

CornellEngineering Update

Lance R. Collins
Dean of Engineering

April 7-8, 2016

Agenda

- General updates
 - College Leadership Updates
 - New Faculty, Awards
 - Research and Graduate Studies Highlights
 - Admissions Highlights
 - DPE Highlights
 - Project Team Highlights
 - Co-op and Career Services Highlights
- Facilities Update
- Cornell Now Campaign Update
- Cornell Tech Update

Director of Systems Engineering



Oliver Gao

Director of Systems Engineering

- Joined Cornell in 2005.
- Associate Professor of Civil and Environmental Engineering
- J.P. and Mary Barger '50 College of Engineering Excellence in Teaching Award 1990
- Degrees received
 - B.S. 1996 in Civil Engineering/Environmental Science, Tsinghua University
 - M.S. 1999 in Civil Engineering, Tsinghua University
 - Ph.D. 2004 in Civil Engineering University of California, Davis
 - M.S. 2004 in Statistics and Agriculture and Resource Economics, University of California, Davis
- Research Focus – transportation and environment (especially air quality and climate change), energy and sustainable development.

New Faculty

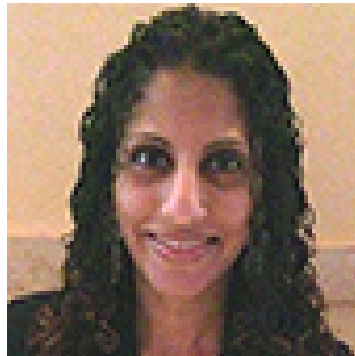
(Arrivals Spring 2016)



Guy Hoffman
Asst. Professor, MAE



Samitha Samaranayake
Asst. Professor, CEE



Nelly Andarawis-Puri
Asst. Professor, MAE



David Kammer
Asst. Professor, CEE

New Faculty

(Arrivals Spring 2016)



Greg Bewley
Asst. Professor, MAE



Fengqi You
Professor, CBE



Nicki Dell
Asst. Professor, Cornell Tech IS

Major Faculty Awards

- **NSF Faculty Early Career Development (CAREER) Award**
 - Katie Keranen (EAS)
 - Ankur Singh (MAE)
 - Chris Alabi (CBE)
- **Presidential Early Career Award for Scientists and Engineers (PECASE)**
 - Lena Kourkoutis (AEP)
- **American Institute for Medical and Biological Engineering (AIMBE)
College of Fellows**
 - Claudia Fischbach-Teschl (BME)
 - Cynthia Reinhart-King (BME)

Major Faculty Awards

- **Google Faculty Research Awards**
 - Yoav Artzi (CIS)
 - Eva Tardos (CIS)
 - Robbert van Renesse (CIS)
- **Association for Computational Linguistics (ACL) Fellow**
 - Claire Cardie (CIS)

\$50 Million Gift Creates Robert Frederick Smith School of Chemical and Biomolecular Engineering



Robert F. Smith '85
Founder, Chairman & CEO
Vista Equity Partners

- A combined \$50 million commitment.
- Gift will support Chemical and Biomolecular engineering and African-American and female students in the College of Engineering.
- Gift will also create the Robert Frederick Smith Tech Scholars Program for select high school seniors with financial need focusing on African-American and female students who will be invited to earn an undergraduate degree at Cornell Engineering, followed by a one-year technical master's degree at Cornell Tech.

Cornell Neurotech Launched with \$2.5 Million Gift from Mong Family Foundation



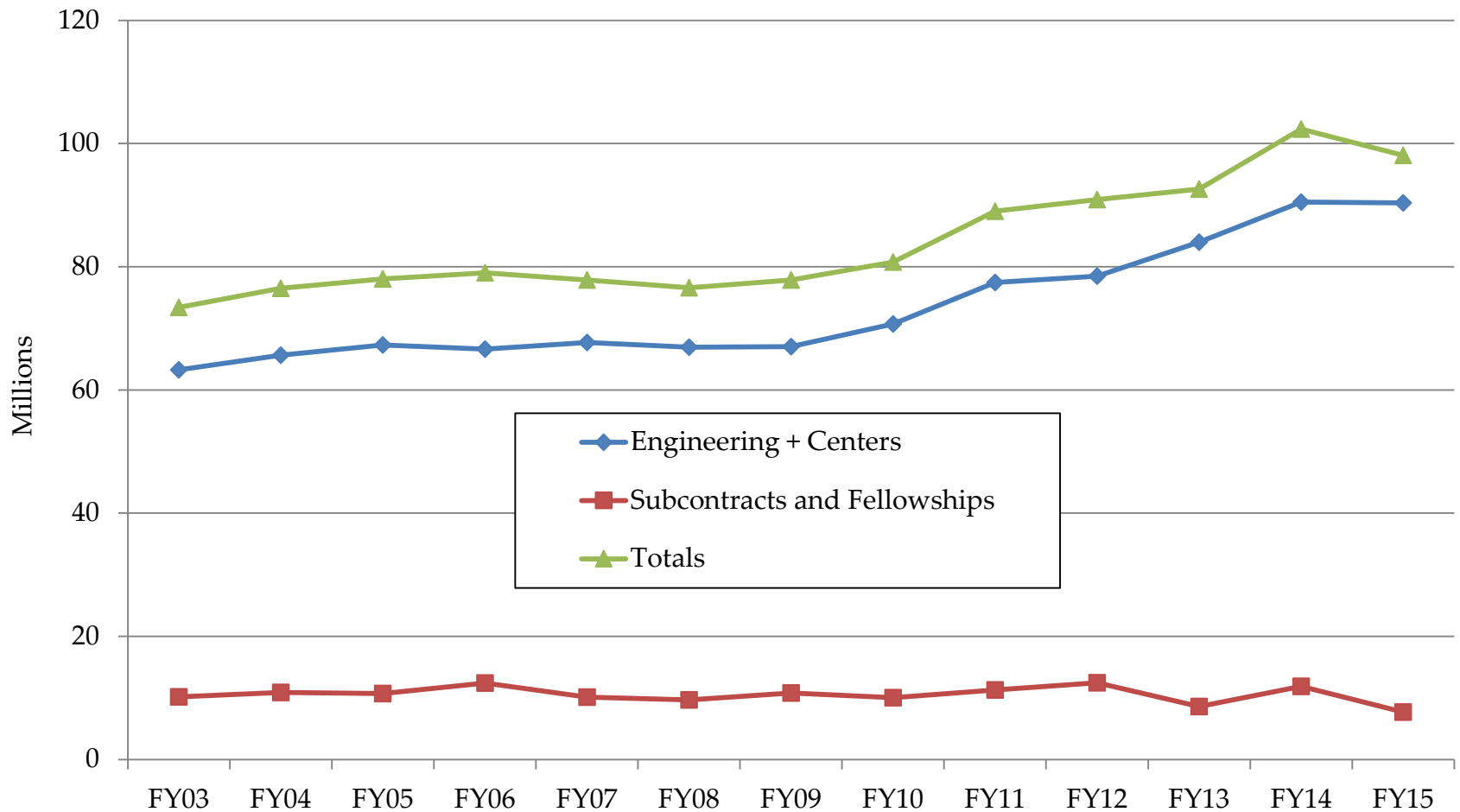
Stephen Mong
'92, MEN '93, MBA '02
Founder & Managing Director
Orien Capital Management LLC

- \$2.5 Million gift from the Mong Family Foundation, through Stephen Mong '92, MEN '93, MBA '02.
- Goal of Cornell Neurotech is to develop technologies and powerful new tools needed to reveal the inner workings of the human brain, with a particular focus on how individual brain cells and complex neural circuits interact at the speed of thought.
- Strong connection to the White House BRAIN Initiative.
- Co-directors:
 - Joseph Fetcho, Professor, Neurobiology and Behavior
 - Chris Xu, Professor, Applied and Engineering Physics
- Mong Fellows (4 per year, 1.2 in high risk lab, ½ in traditional lab)

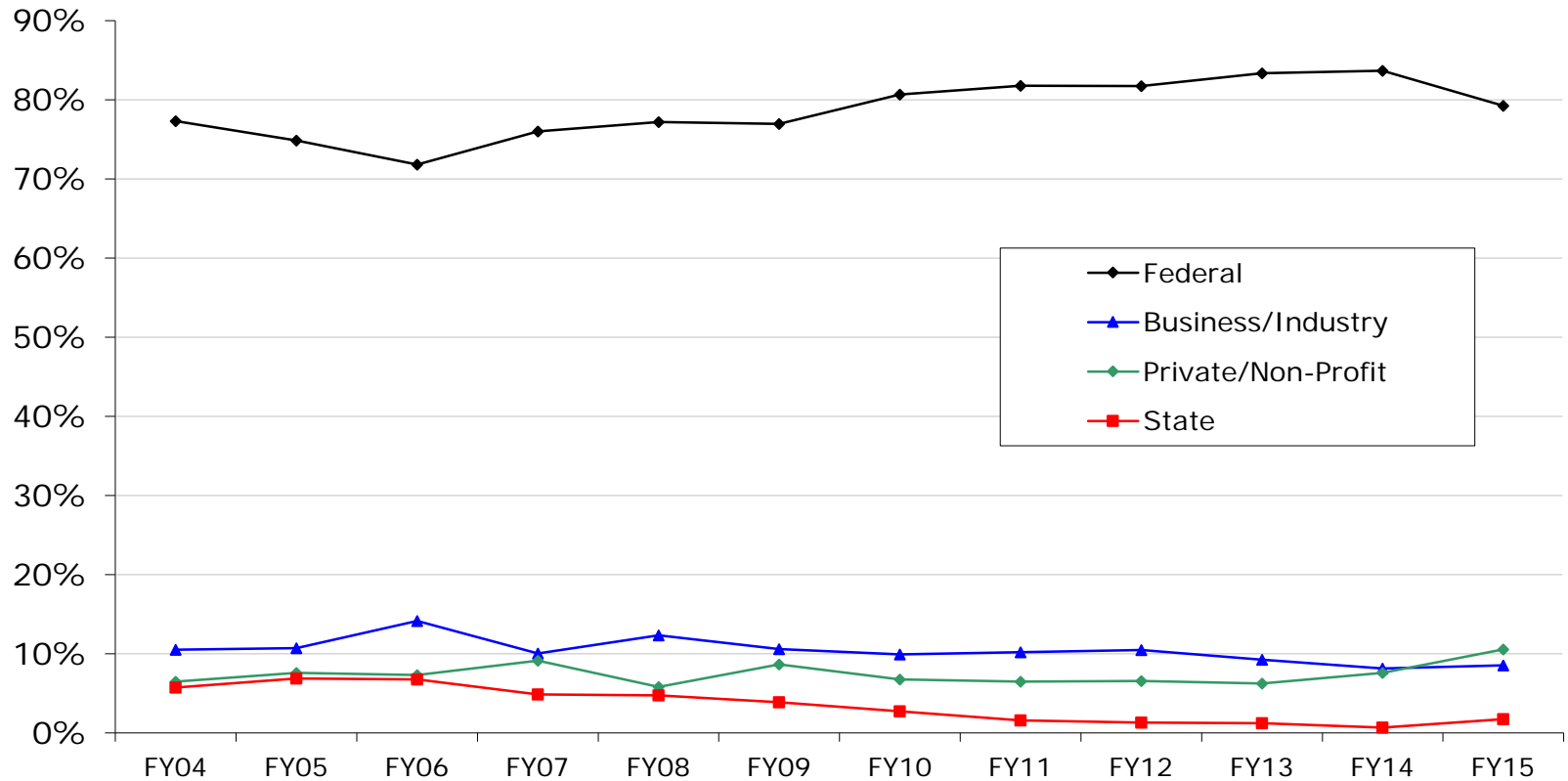
Research and Graduate Studies Highlights

April, 2016

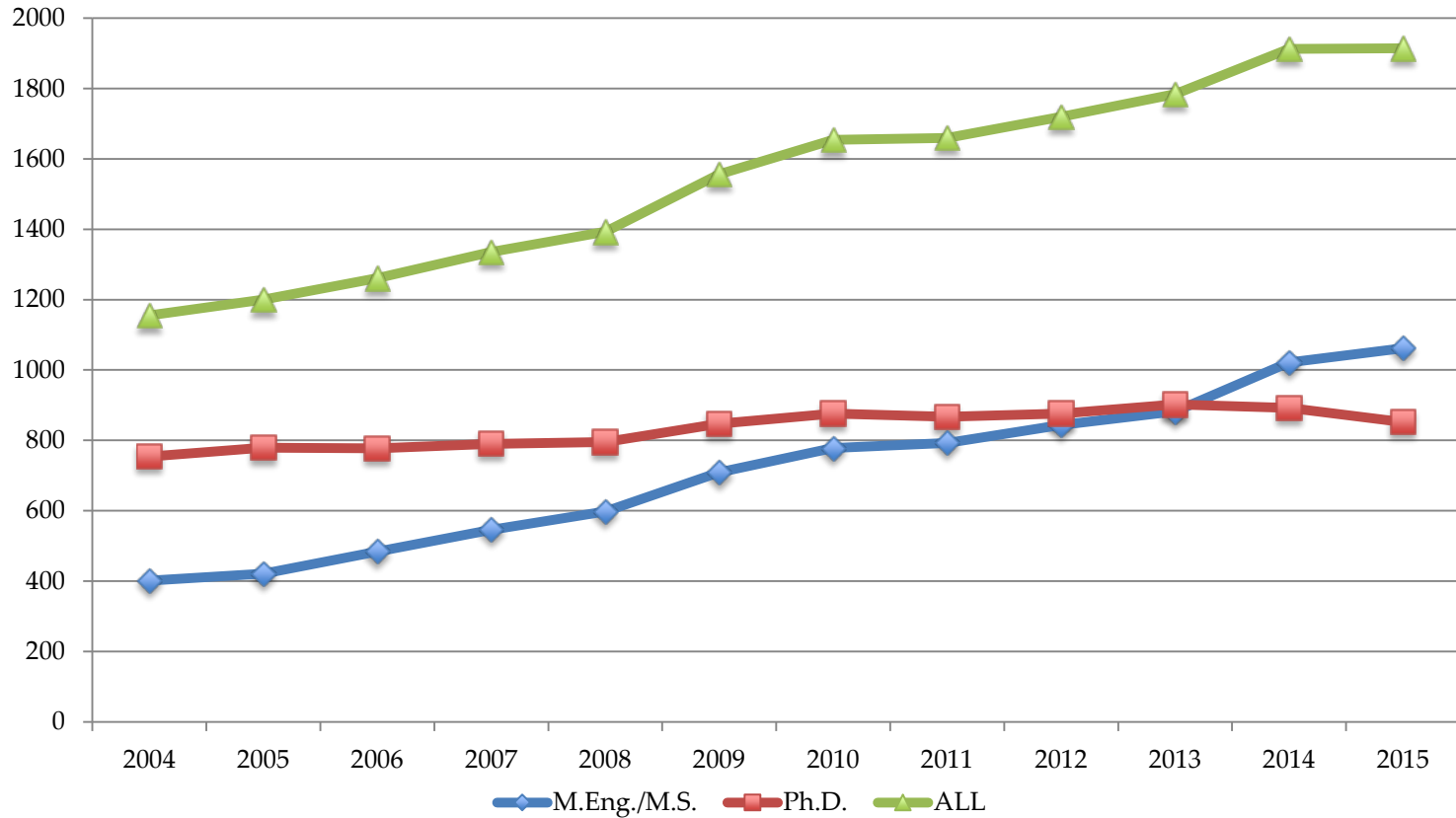
Research Expenditures



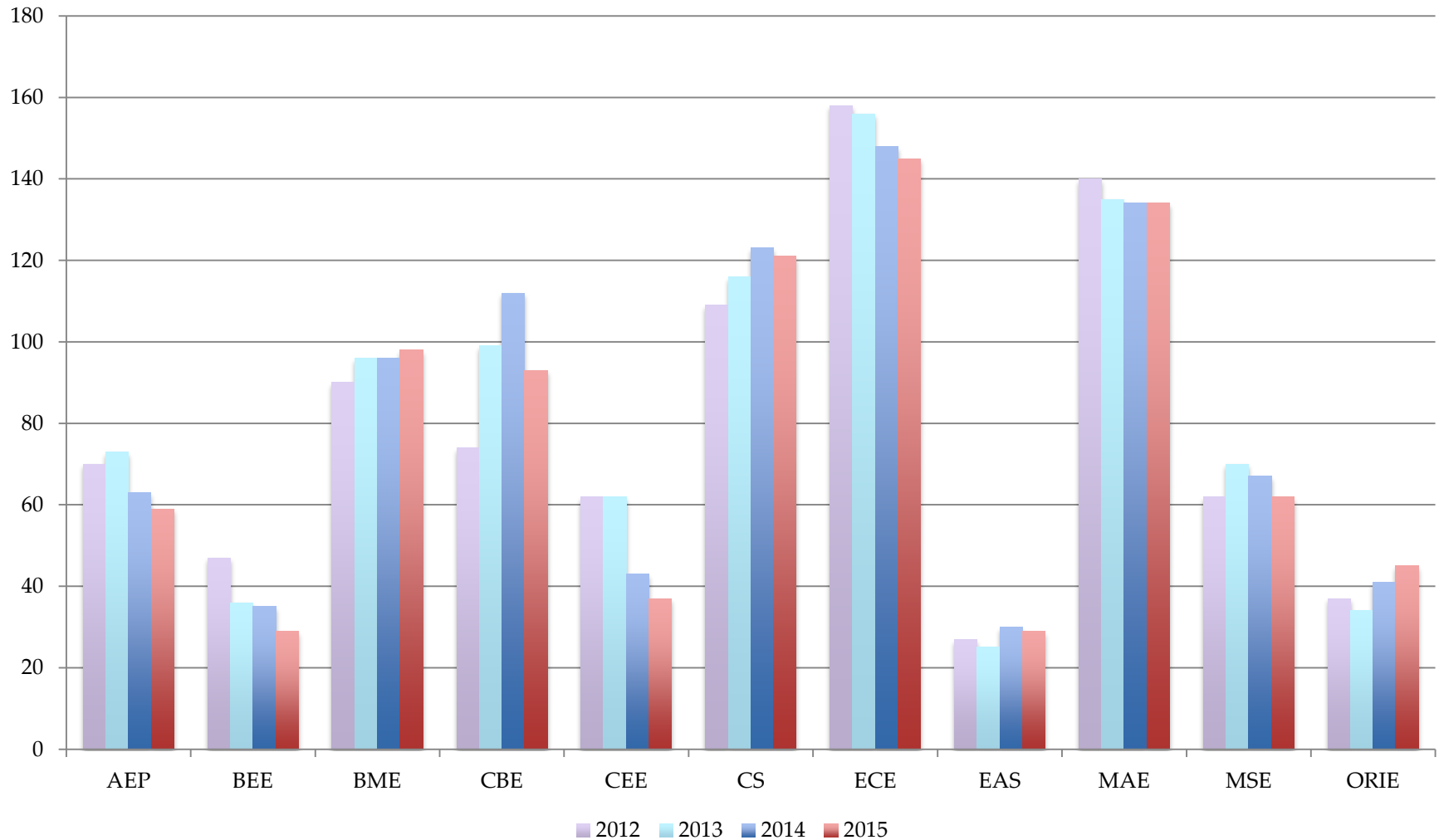
Percent Distribution of Research Expenditures



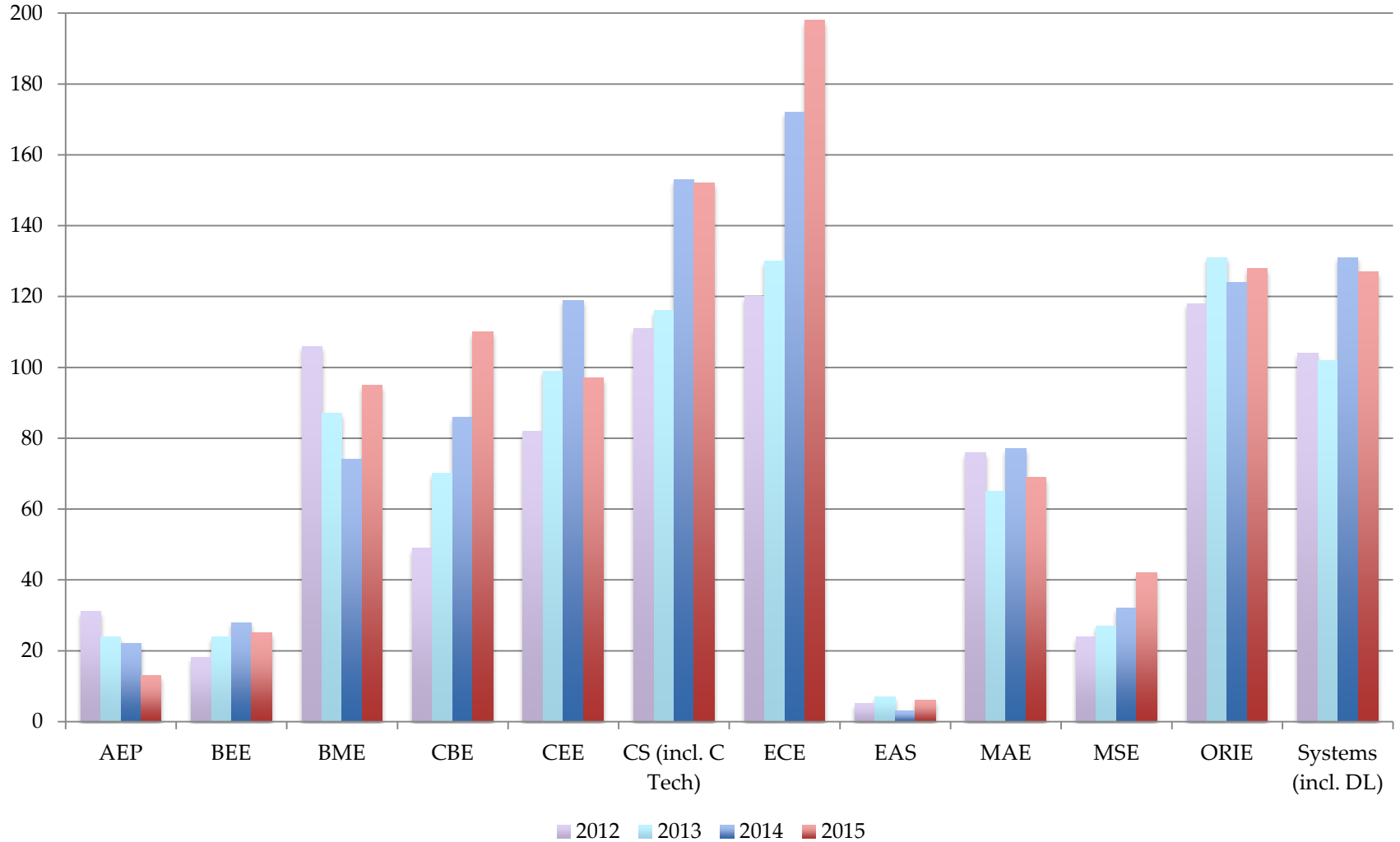
Graduate Student Enrollment



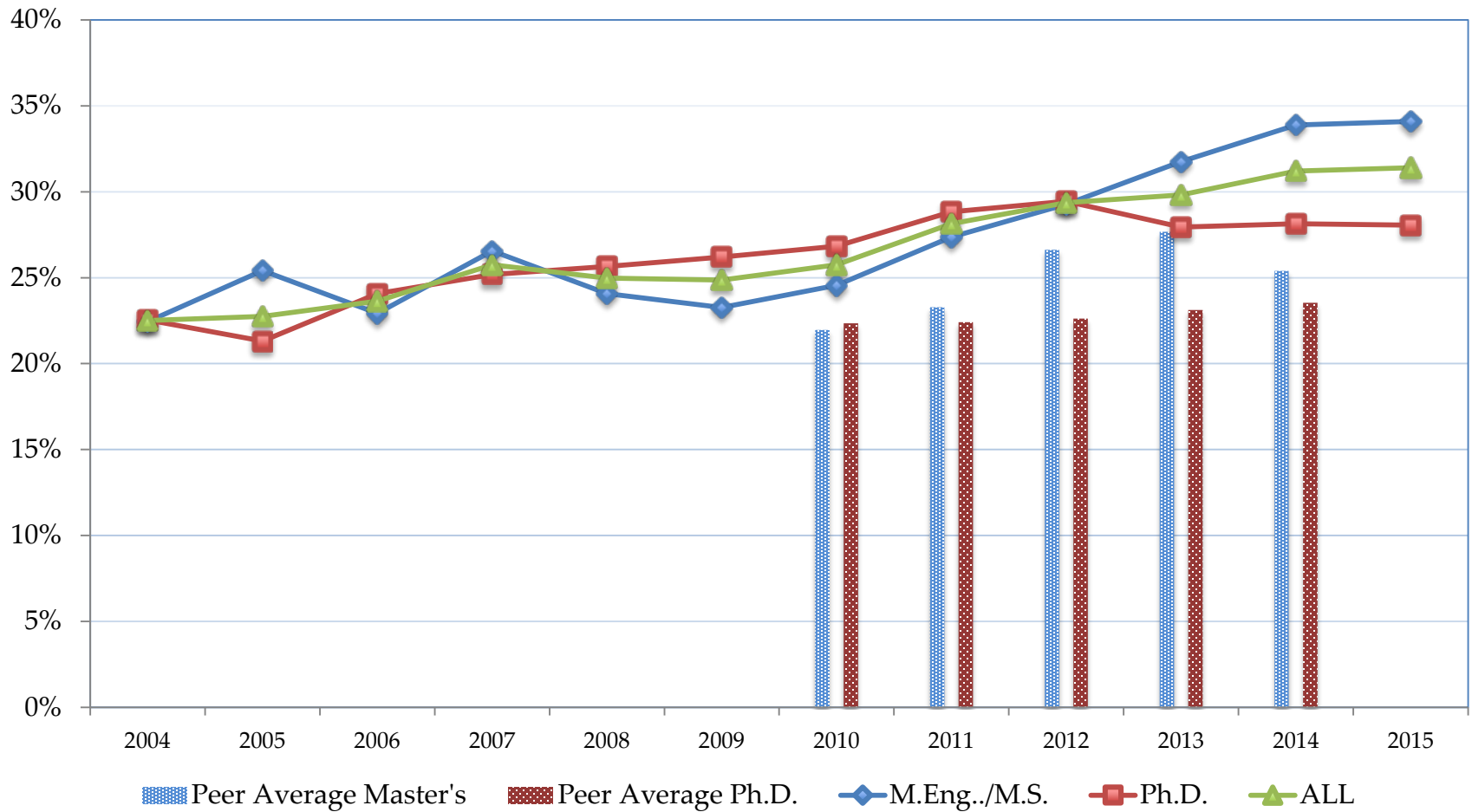
Ph.D. Enrollment by Field



M.Eng./M.S. Enrollment by Field

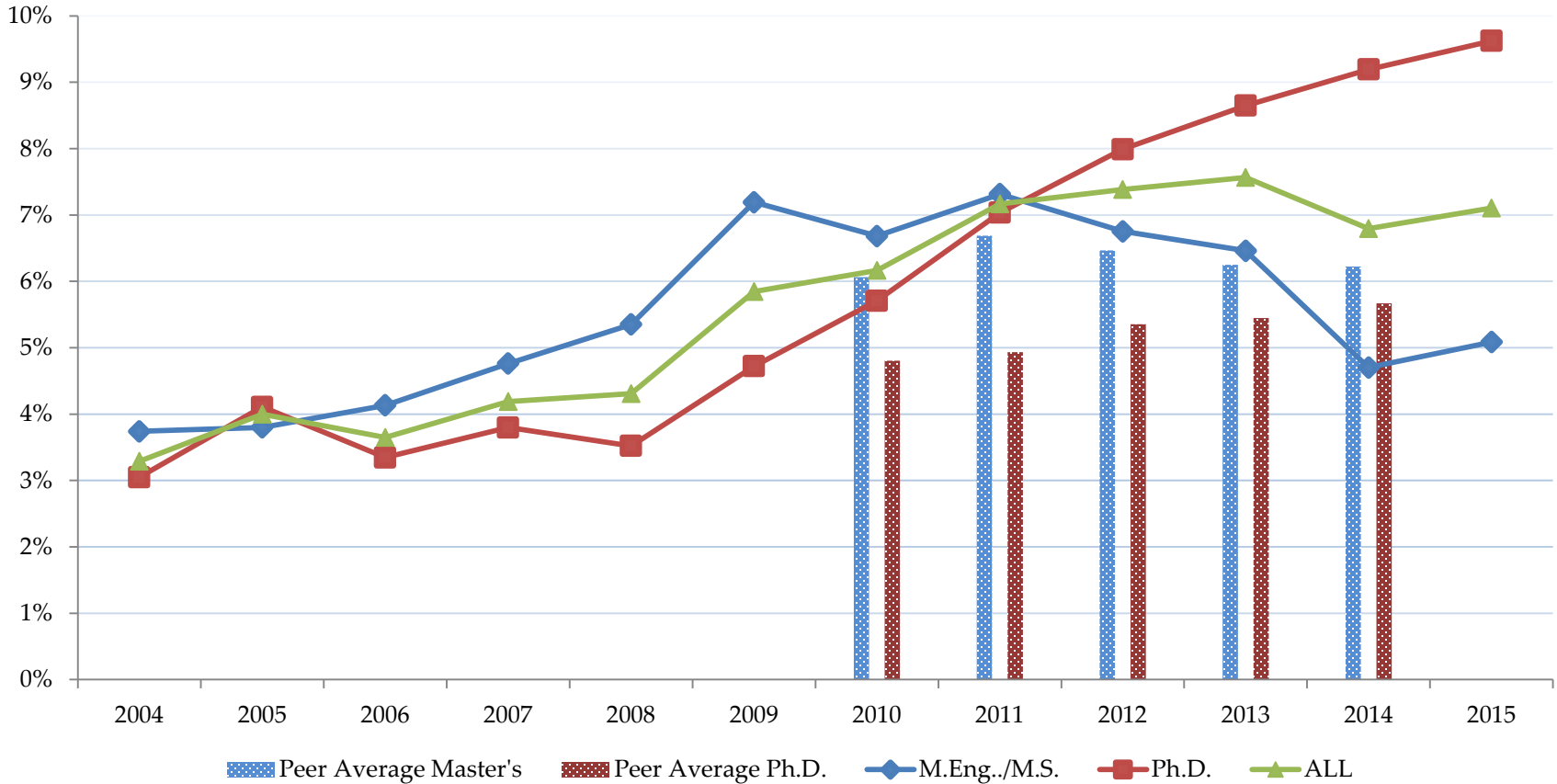


Graduate Student Enrollment Women



* Peers: Carnegie, Columbia, Georgia Tech, MIT, Princeton, Purdue, Stanford, UT Austin, Berkeley, UI-Urbana Champaign, Michigan
 Source for peer data: ASEE data mining tool

Graduate Student Enrollment Underrepresented Minorities



* Peers: Carnegie, Columbia, Georgia Tech, MIT, Princeton, Purdue, Stanford, UT Austin, Berkeley, UI-Urbana Champaign, Michigan
 Source for peer data: ASEE data mining tool

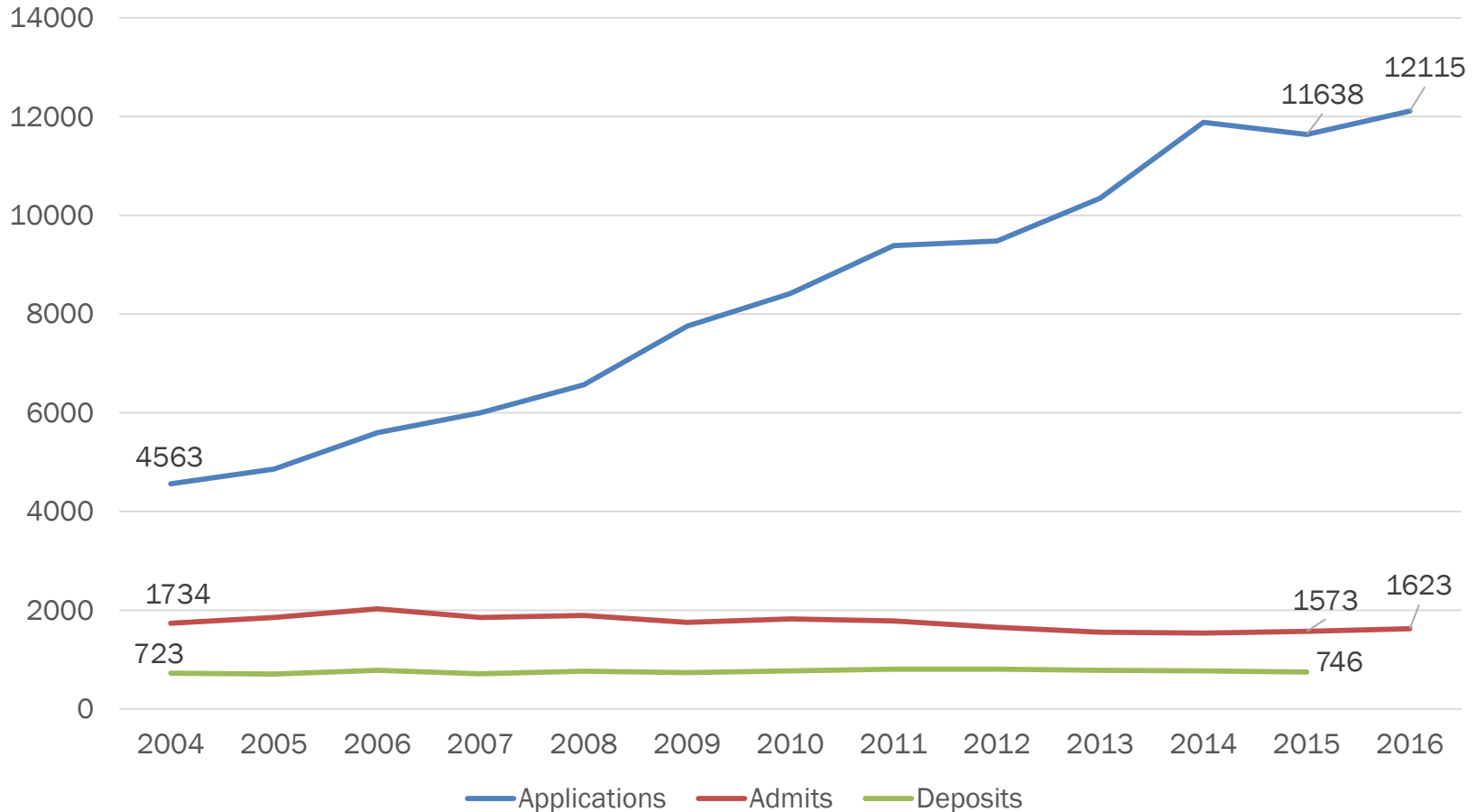
Graduate Student Enrollment International



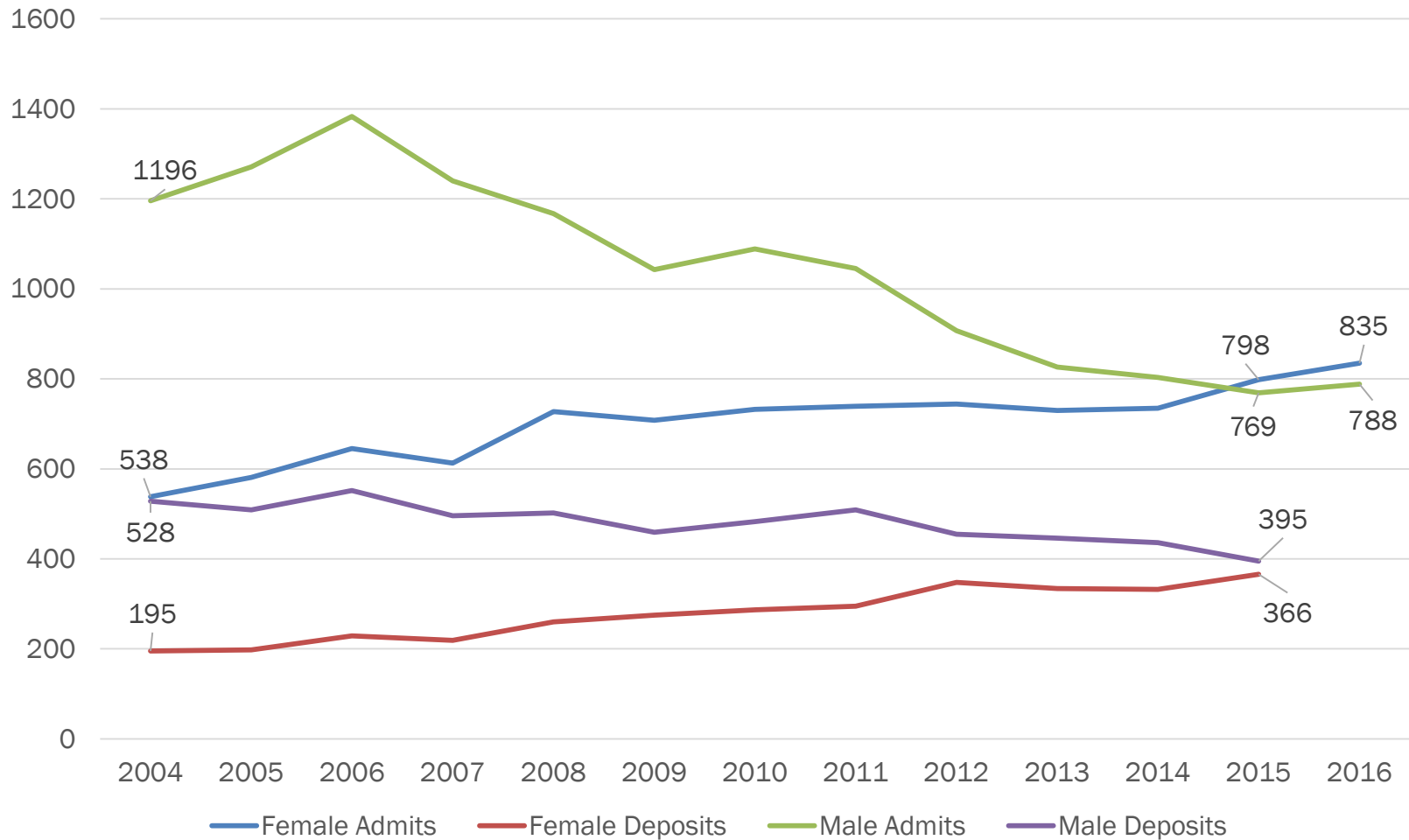
* Peers: Carnegie, Columbia, Georgia Tech, MIT, Princeton, Purdue, Stanford, UT Austin, Berkeley, UI-Urbana Champaign, Michigan
 Source for peer data: ASEE data mining tool

Admissions Preliminary Highlights April, 2016

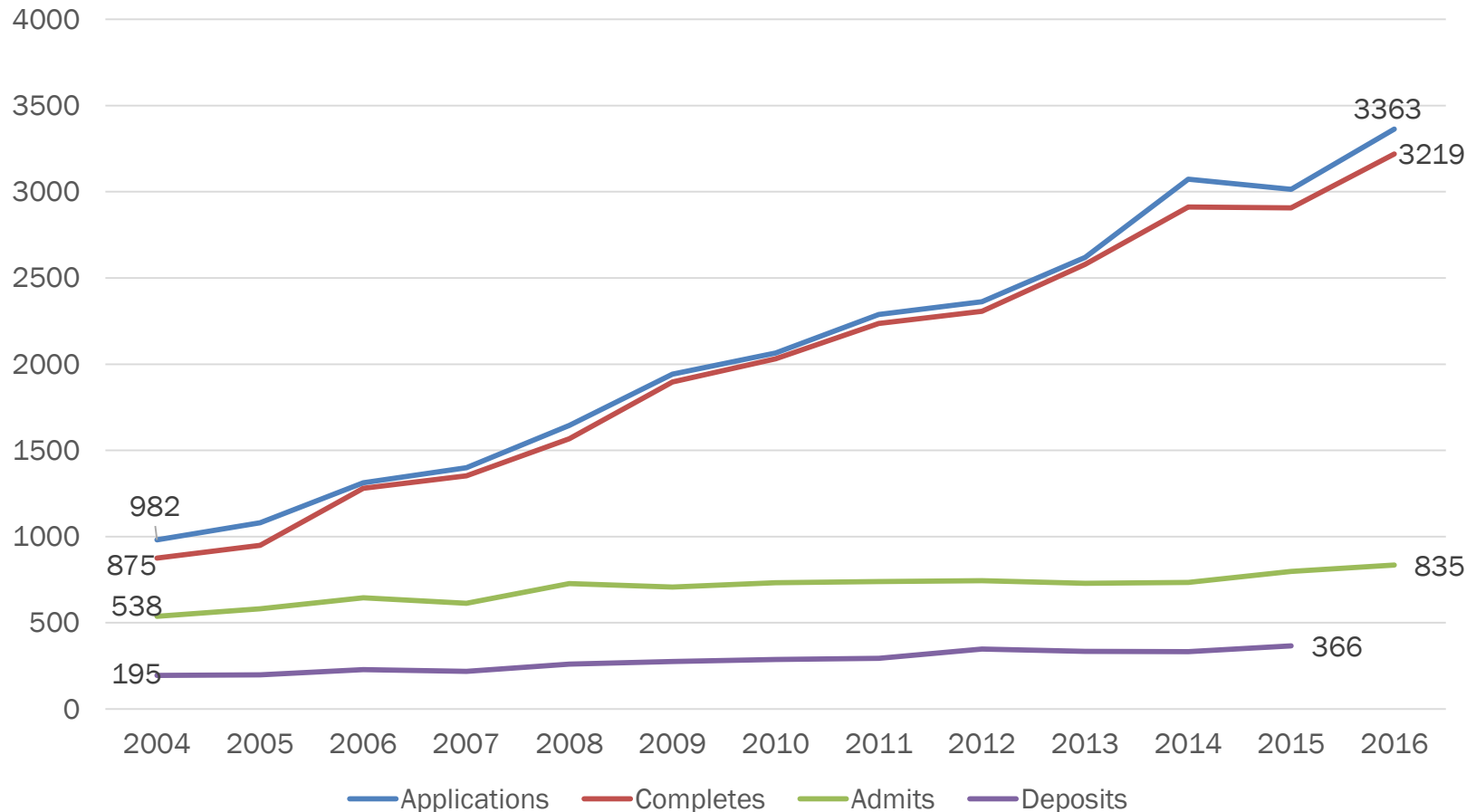
UG Engineering Applications, Admits, Deposits: 2004 – 2016



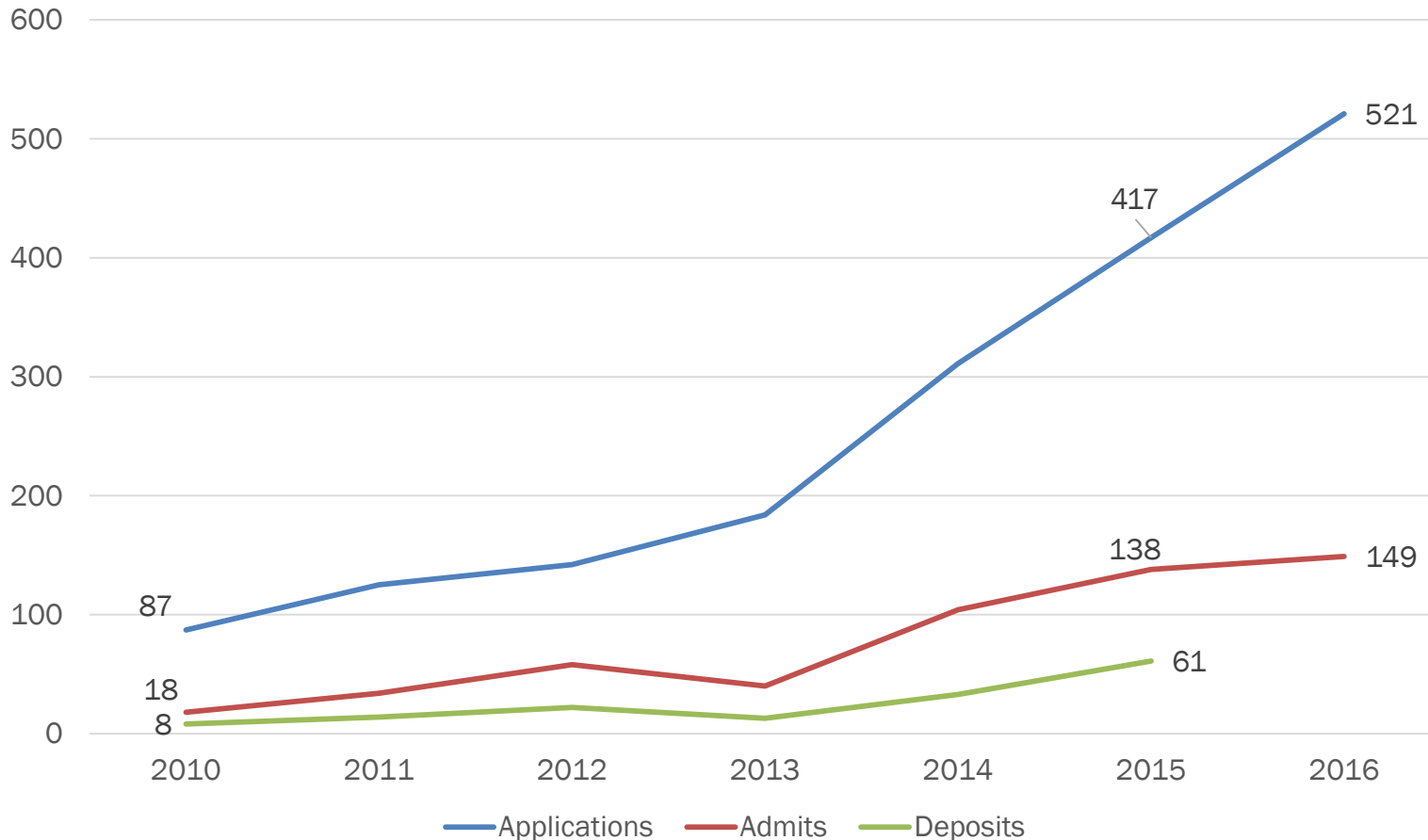
UG Female and Male Admits and Deposits: 2004 - 2016



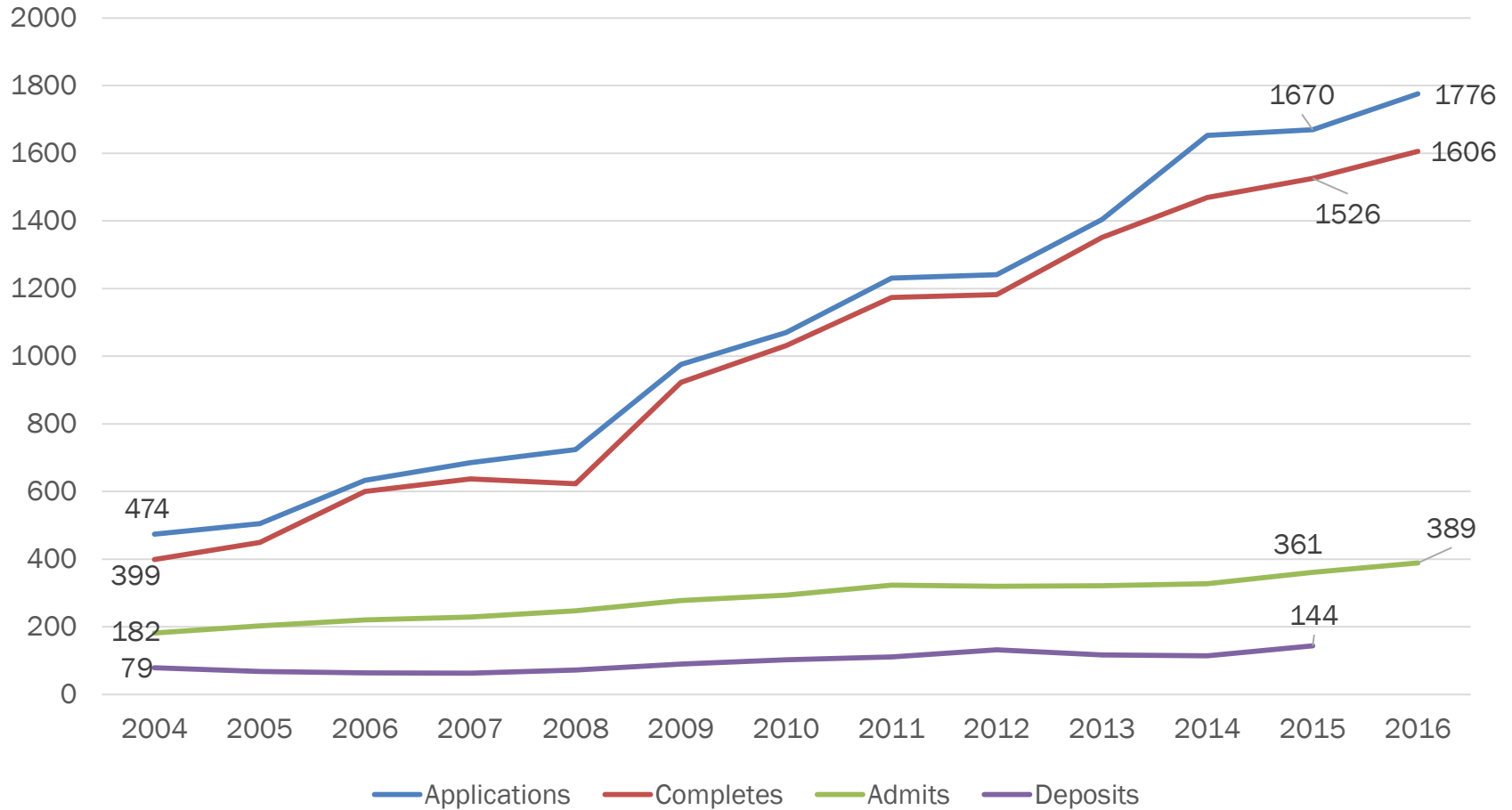
UG Female Applications for Admission: 2004 - 2016



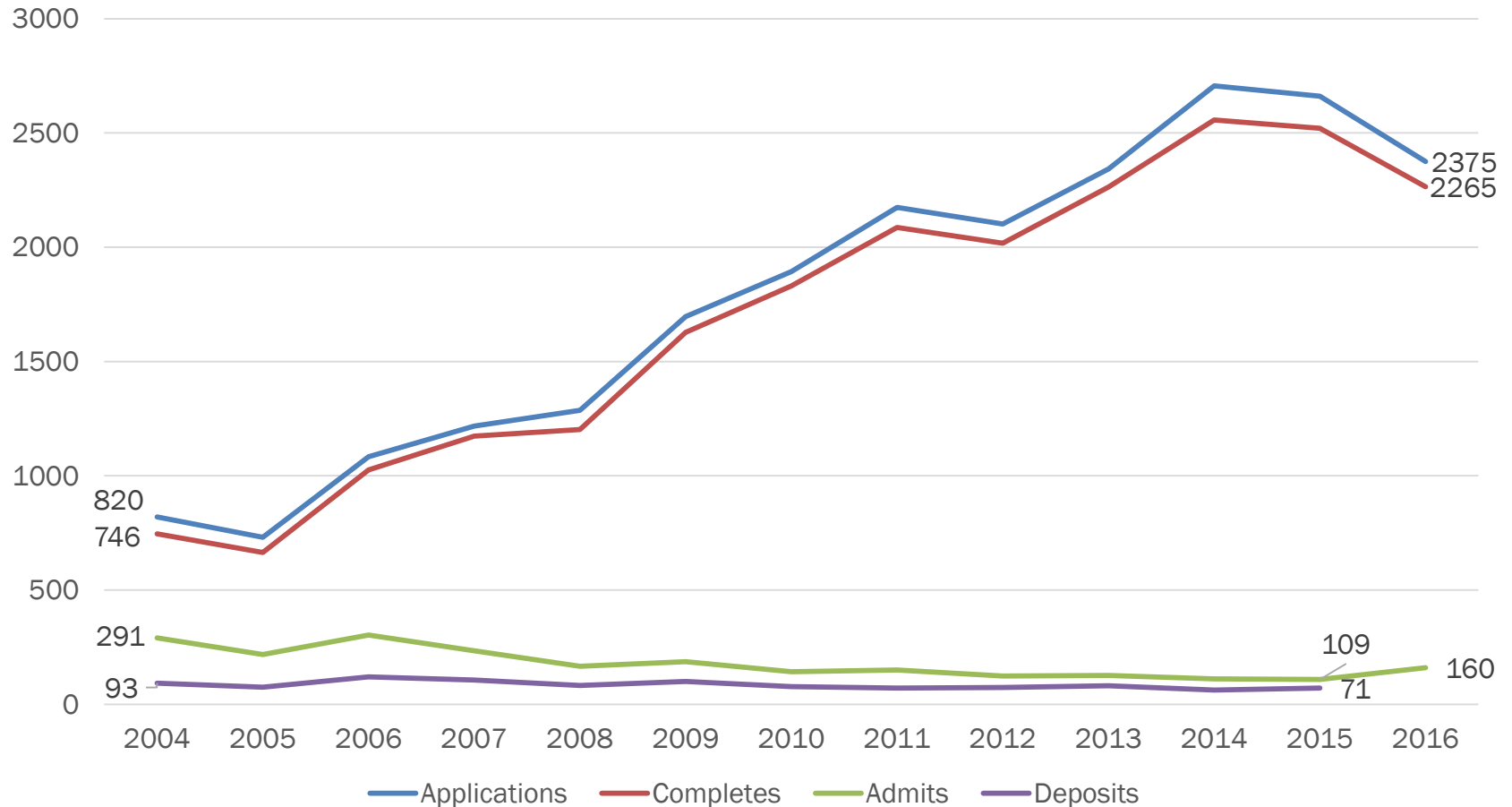
UG Female Applications for Admission to Computer Science: 2010 - 2016



Total UG URM Applications for Admission: 2004 - 2016



Total UG International Applications: 2004 - 2016



DPE Highlights April, 2016

Organizing Rubric

- The framework is structured according to four core principles:
 - **COMPOSITION**
 - **ENGAGEMENT**
 - **INCLUSION**
 - **ACHIEVEMENT**
- Composition refers to the demographic make-up
- Engagement reflects personal, social, and professional commitment to institutional goals and activities; retention
- Inclusion comprises climate and interpersonal relations
- Achievement reflects levels of attainment for underrepresented individuals or groups

2014-'15 TND Plan

- **Faculty composition**
 - Search oversight, targets of opportunity, dual careers
- **Graduate student composition, engagement and achievement**
 - Sloan Foundation and Colman endowment funded minority Ph.D. program: fellowships, leadership, professional development, community building. Co-Host Graduate Horizons Conference.
- **Undergraduate achievement**
 - NSF funded CUES Program—to increase retention of URM and first generation students.
- **Staff inclusion**
 - College wide messaging at departmental staff meetings, college wide staff meeting with Ordinary People, followed by discussion and social event
- **Ph.D. student orientation**
 - Use interactive theater to bring an awareness of impacts of microaggressions, implicit bias, stereotype threat, and tokenism

2015-'16 New Initiatives

- **Faculty engagement**
 - **Community building dinners:** New faculty across disciplines gather at the Associate Dean for Diversity and Faculty Development's house
 - Outcomes: **Generally successful.** Intimate, open discussion. Slightly difficulty to schedule.
 - Next Steps: Considering reinstating junior faculty lunch series
 - Formalized the **Ephraim Garcia Engineering Society:** Faculty interest group focused on creating/maintaining an inclusive environment for URM faculty
 - Outcomes: **Very successful.**
 - Allows the dean to hear issues facing URM faculty.
 - Acts as an informal mentorship committee for junior URM faculty.

2015-'16 New Initiatives (continued)

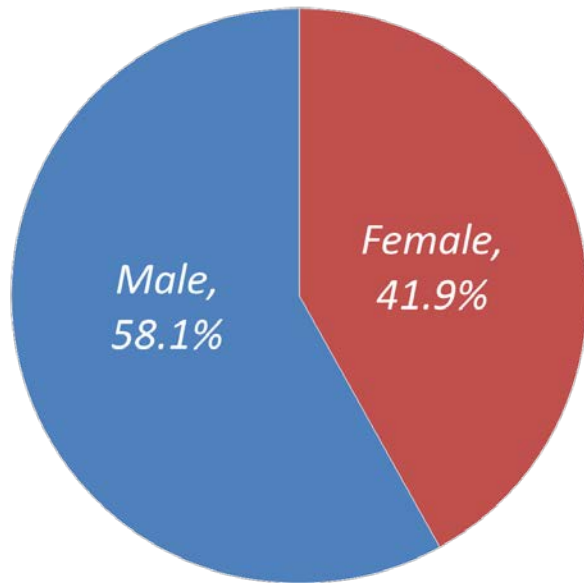
- **Graduate student engagement**
 - In the process of developing Your Story, My Story to capture inclusion issues for graduate/professional students (joint with several on campus partners)
 - Outcomes: Completed survey. Interactive theater still in development
 - **Summer Success Symposium**: One day symposium that provides workshops related to successful early career decision-making in industry and academia
 - Outcomes: **Very successful**. Student feedback was almost uniformly positive

DPE Recent Highlights 2015-16

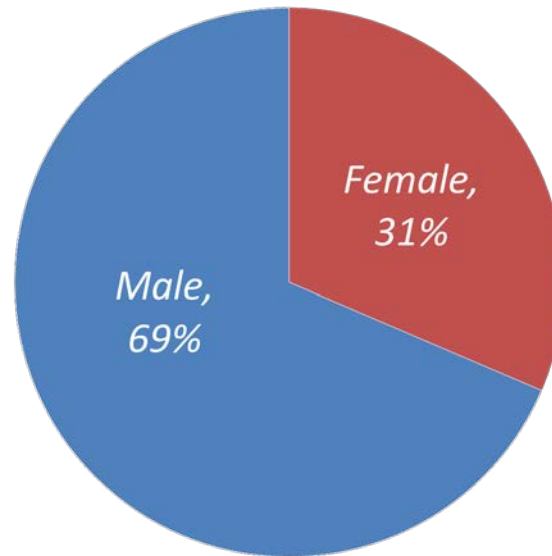
- CUES receives \$5 million gift from Robert F. Smith
- Sloan Fellowship funding renewed at \$1,200,000
 - 50% of Sloan Scholars Awarded NSF Graduate Research Fellowships (Cohorts 2012-2015)
 - Sloan Scholars graduation rate is 75.6% compared to 57.1% of URM students not in the Sloan program for cohorts 2004-2008
- The Louis Stokes Alliances for Minority Participation (LSAMP) Scholars
 - 2 LSAMP Scholars awarded 2016 NSF Graduate Research Fellowships
 - 75% of LSAMP Scholars earn or enrolled in an advanced degree program
 - 95% of LSAMP Scholars have engaged in undergraduate research
 - 100% CU LSAMP REU Scholars who've graduated and have pursued a MEng/MS or PhD have remained in a STEM discipline
- Ryan Scholars
 - 2015 Ryan Scholar retention rate in COE is 97% compared to 93% of URMs in COE
 - 100% of Ryan Scholars remain in good academic standing for 2016 January
 - 34 slots for 2016 Summer

Gender Demographics

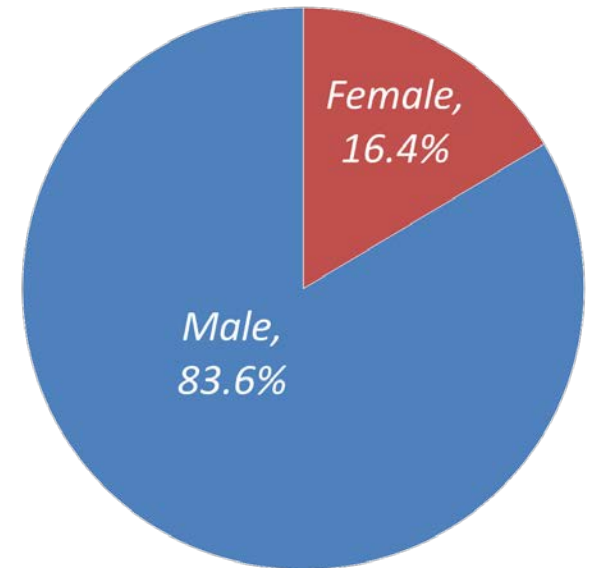
Undergraduate



Graduate



Faculty



Representation of Women – National Averages:

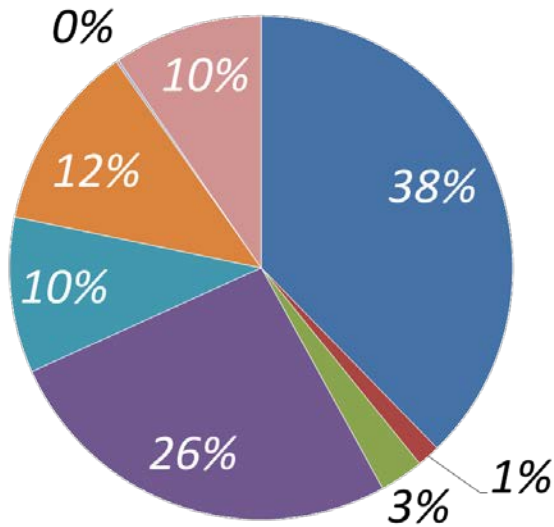
Undergraduate: 18%

Graduate: 23%

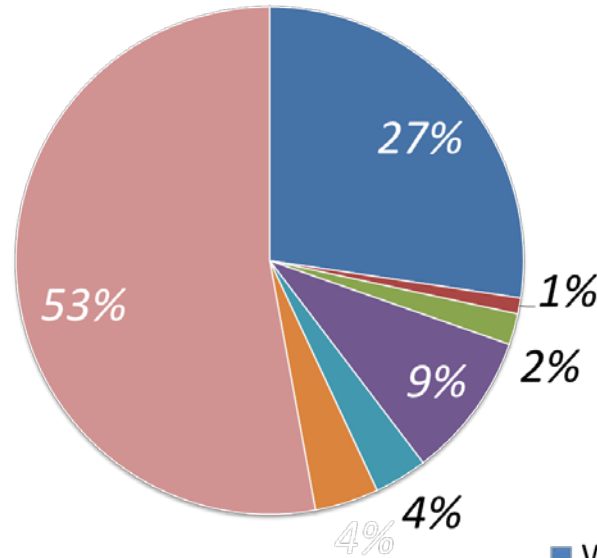
Faculty: 14%

Race/Ethnicity Demographics

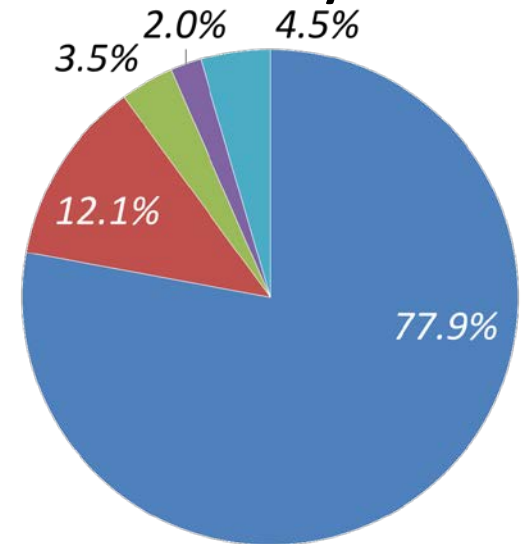
Undergraduate



Graduate



Faculty

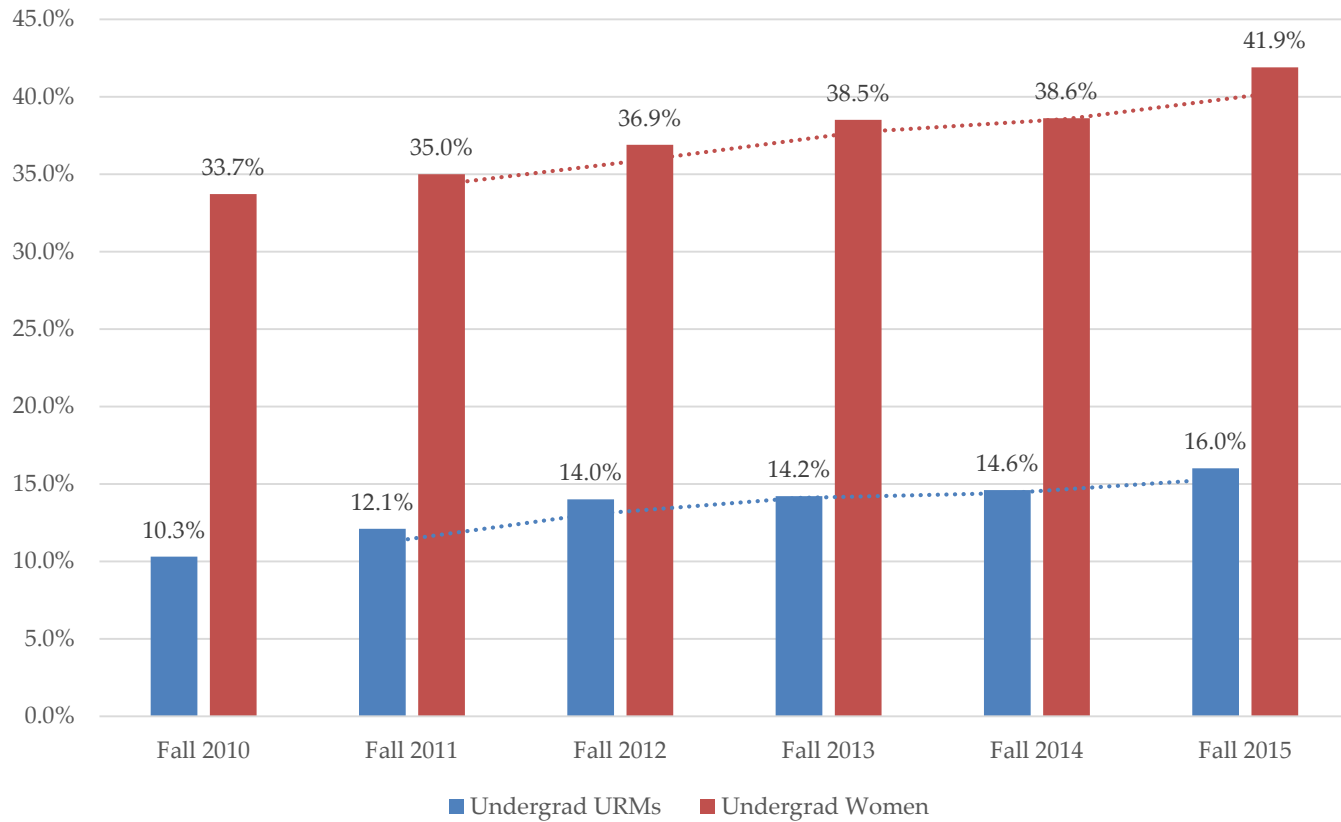


Underrepresented Minorities (URM) – Cornell and National Averages (Fall 2014):

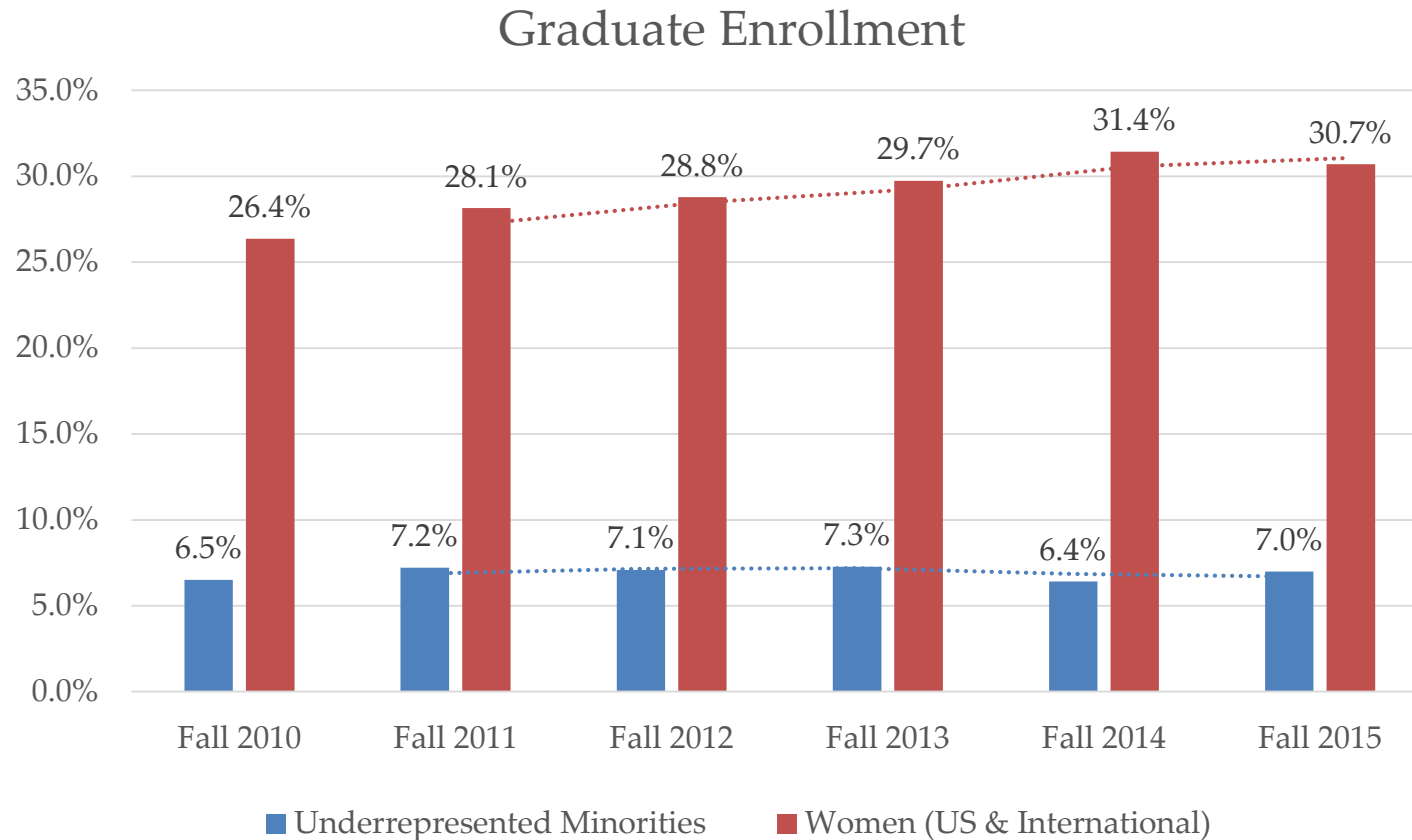
	Undergraduates	Graduates	Faculty
Cornell:	14.5 %	6.4 %	5.5 %
National:	16 %	7 %	6 %

Undergraduate Diversity

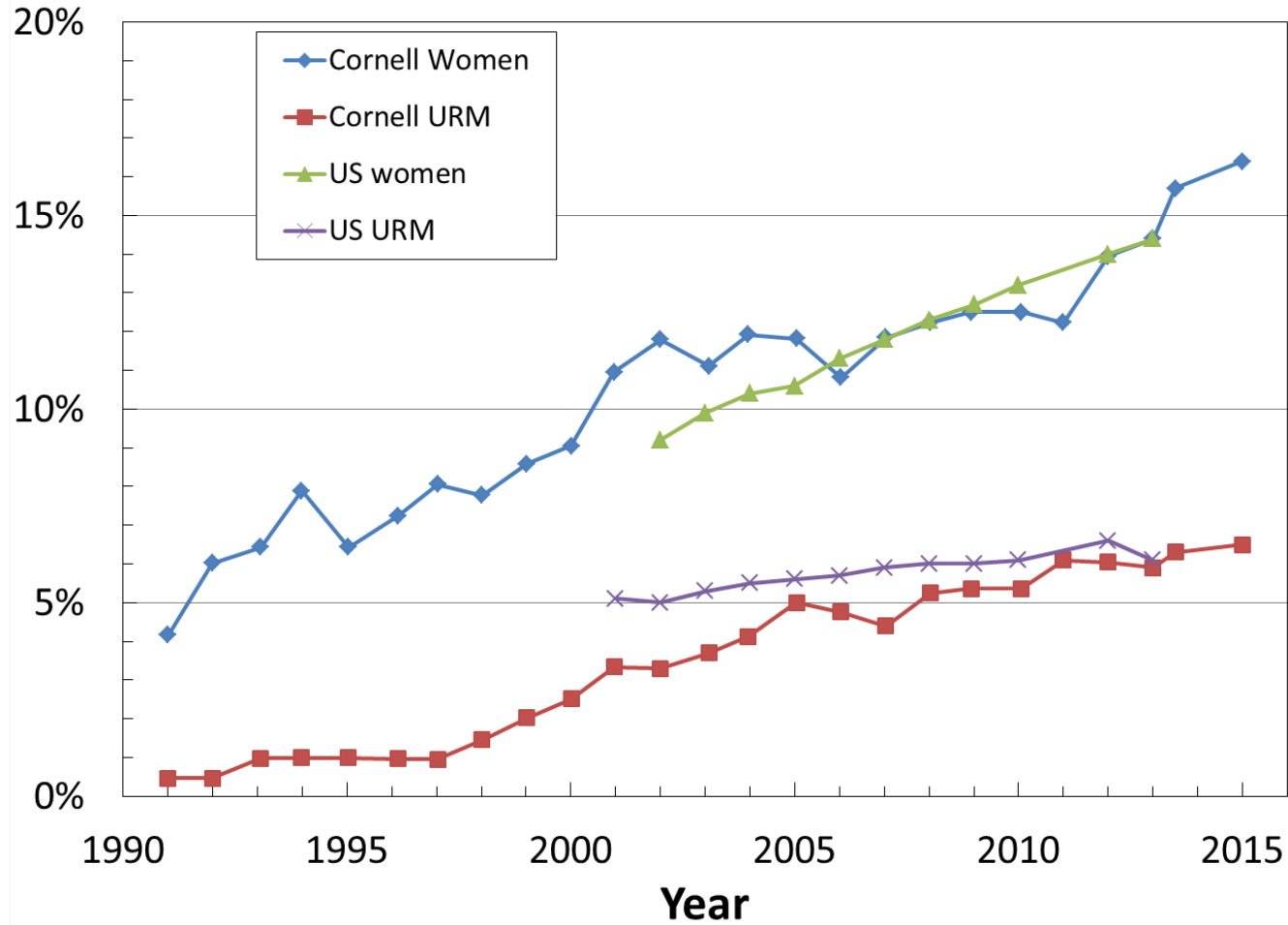
Undergraduate enrollment



Graduate Diversity



Faculty Diversity



Student Project Team Highlights

April, 2016

Student Project Teams 2015-16 Academic Year

23 Teams, ~1000 Student Participants

Competition, Service, and/or Client focused

Microcosm of student body and engineering design enterprises

Team Budget Proposals: \$850,000+

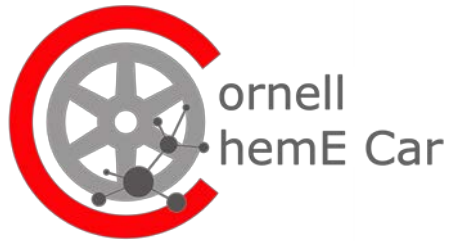
Anticipate Need: 1/4 Internal, 1/4 Fundraising and 1/2 In Kind

Internal Seed Funding: \$225,000

Current Cash Donations: \$160,000+

Follow us @CornellENGTeams
www.engineering.cornell.edu/teams

Student Project Team News



won 4th title over 30+ international teams at the 2015 AIChE Chem-E-Car Competition on November 8 in Salt Lake City.



won 2nd consecutive Greater New York Region ACM ICPC Contest earning an invitation to World's in Thailand.



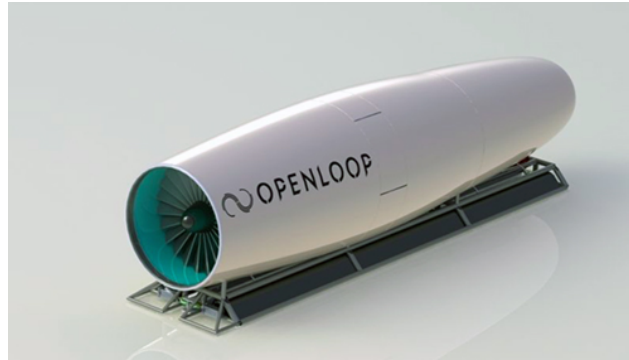
CORNELL iGEM

won 3 awards against 280+ teams on September 28 at the 2015 International Genetically Engineered Machines Jamboree in Boston.

BEST ENVIRO track, in APPLIED DESIGN, in SUPPORTING ENTREPRENEURSHIP

Student Project Team News

SpaceX Hyperloop Pod Competition



- “OpenLoop”, is one of eight teams selected to compete in the **Hyperloop Pod Competition**, to be held in June at SpaceX. Collaborators: Princeton, Michigan, Harvey Mudd, Northeastern and Memorial University of Newfoundland
- Project is the brainchild of entrepreneur Elon Musk and seeks to design components of a proposed high-speed transportation service linking Los Angeles and San Francisco in as little as 35 minutes.

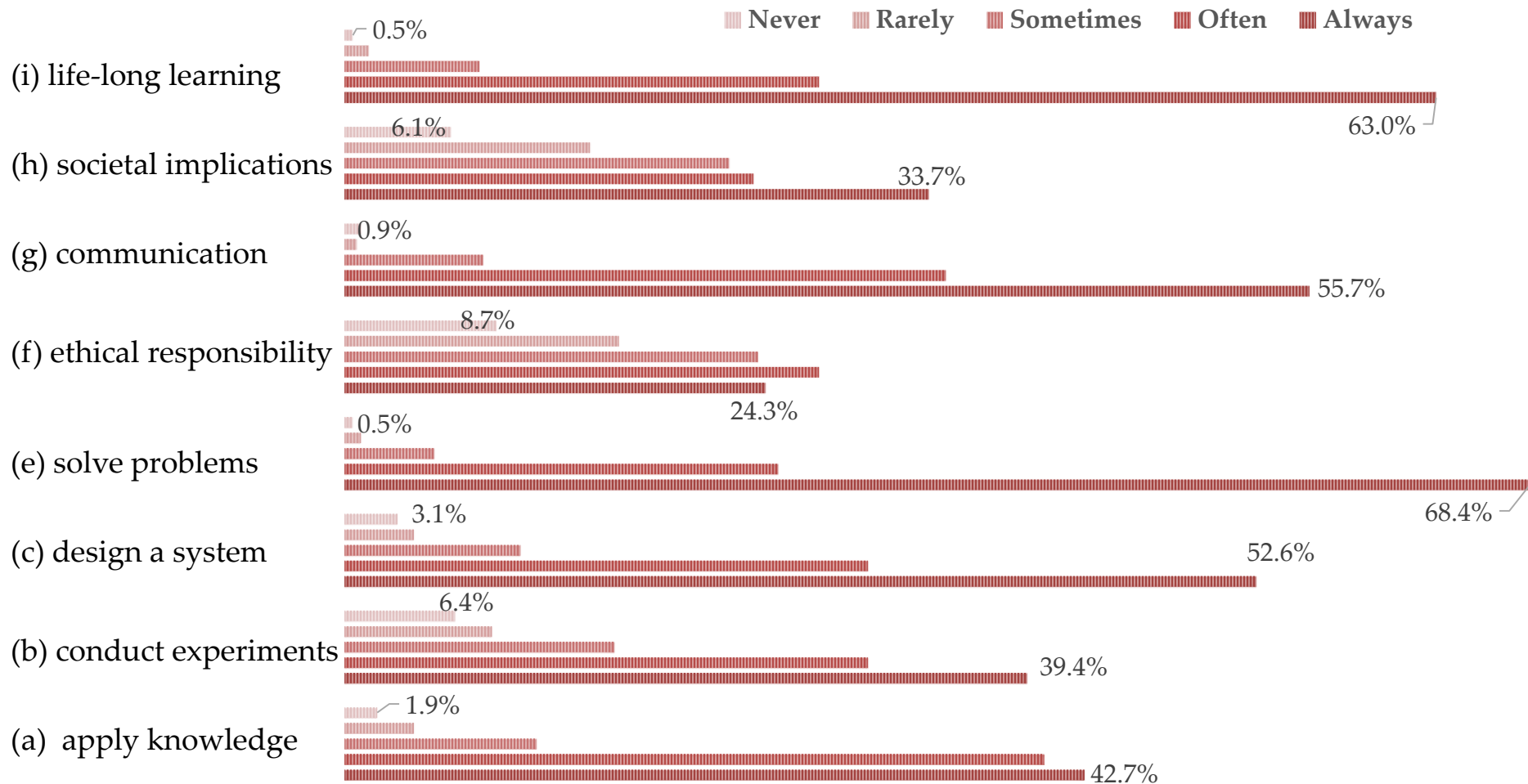
Student Project Teams

Student Outcomes (ABET)

Mid-semester surveys are used to capture student perceptions and according to ~500 respondents over 3 years the following results (% **sometimes or more achieved during team experience**).

- 94.1%** (a) an ability to apply knowledge of mathematics, science, and engineering
- 85.1%** (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- 92.9%** (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- GIVEN** (d) an ability to function on multidisciplinary teams
- 98.6%** (e) an ability to identify, formulate, and solve engineering problems
- 75.5%** (f) an understanding of professional and ethical responsibility
- 98.3%** (g) an ability to communicate effectively
- 79.7%** (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- 98.1%** (i) a recognition of the need for, and an ability to engage in life-long learning
- GIVEN** (j) a knowledge of contemporary issues
- GIVEN** (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Student Project Teams Student Outcomes (ABET)



Engineering Co-op & Career Services Highlights April, 2016

ECCS Post Graduation Report – 2015

Post-Graduate Report – '15

Undergraduate 750 Graduated, 66% Response Rate

34% Grad School 60% Employed 3% Seeking Employ. 3% Other

MEng 694 Graduated, 99.4% Response Rate

4% Grad/Prof School 66% Employed 25% Seeking Employ.* 5% Other

** 53 MEng listed as seeking employment selected "Have an offer, but still looking"*

Employers Hiring 8+ Eng. Students All Degrees

Oracle 38

Lockheed Martin 31

Google 17

Intel 16

Amazon 16

Epic 15

Goldman Sachs 13

Deloitte

Microsoft 12

Accenture 11

Workday 9

LinkedIn 9

PwC 8

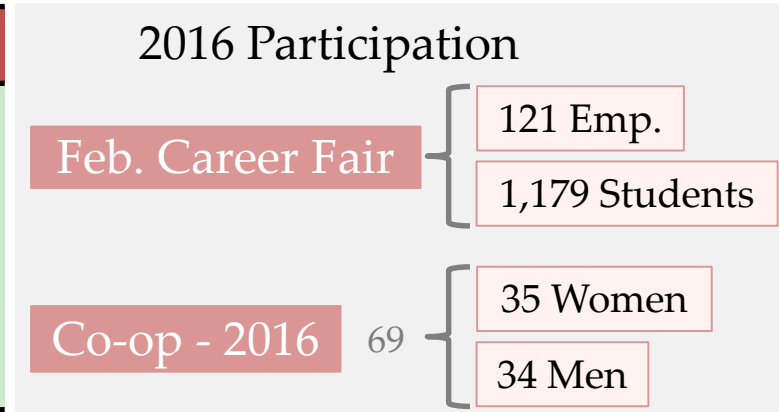
Facebook 8

EY 8

Citi 8

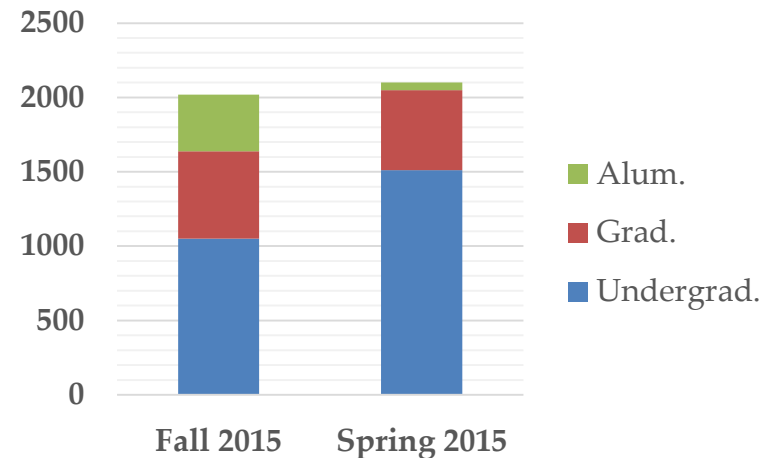
Campus Impact and Office Services

	Fall 2015	Spring 2015	Total
Resume Critiques (w/ Student Staff)	348	219	567
Mock Interviews (w/ Student or Professional Staff)	63	104	167
Appointments (including phone)	704	724	1,428



6,300+
Student Contacts (appointments, workshops, fairs)

Individual Student – Office Interaction



College Facilities Update April, 2016



Facilities: Providing The Built Environment Supporting Engineering's Strategic Vision

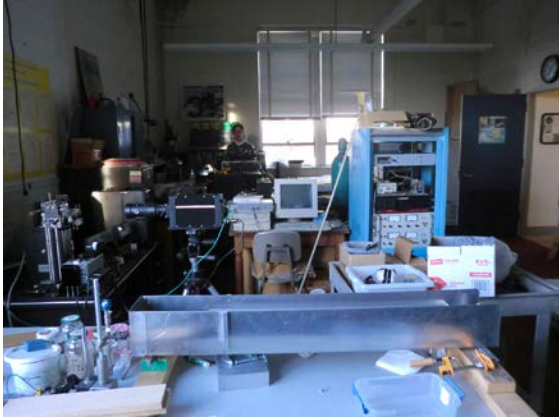
- **Functionally Enhance:**
 - Research
 - Learning
 - Student development
 - Scholarship
- **Attract and Retain Faculty**
- **Model Best Energy and Sustainability Practices**
- **Project a Forward-Looking Engineering Presence**

Master Plan Status

- **BME Expansion for New Undergraduate Program**
 - University proposed existing spaces and moderate additions
 - Weill, Comstock and Plant Science possibilities
 - Engineering and other impacted colleges reviewing proposal
- **Major Renovations on Quad**
 - Kimball Hall Wet Labs achieved LEED Gold
 - Upson Hall Full Renovation–Upper floors readied for Fall
- **Research & Department Program Projects**
 - PARADIM Materials by Design in Duffield Hall
 - Faculty Research Labs
 - CBE Unit Operations Lab
- **Facility Master Plan Update Starting**
 - To inform 2017 Capital Planning
 - Focus: Hollister, CBE labs, and Rhodes rearrangements

Major Renovations on Quad

- **Kimball Hall** –BME / multi-department wet labs



- **Upson Hall** – hybrid labs, project teams, MAE Consolidation

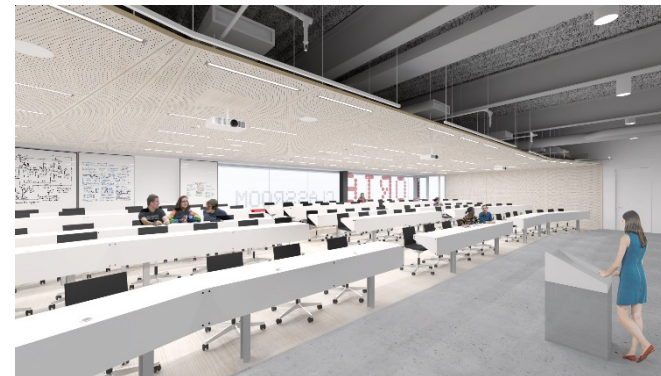


Selected Others

- **Snee & Bard** –Geochemistry cleanroom & faculty labs done.
- **Olin** – Unit Operations lab renovated and expanded.



- **Duffield** –Faculty MBE labs in construction.
- **Relocating ECE/CSL and ORIE Computer Classroom in Rhodes:**



**College of Engineering
Cornell Now
Campaign Update**

April, 2016

Campaign Progress

Cornell Now Goal	\$185,000,000
Cornell Now Total	\$293,500,000
Attainment	158.7%

** Cornell Now Campaign ended 12/31/15*

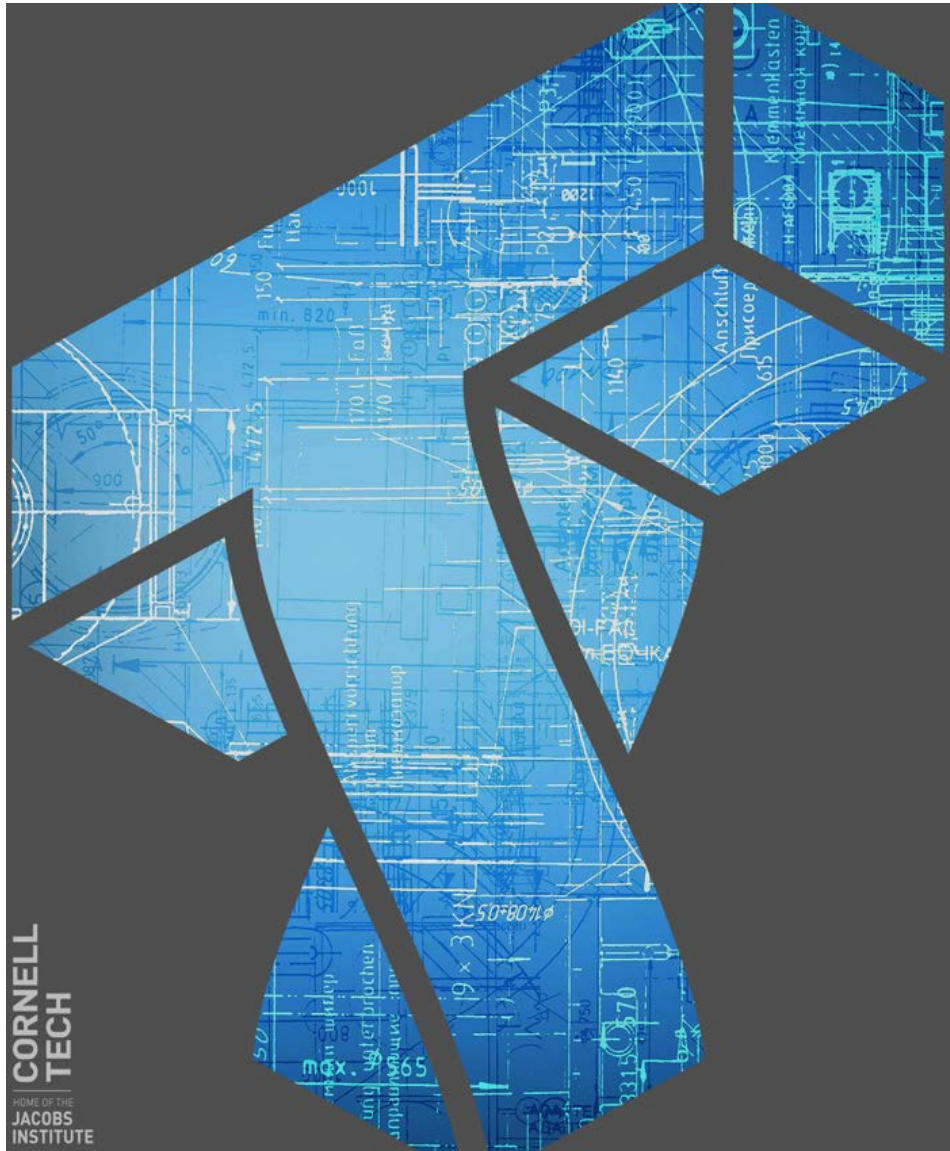
Fiscal Year 2016 NG&C Goal	\$ 50,000,000
Fiscal Year 2016 NG&C Total	\$ 36,017,000

As of 3/4/16

Fiscal Year 2016 Annual Fund Goal	\$ 2,300,000
Fiscal Year 2016 Annual Fund Total	\$ 1,300,337

ECC Active Member Participation	25 donors out of
<i>(based on FY '16)</i>	55 active members

As of 3/4/16



Cornell Tech Update April, 2016

Cornell Tech Faculty

- 22 Faculty Members
 - 2 Professors of Practice
 - 7 Multi-year visiting tenure track (5 Ithaca, 2 Haifa)
 - 13 Permanent tenure track (8 tenured, 5 untenured)
- Two additional faculty hired last year joining Fall 2016
- Plan to hire about 5 additional this coming year
- About 1/3 faculty are in Jacobs Technion-Cornell Institute
 - Jacobs faculty are mix of Cornell and Technion

Cornell Tech Students

- About 30 supported PhD students (some in Ithaca)
- About 130 Masters students, approximately evenly split between 3 programs
 - Cornell CS MEng
 - Johnson Tech MBA
 - Technion-Cornell dual MS in Information Systems
 - Concentrations in Connective Media, Health Tech

Roosevelt Island Campus – Summer 2017



Roosevelt Island Site – January 15, 2016



Thank you!

Lance R. Collins
Dean of Engineering

April 7-8, 2016