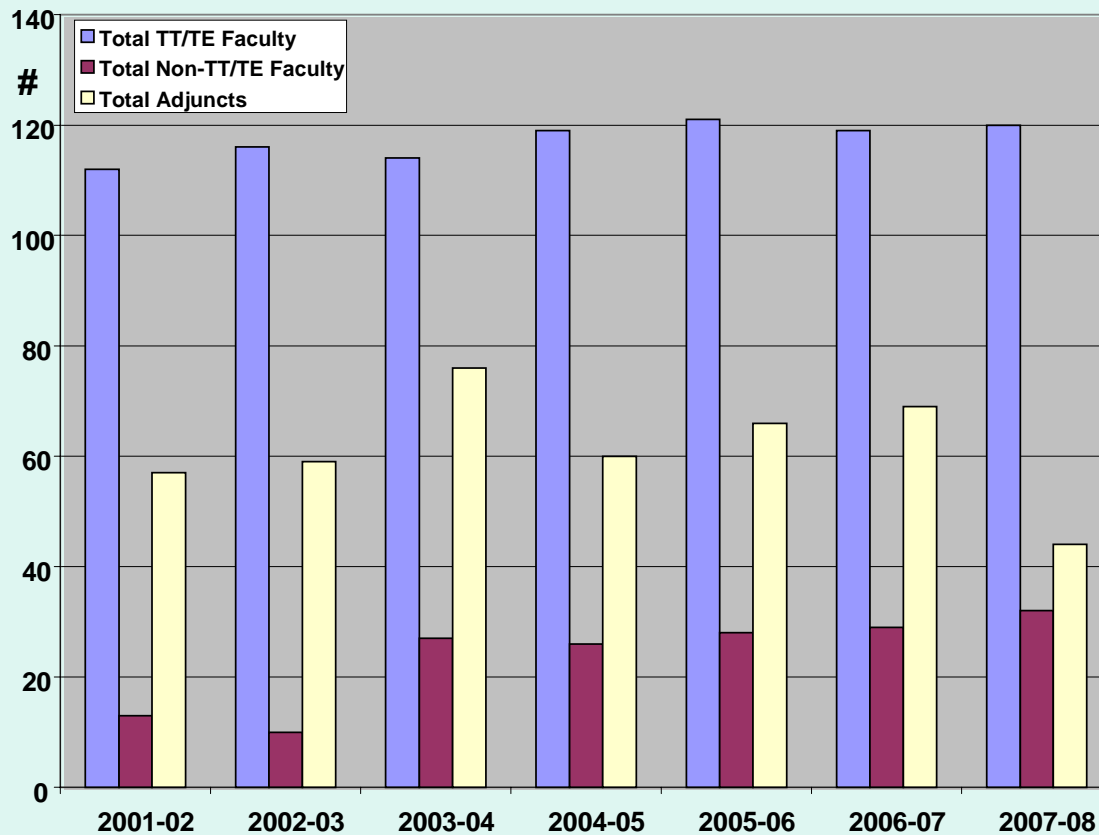
The college is very successful at obtaining sponsored research dollars which has continued to increase significantly since last review. The loss of several key research faculty members in recent years resulted in a decrease last year



Academic Program Review 2009

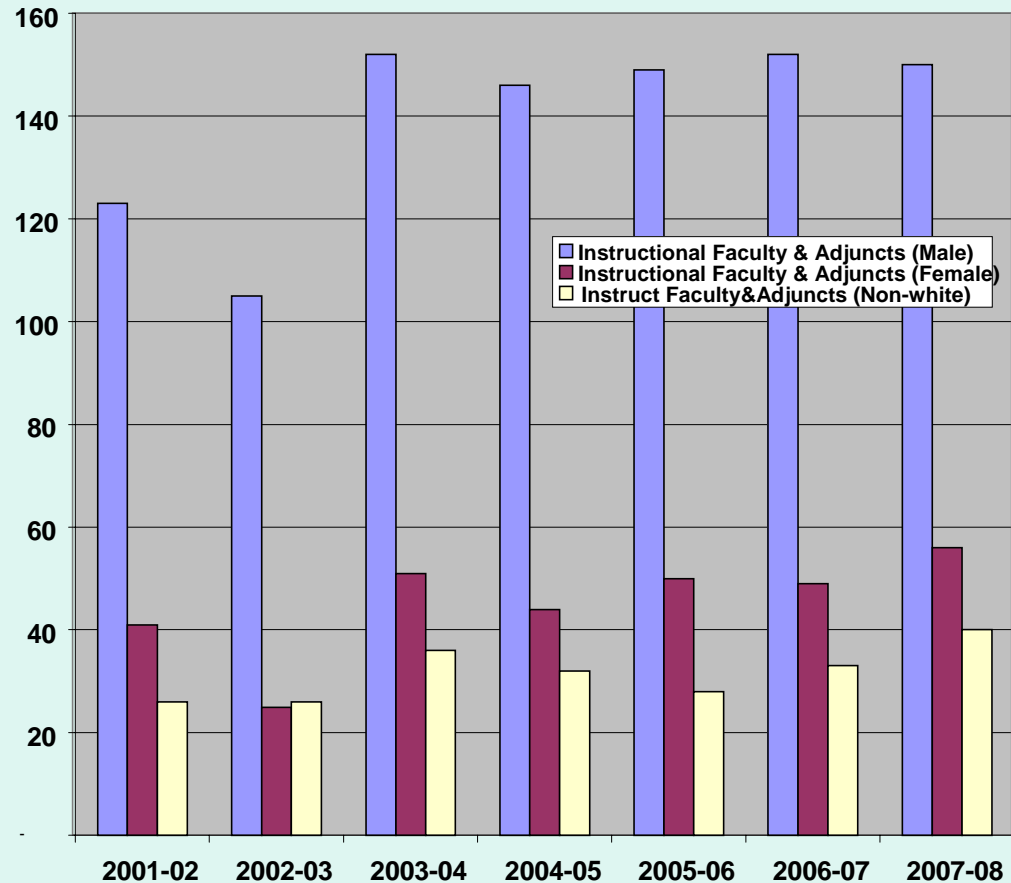
Number of Tenured, Tenure-Earning, Non-Tenure Earning & Adjunct Faculty: Goals 1,2,3&4

The number of regular faculty has remained essentially constant over the last decade while all other productivity measures have increased



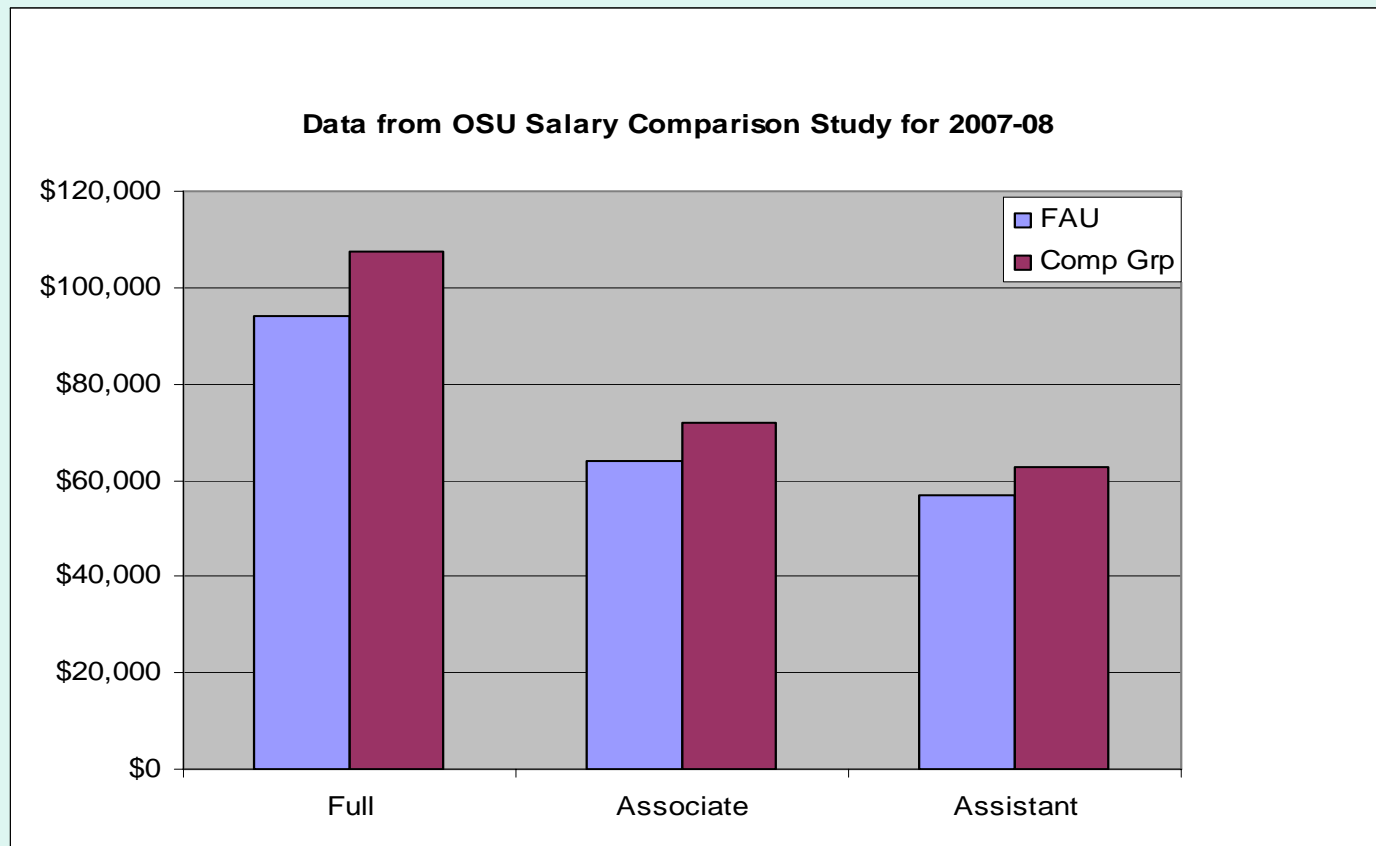
Instructional Faculty & Adjuncts by Gender & Diversity: Goals 1,2,3&4

Diversity of instructional faculty has increased about 20% in last few years, although majority of faculty are white males with 33% female faculty



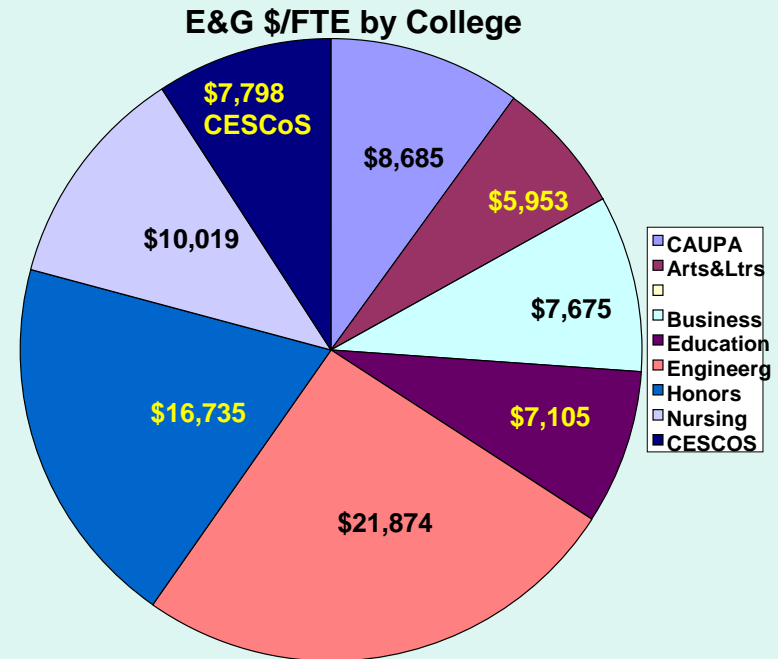
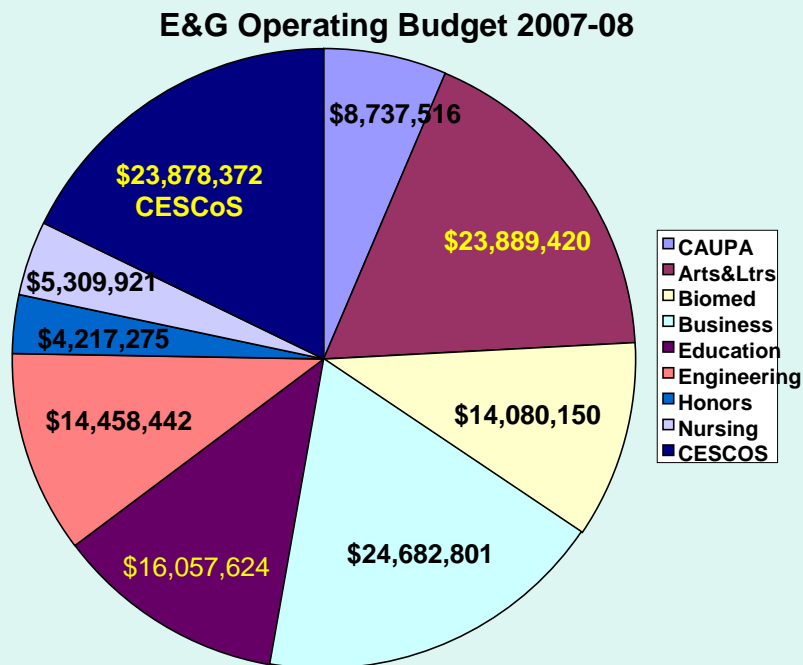
Faculty Salary Comparison 2007-08: Goals 1,2,3&4

Faculty salaries are less competitive than at our peer institutions



Operating Budget

Science has the third largest budget of the colleges although has a very favorable cost per FTE when compared to other colleges



Instructional and Research Expenditures per FTE in 2007-08: Goals 1,2,&3

*Compare favorably with peer and research institutions in instructional cost per student FTE and research expenditure per faculty FTE**

	Instructional Cost per FTE Student			Research Expenditures per FTE T/TT Faculty		
	FAU	Peer	Research	FAU	Peer	Research
Biology	\$5,448	\$4,798	\$6,682	\$88,674	\$131,286	\$95,505
Mathematics	\$5,440	\$4,381	\$5,071	\$46,818	\$11,515	\$16,937
Chemistry	\$5,267	\$6,584	\$7,412	\$153,063	\$70,518	\$148,881
Geology	\$4,426	\$7,778	\$8,353	\$15,999	\$37,307	\$73,186
Physics	\$6,985	\$7,038	\$8,157	\$19,528	\$56,509	\$105,250
Psychology	\$4,688	\$5,497	\$4,887	\$44,601	\$66,454	\$55,662
Geography	\$4,376	\$5,722	\$5,757	\$15,999	\$16,533	\$38,567
AVERAGE	\$5,233	\$5,971	\$6,617	\$64,114	\$55,732	\$76,284

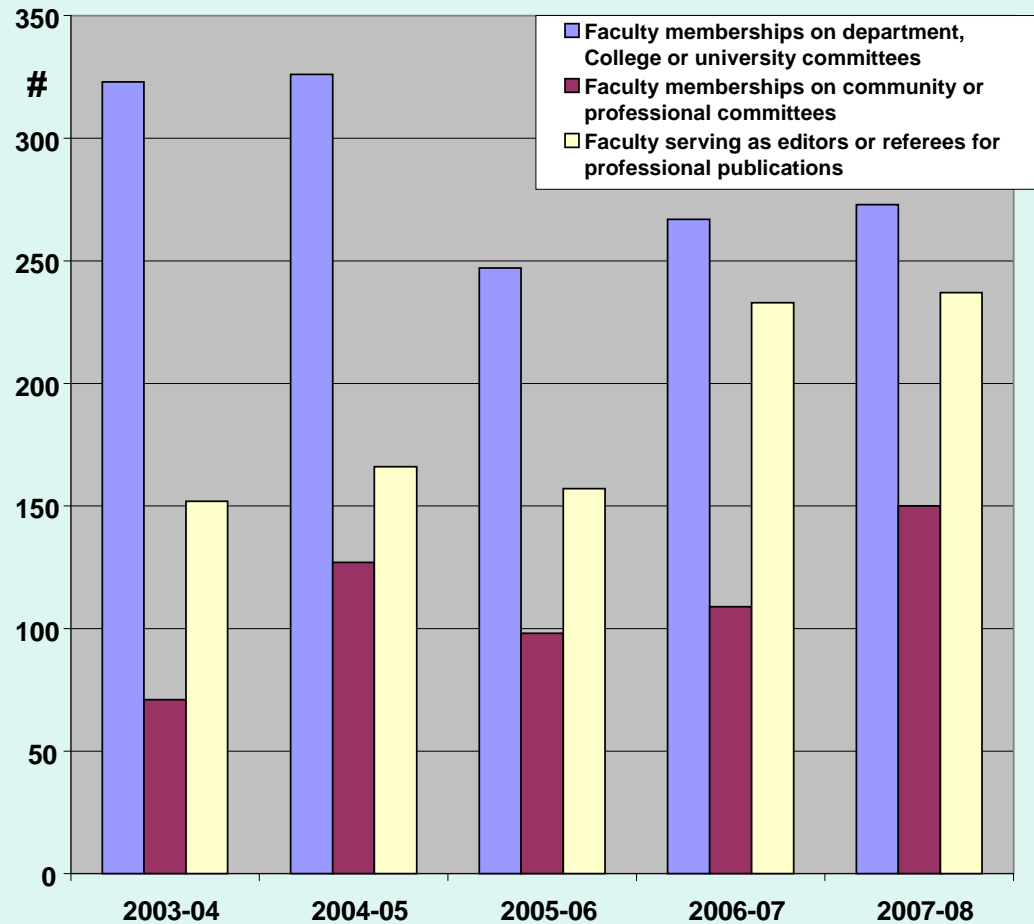
*These data are taken from the National Study of Instructional Costs & Productivity ("The Delaware Study") for 2007-08

GOAL 4: Meeting Community Needs and Fulfilling Unique Institutional Responsibilities

Florida Atlantic University will be a full participant in the life of its seven-county service region. It will advance economic development, encourage regional cooperation and sustainability, build partnerships in key areas of community need and enrich lives through lifelong learning.

Service to University, Community and Profession: Goal 4

Science faculty are active in service activity to the university, community and their professions



Partnership Activities: Goal 4

The college and its faculty are active in partnership activities in key areas of our service community

- **Scripps Florida**
- **Max Planck Florida Institute**
- **Torrey Pines Institute for Molecular Studies**
- **Harbor Branch Oceanographic Institute**
- **South Florida Water Management District**
- **National Park Service (esp. Everglades)**
- **US Geological Survey**
- **Other colleges at FAU**

Outreach Activities: Goal 4

The college and its faculty are active in outreach and partnership activities in our schools and in our local community

- **Frontiers of Science Public Lecture Series**
- **Nobel Symposium**
- **LLL Lecture Series – Exploring Science Today**
- **Math in Middle Schools – Teacher/Curriculum enhancement (NSF funded)**
- **ChemBond - The next Generation (NSF funded)**
- **Math Days (High/Middle Schools)**
- **Pumpkin Drop (Middle Schools)**
- **Science Olympiad (High/Middle Schools)**

SWOT ANALYSIS

- **Strengths**
 - **Quality of Faculty**
 - **Interdisciplinary graduate programs**
 - **Undergraduate programs**
 - **Facilities**
 - **Research/Technology infrastructure**
 - **Community engagement**
- **Weaknesses**
 - **Program Assessment**
 - **Faculty shortage/Faculty salaries**
 - **Graduate stipends**
 - **Fundraising**
 - **Community exposure**

SWOT ANALYSIS

- **Threats**
 - **Faculty number**
 - **Faculty salary/rewards**
 - **Instructional load**
 - **Graduate Stipends**
 - **Cost of living**
 - **Community/State College expansion**

- **Opportunities (Jupiter)**
 - **Campus specific missions**
 - **Partnerships**
 - **Economic development**
 - **Regional initiatives**
 - **Community outreach**

Institute for Biomedical Science and Technology

