UCF Stands For Opportunity

SCHOOL OF ELECTRICAL ENGINEERING & COMPUTER SCIENCE

School of EECS Overview

Electronic Devices Colloquium

Feb. 21, 2008

Issa Batarseh
School of EECS Director
University of Central Florida
Orlando, FL
batarseh@mail.ucf.edu

Harris Corp. Engineering Center

New 100,000 sq.ft. home of the School of EECS

HARRIS

The Most Significant Gift of $6M

University of Central Florida

Then

1969 – Enrollment: 1,948 Students

Now

2007 – Enrollment: 48,500 Students

UCF Facts

- ***Mission:*** **to be America's leading partnership research university**

- **Sixth largest university in the U.S.**
  - **48,497 Students (55% female, 93% in-state)**
  - **7,200 Graduate Students & 9,300 Faculty & Staff**
  - **Engineering & CS 4,936 UG 990 Grad 5,926 Total**
  - **2nd highest number of National Merit Scholars**

- **Main Orlando campus & 12 regional sites including six Florida Community Colleges**

- **Twelve colleges, including new College of Medicine Admitting Students in 2009**

- **Over 160,000 degrees awarded, including 1,600 plus doctoral degrees**

UCF Facts

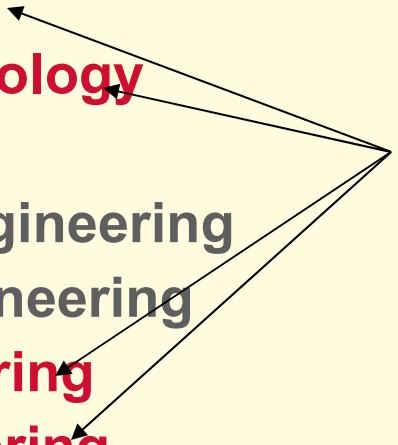
- UCF Extensive Distributed Learning & Campus Infrastructure
- Advanced learning spaces
  - 80% of classrooms multimedia-equipped
- UCF $950M Budget, $1.7 B local economic impact
- Top ten employer in Central Florida
- Over $105 Million in Sponsored Research
- Central Florida Research Park (UCF Research Park)
  1,027 acres, 116 companies,
  Over 8,000 employees
  $1.4 Billion in economic impact
  $2 Billion in DoD contracts
  One of leading M&S business hubs in America

College of Engineering & Computer Science

- UCF College of Engineering and Computer Science (CECS) has an enrollment of more than 5,000 undergraduate and 1,100 graduate students.
- CECS is ranked in the top 9% of colleges for the number of Bachelor's degrees, top 10% for the number of Master's degrees, and top 12% for the number of PhD degrees awarded in engineering.
- EECS ranked 2nd after Georgia Tech in head count

CECS Programs of Study

- Computer Science
- Information Technology
- Civil Engineering
- Environmental Engineering
- Construction Engineering
- Electrical Engineering
- Computer Engineering
- Engineering Technology
- Industrial Engineering
- Aerospace Engineering
- Mechanical Engineering



School of EECS

School of EECS Programs of Study

BS, MS and Ph.D. degrees in:

- Computer Science
- Information Technology*
- Electrical Engineering
- Computer Engineering

**IT is a BS only degree at this time*

EECS Vision

To be among the premier Schools of Electrical Engineering and Computer Science and be ranked among the top 50 departments in the nation by 2011.

School of EECS Strategic Plan Objectives

- Achieve national prominence in strategic research areas of, computer science, engineering computer, and electrical engineering.
- Achieve national leadership in EECS education.
- Achieve success in helping develop/advance Florida's/US Hi-Tech economy.

EECS Priorities

- **Retain and Recruit outstanding faculty and attract high quality students**
- **Promote and expand multi-disciplinary research**
- **Continue to update and develop quality graduate and undergraduate curricula**
- **Strengthen industrial outreach**
- **Promote faculty, students, and teaching and research programs!**

EECS Focus Areas

- Bioinformatics and Systems Biology
  - EECS leading a new interdisciplinary MS (and eventually Ph.D.) program with 2 other colleges
  - Includes “biologically-inspired” computing
- Entertainment Engineering
  - Graphics, Vision, Co-operative behaviors, Immersive Environments, Robotics, Modeling, Simulation and Training
- Energy
  - Renewable energy, grid-based networks, power electronics

EECS Research

- EECS reached $8.8 million in new funded research for FY 2006-2007
- Total Expenditure $7M
- Average of $140k/Faculty

Program Rankings

US News and World Report:

- **2005** – none were ranked.
- **2006** – EE ranked 76, and CpE was not ranked
- **2007** – EE ranked 69, and CpE ranked 67
- **2008** – EE ranked 67, and CpE ranked 69

Public University Ranking:
2007: 38
2008: 34

NRC – National Research Council:

- **1993 –** EE Ranked 77
- **2008 –** to be announced in April

EECS Faculty Count

EECS			
Tenured/ Tenure-Track Faculty	Visitors/ Lecturers	Total Faculty for 2006-2007	Projected New Hires for 2008-2009
60	7	67	1-2?

One of the 10 largest ***combined*** EECS academic units in the nation in terms of student enrollment and faculty size.

EECS Faculty Recruiting

- 10 Tenure-track faculty joined EECS in the past 2 years from:
  - MIT, Caltech, UT-Austin, Michigan, Brown, UMass, etc.
- This year, recruited Marwan Simaan, UCF's first National Academy of Engineering faculty member
  - Part of the 21st Century World Class Scholar program

  Also recruited Dan van der Weide with CREOL
- Over 525 applicants!

EECS Technical Areas

Our TT-faculty are grouped into the following 8 focus areas

1.	Computer Systems and VLSI	Core Faculty (7)
2.	Algorithms and Software Systems	Core Faculty (7)
3.	Intelligent Systems and Machine Learning	Core Faculty (5)
4.	Computer Networks	Core Faculty (8)
5.	Signal Processing and Systems	Core Faculty (8)
6.	Micro- and Nano-Systems	Core Faculty (7)
7.	Computer Vision and Graphics	Core Faculty (9)
8.	Electromagnetics and Optics	Core Faculty (6)

School of EECS
Fall 2006

EECS Enrollment	
TOTAL Undergraduate Headcount	1885
TOTAL Graduate Headcount	478
TOTAL HEADCOUNT	2,363

Undergraduate Enrollment

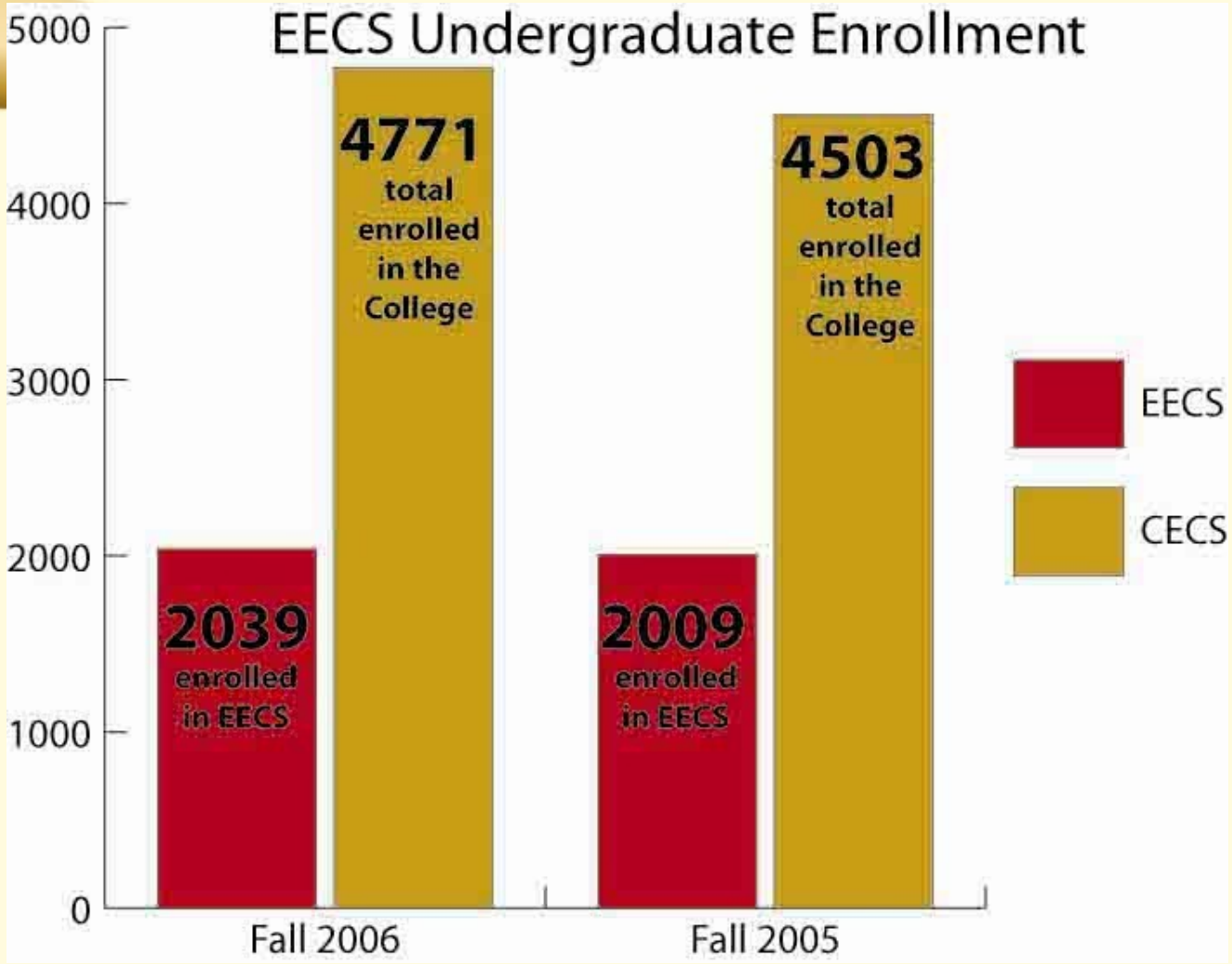
AY (2006-2007)

Undergraduate Program Enrollment	Total UGD
Computer Engineering	417
Computer Science	638
Electrical Engineering	528
Information Technology	302
TOTAL Undergraduate	1,885

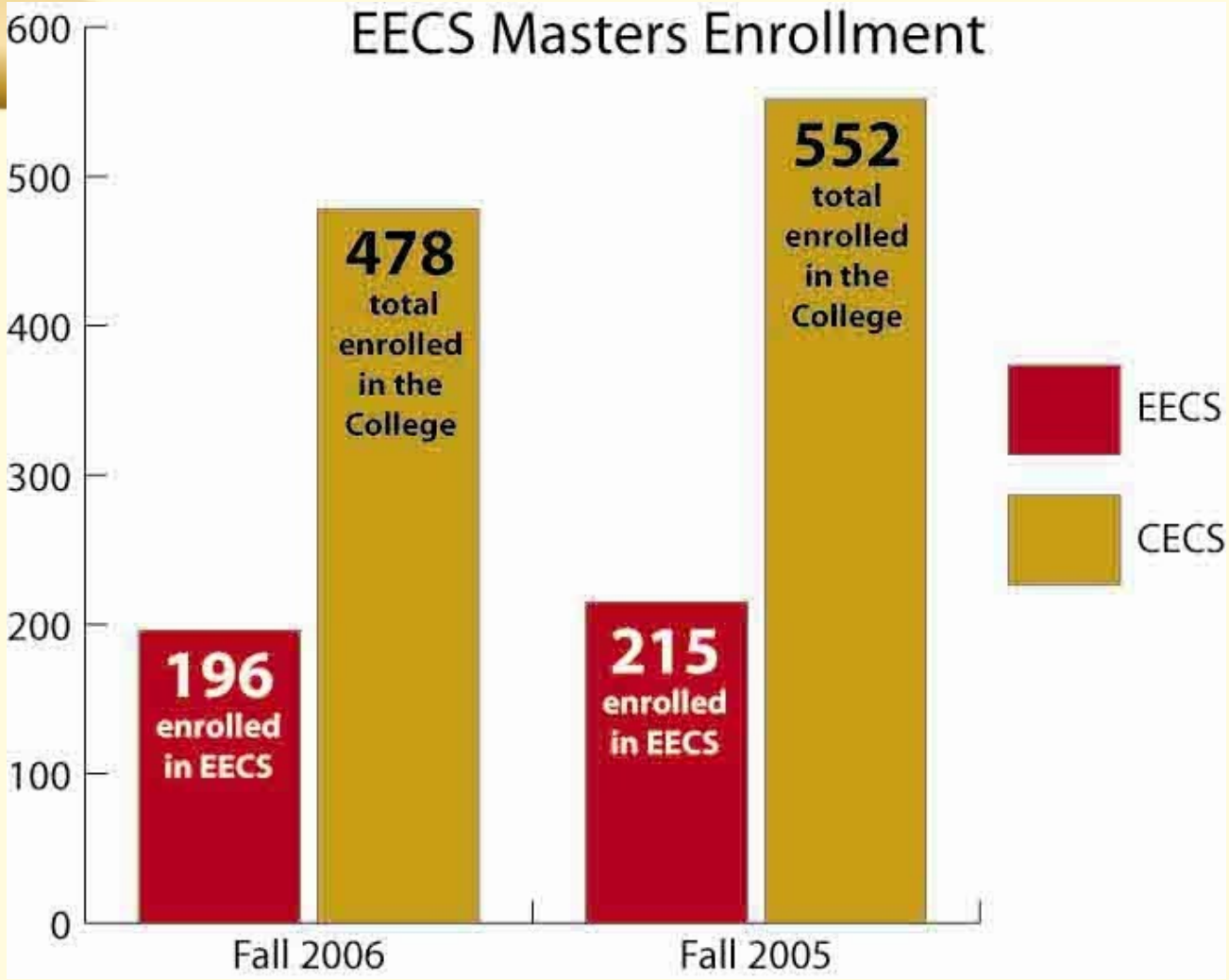
Graduate Enrollment
AY (2006-2007)

Graduate Program Enrollment	M.S.	Ph.D	Total
Computer Engineering	67	55	122
Computer Science	45	121	166
Electrical Engineering	83	107	190
TOTAL Graduate Enrollment	195	283	478

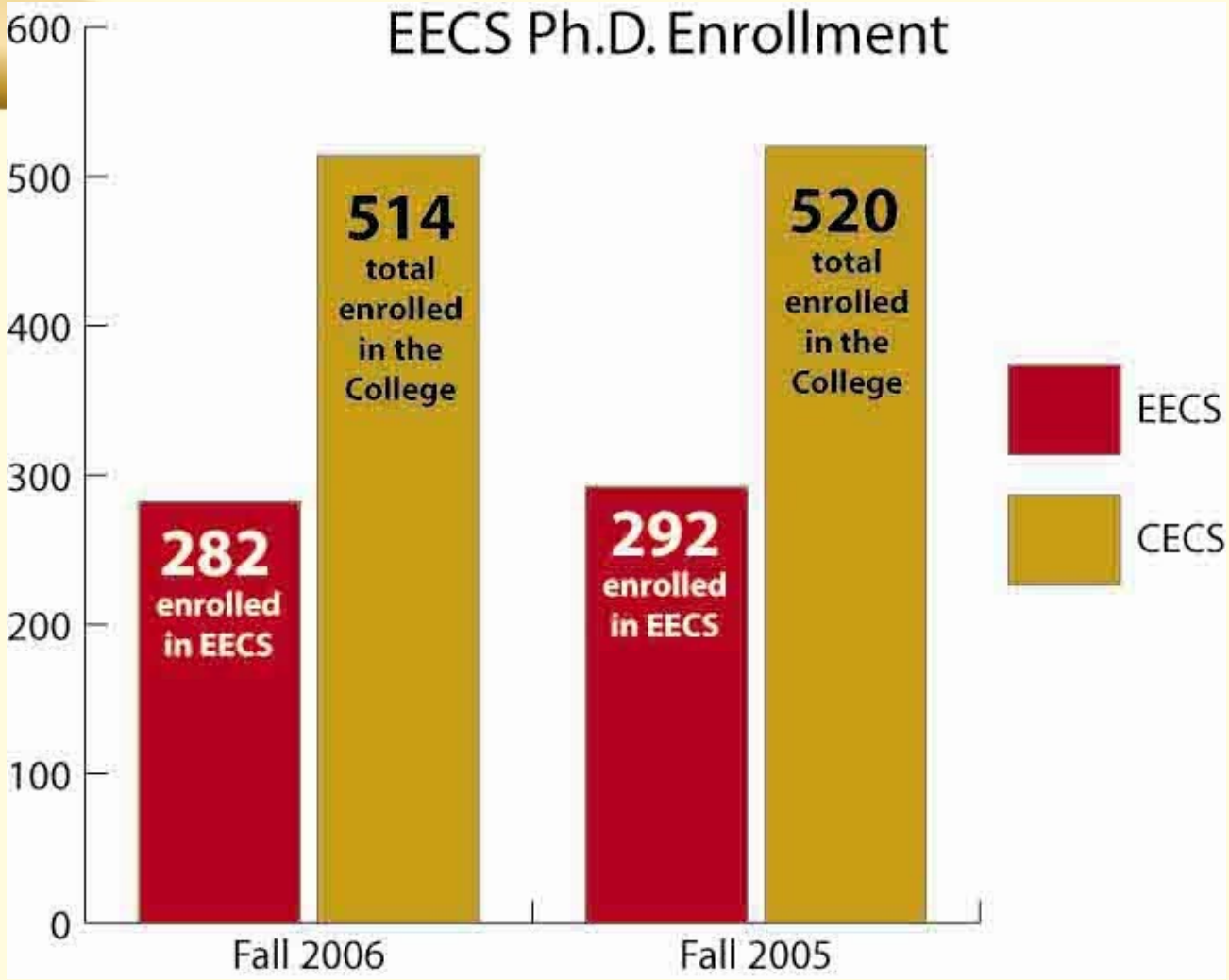
BS Enrollment



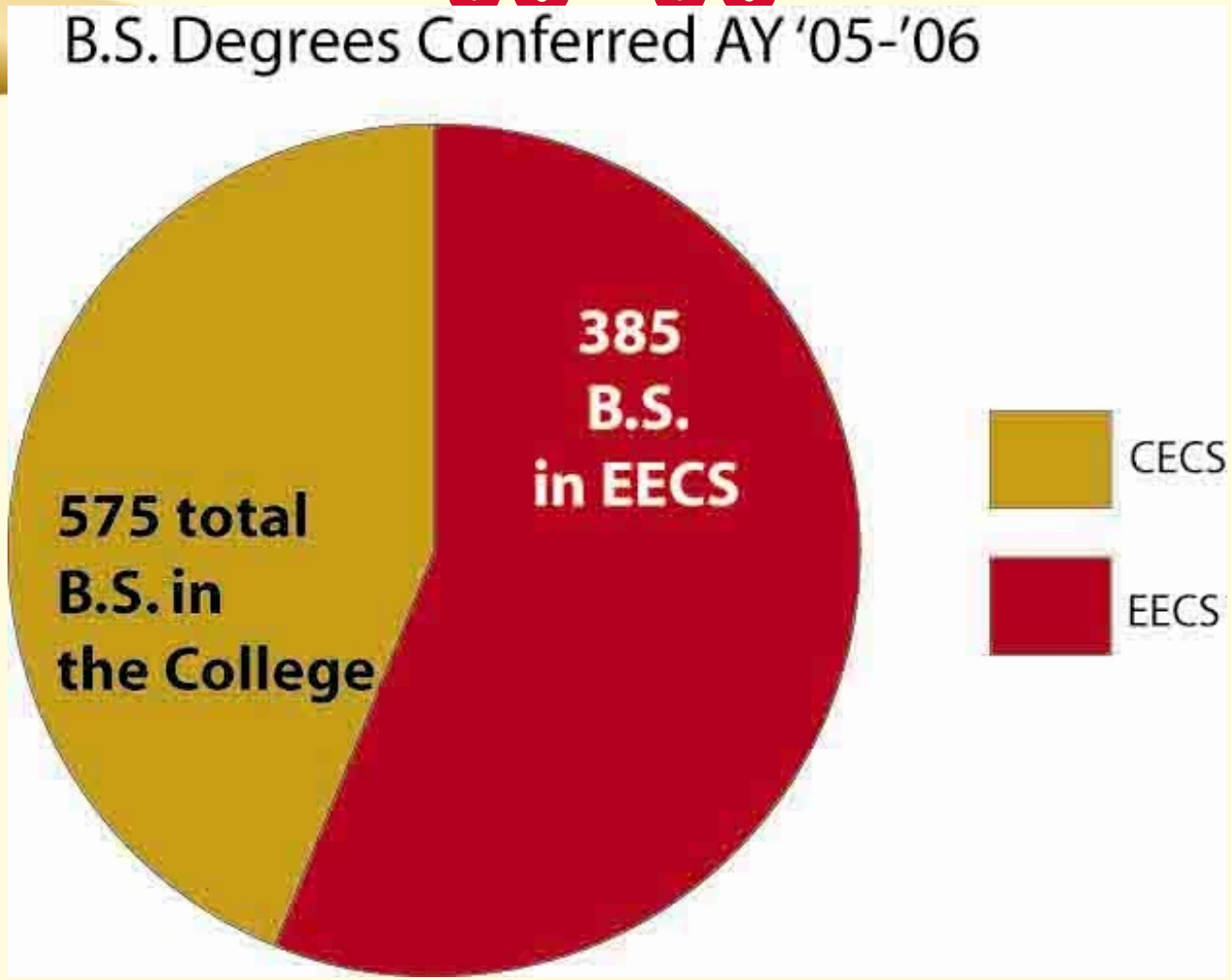
MS Enrollment



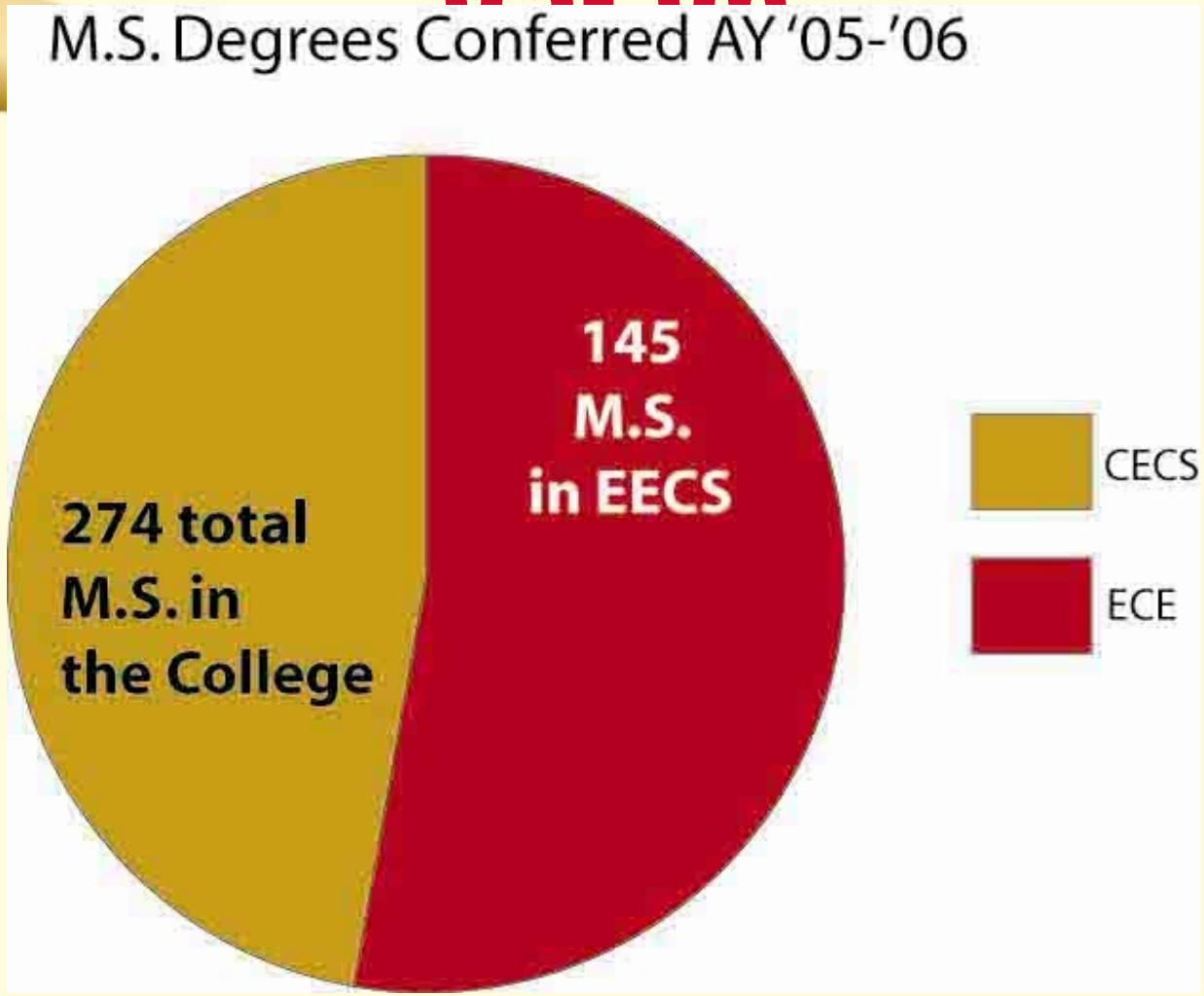
Ph.D. Enrollment



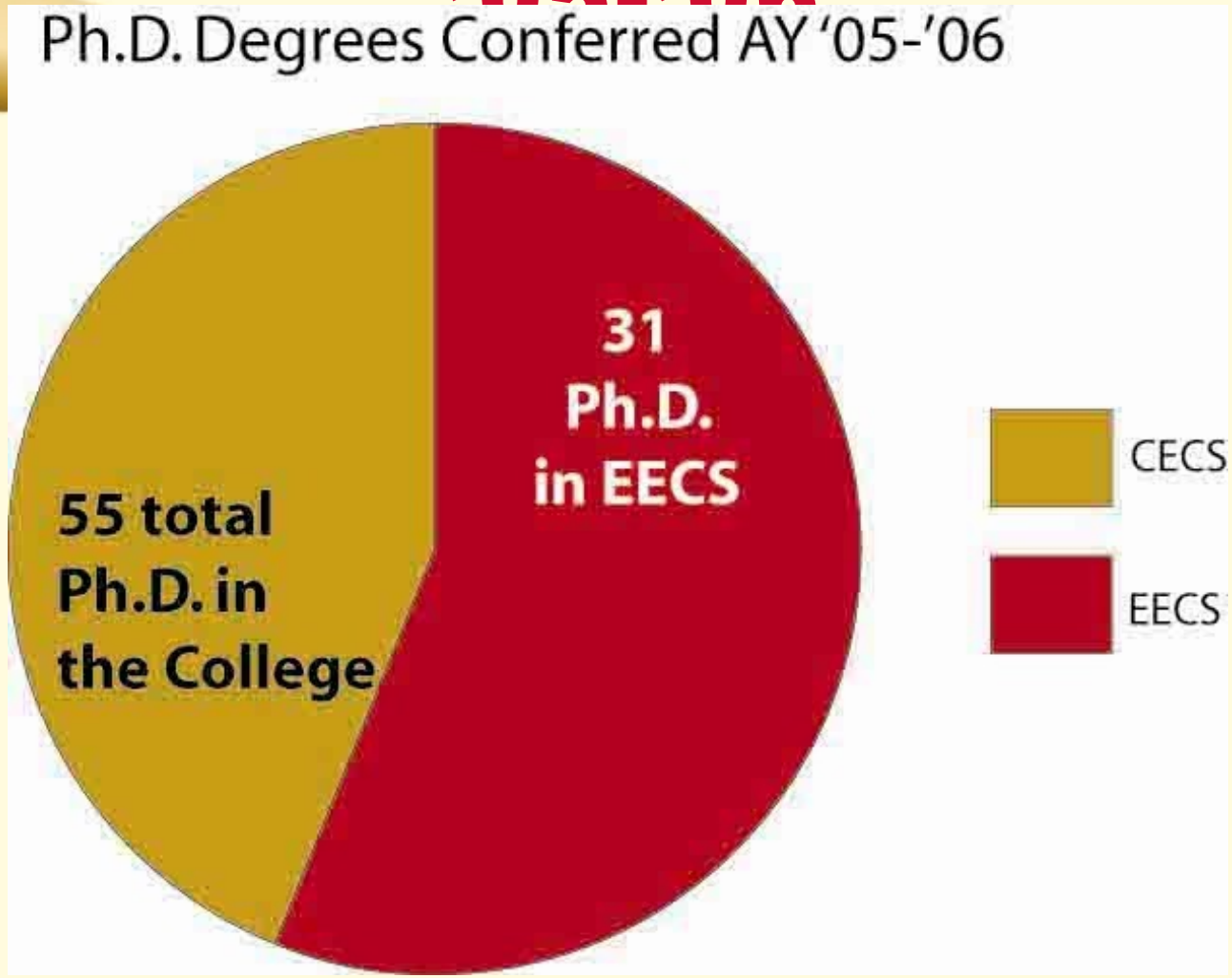
BS Degrees Conferred '05-'06



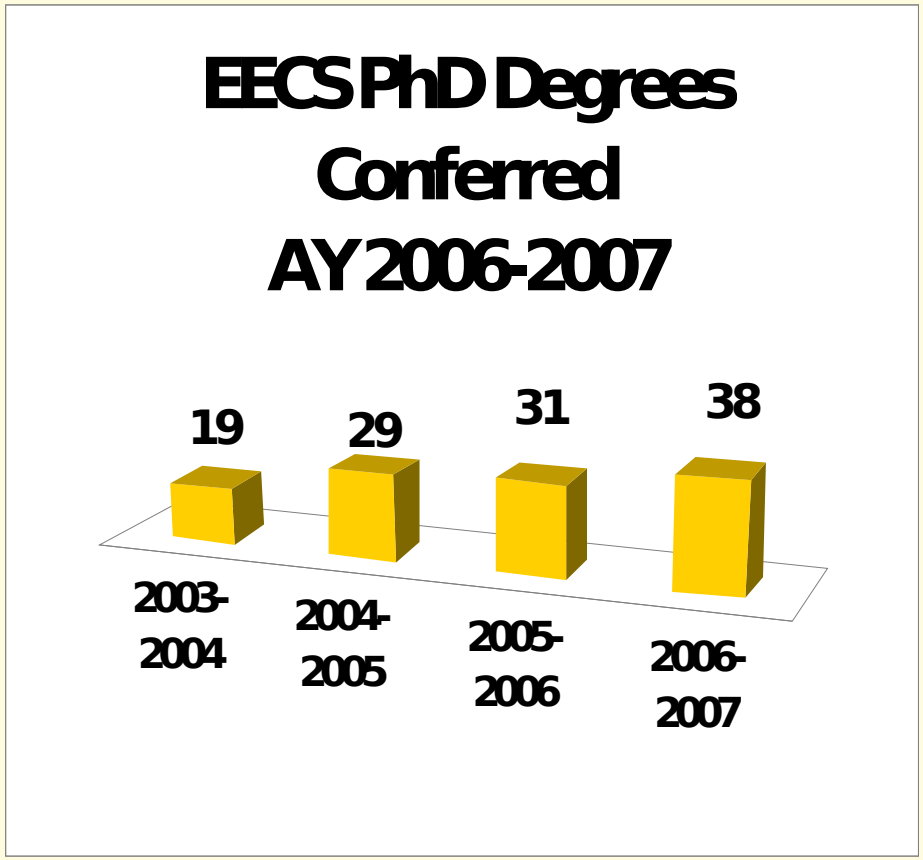
MS Degrees Conferred '05-'06



Ph.D. Degrees Conferred '05-'06



Ph.D. Degree Production



- CS Ph.D. production 15th in the nation according to CRA
- Oldest CS Ph.D. program in FL, 1st PhD program at UCF
- 0.6 Ph.Ds/TT-faculty/yr ranks with top schools

EECS Partnerships

- Harris Corp. – Naming opportunities, research, student outreach.
- Coleman Technologies – DARPA project
- L^3 Communications – CAVE (computer aided virtual environment) equipment
- Lockheed Martin – academic partner to educate their employees with work study programs, special training courses
- Entertainment Arts – summer internships for min. of 2 EECS students each year

EECS Outreach

- **Florida Science Olympiad Invitational – Targets Middle School AND High School students.**
- **ACM International Collegiate Programming Contest – UCF will host this competition here in early 2008; outstanding opportunity – access to the World's best programmers.**
- **UCF High School Programming Contest – the largest and oldest contest of its kind in Florida, this is an annual event hosted at UCF that is an important recruiting event.**

DARPA Urban Challenge

UCF Knight Rider

Finished 7th (MIT. Stanford, CM, VT)

- Complete a 60-mile Urban course safely in less than 6 hours.
- Entry of UCF Knight Rider VIP into the final among 35 teams
- Goals
  - Showcase of technical competence in relevant areas of EE, CpE and CS
  - Industrial-academic collaboration
  - Student participations
  - Visibility
  - National interests

UCF Programming Team

Programming Contest Prestige

- Organized by the Association for Computing Machinery (ACM)
- IBM began sponsoring the contest in 1997
- In 11 years since, participation has grown by a factor of 7.5!
- University Participation:
  - 1997 = 560 universities
  - 2007 = 1,756 universities
- Teams Involved:
  - 1997 = 840 teams
  - 1997 = 6,099 teams

UCF's Unrivaled Success in the ACM Programming Contest

- UCF has competed the last 25 years
- Southeast Regional Contest Results:
  - First Place – 12 times
  - Second Place – 7 times
  - Third Place – 6 times
- World Contest Final Results
  - Second Place ('87)
  - Fourth Place ('86)
  - Fifth Place ('91)
  - Seventh Place (twice: '92 & '94)

University of Central Florida

School of EECS

Programming Team Record

Year	Regional (Five States, typically 80+ teams)	International (World, typically 6,000+ teams)
1982-83	2nd	17th
1983-84	3rd	
1984-85	1st	16th
1985-86	2nd	4th
1986-87	1st	2nd
1987-88	3rd	
1988-89	3rd	
1989-90	1st	16th

Year	Regional (Five States, typically 80+ teams)	International (World, typically 6,000+ teams)
1990-91	1st	5th
1991-92	1st	7th
1992-93	3rd	
1993-94	2nd	7th
1994-95	1st	25th
1995-96	2nd	30th
1996-97	1st	17th
1997-98	1st	37th

Year	Regional (Five States, typically 80+ teams)	International (World, typically 6,000+ teams)
1998-99	3rd	
1999-2000	2nd	11th
2000-01	1st	14th
2001-02	1st	27th
2002-03	3rd	
2003-04	1st	44th
2004-05	2nd	41st
2005-06	2nd	56th
2006-07	1st	44th

The Southeast region includes Florida, Georgia, South Carolina, Alabama, and Mississippi. Among Schools competing in this region are University of Florida, Florida State University, Georgia Tech, Auburn, Clemson, University of South Carolina, and Mississippi State.

The World Contest Finals includes teams from six continents in the world. Countries participating in finals include USA, Russia, Canada, Germany, Netherlands, Japan, China, Mexico, Brazil, Morocco, and Australia.

UCF Stands For Opportunity

SCHOOL OF ELECTRICAL ENGINEERING & COMPUTER SCIENCE

EECS New Initiatives

Master of Science degree in Digital Forensics (MSDF)

- Provides training in the science and practice of handling computer (digital) evidence: identification, collection, preservation, examination, analysis, reporting, and presentation
- Is an interdisciplinary program (Colleges of Engineering & Computer Science and Health & Public Affairs) led by EECS faculty:
  - EECS (Lang, J. Lee, D. Turgut, C. Zou)
  - ENT (Craiger, Pollitt)
  - Forensic Science (Whitcomb, Sadaka)
  - Criminal Justice/Legal Studies

MSDF (continued)

- Builds upon existing graduate certificate in computer forensics which started in the fall of 2001 with collaboration of EECS, Forensic Science/Chemistry, and the National Center for Forensic Science
- Consists of 30 credit hours with coursework in computer and network forensics, cyber law, forensic science, expert witness in the courtroom, and internship/practicum experience
- Potential partners: law enforcement agencies, community colleges, industry
- Target start date: fall of 2007

Undergraduate Research Experience Program

- The Undergraduate Research Experience (URE) program provides an opportunity to work with and learn from UCF research faculty, their graduate students, and their activities
- This program is in addition to other undergraduate research programs, such as UCF's RAMP.
- It provides additional opportunities for interested students starting at the freshman level.
- Students accepted into the receive a contract for $3,000 per academic year, which includes the Fall and Spring semesters.

The EXCEL Program at UCF

- The EXCEL program is a STEP (Science Technology, Engineering and Mathematics Talent Expansion Program) project ***funded by NSF*** for 5 years (January 2006 to December 2010) at the level of $1.8M

- The EXCEL program was ***one of 19 (out of 197 proposals)*** that were submitted to NSF in the 2005 STEP cycle (success rate ~ 10%)

The EXCEL Program at UCF

- The EXCEL Program's objective is to ***increase*** the ***success,*** in their first two years of college, of students (US and permanent residents) that pursue ***STEM (Science, Technology, Engineering and Mathematics)*** disciplines at UCF
- The EXCEL program has already ***recruited 184 UCF STEM*** students in the Fall of 2006
- Please visit our web-site (www.excel.ucf.edu) to learn more about EXCEL

THANK YOU!