



BOSTON
UNIVERSITY



GROWTH & INNOVATION

Boston University College of Engineering
2010-11 Academic Year

A YEAR OF GROWTH & EXCELLENCE

Despite the continued complex conditions nationally and globally during the 2010-11 year, the Boston University College of Engineering enjoyed another highly successful year. Enrollment and academic quality of students rose, research funding remained extraordinarily impressive in a highly competitive environment, and philanthropic support reached record levels.

While the College enjoyed record numbers of applications and the highest SAT scores of matriculants in its history, it also greatly expanded its graduate degree offerings. Six new professional Master of Engineering programs and four new graduate certificate programs began accepting applications in 2010-11, joining two existing MEng programs. The College also won accolades from the National Research Council, which rated its PhD programs among the nation's best, despite the fact that they are only about 20 years old and hence not ranked in the previous NRC effort.

The College of Engineering educates Societal Engineers, tomorrow's leaders who use their interdisciplinary engineering expertise, business acumen, communication skills and creativity to solve complex problems in healthcare, energy, security, communication and other high-impact domains. To this end many new initiatives were established in 2010-11, including a creative STEM program for K-12, and curricular and experiential enhancements that embed in the students of today and tomorrow a passion to improve society through innovation.



DID YOU KNOW?

BU's increase in academic quality and reputation recently led *U.S. News & World Report* to grow the College's ranking to #39, bringing BU into the **top 20% of the nation's engineering schools**. This increase represents three spots higher than the previous year, and an impressive 12 spots higher than the College's ranking in 2005.

DID YOU KNOW?

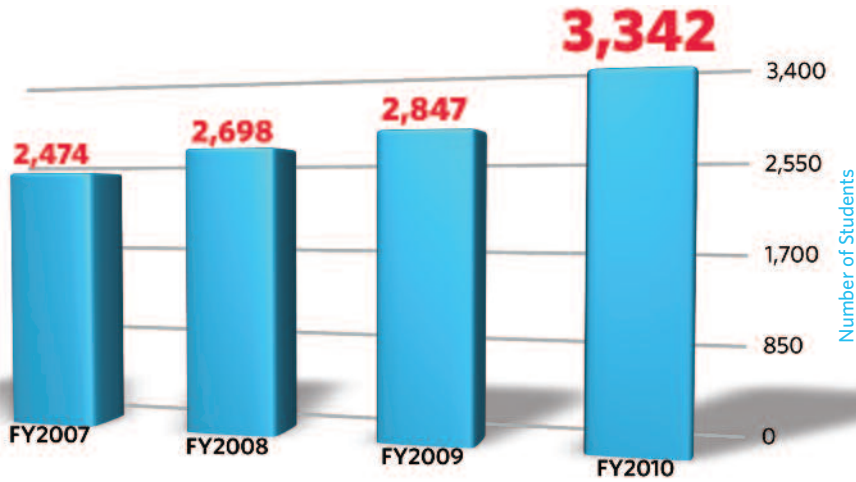
The College announced the establishment of **six new Master of Engineering programs** to debut in the fall of 2011, designed to prepare future leaders for technology innovation careers in industry. These programs blend advanced-level engineering expertise with courses and training in project management, product development, the innovation process and organizational leadership. The College also announced the creation of its first **three-course graduate certificate programs in Engineering Innovation, Energy & Sustainability, MEMS and Product Design**.



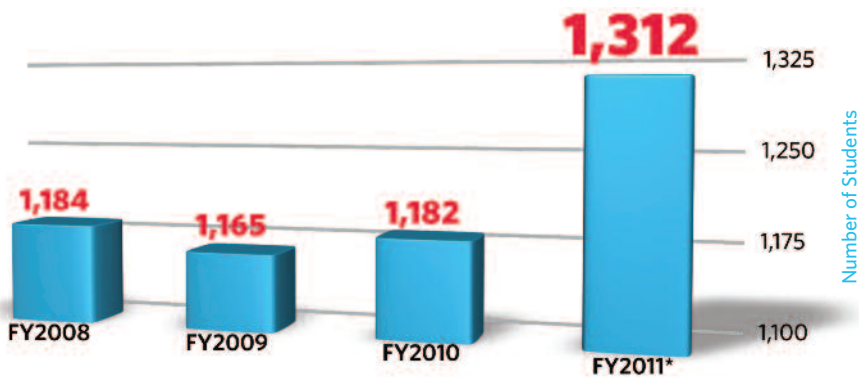
ENROLLMENT & ACADEMIC QUALITY RISE SHARPLY

Undergraduate enrollment has gained added momentum over the last several years. As the College continues to be increasingly selective in its admissions process, application numbers continue to rise as does enrollment and the SAT scores of matriculants.

Applications Received

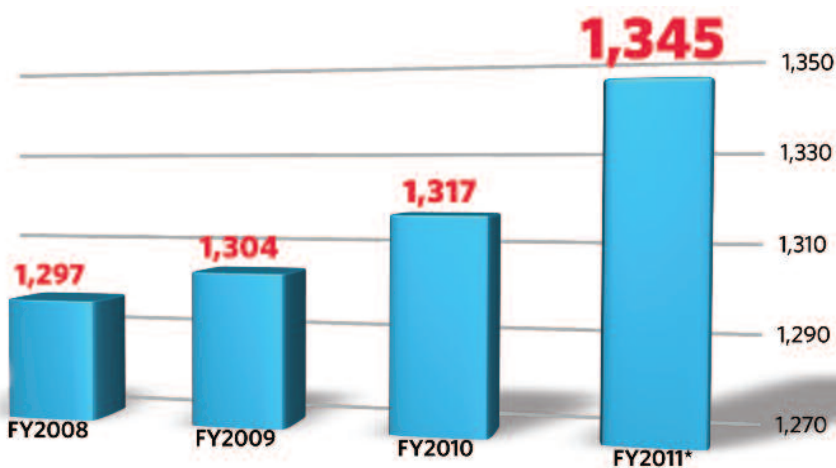


Total Undergraduate Enrollment



*Paid deposits reported at end of 2010-2011 fiscal year.

SAT Score of Matriculants

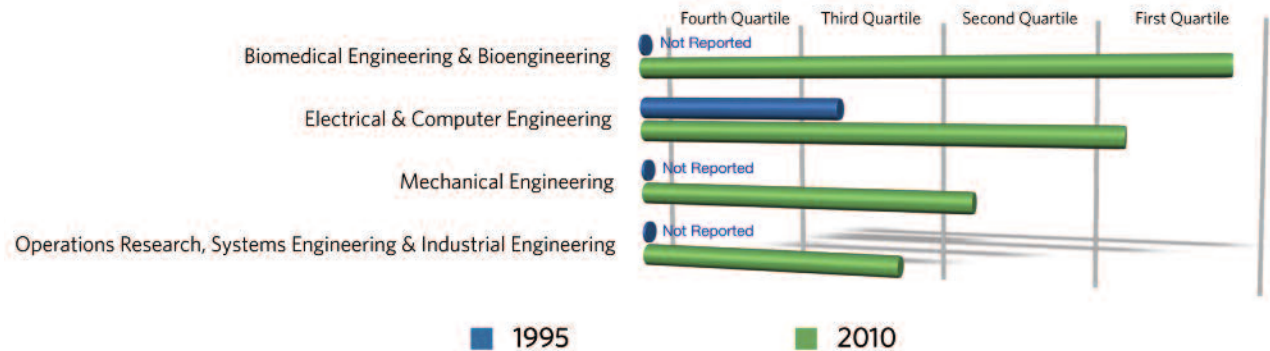


Data shows average composite SAT math and verbal scores of all matriculants to the College of Engineering.
*FY2011 data is as of July 15, 2011 Profile of Admissions Credentials report.

GRADUATE PROGRAMS RATED AMONG NATION'S BEST

The BU College of Engineering began offering doctoral programs in 1994. In less than 20 years, its PhD programs have advanced into the front ranks of such programs nationally, according to a 2010 report from the National Research Council.

NRC Assessment of ENG PhD Programs 1995 and 2010



Note that the MSE department is absent from these rankings because the doctoral program was first offered after the data collection for the 2010 survey had already begun.



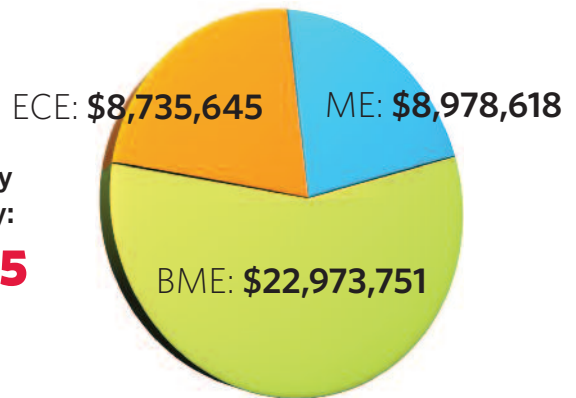
DID YOU KNOW?

Boston University expanded its study abroad programs just for engineering students by adding a program in Grenoble, France, that will begin in the spring of 2012. Classes will be held at the Université de Grenoble, where students will complete a full semester of the same engineering courses they would be taking while on campus at BU, allowing them to maintain their pace toward graduation.

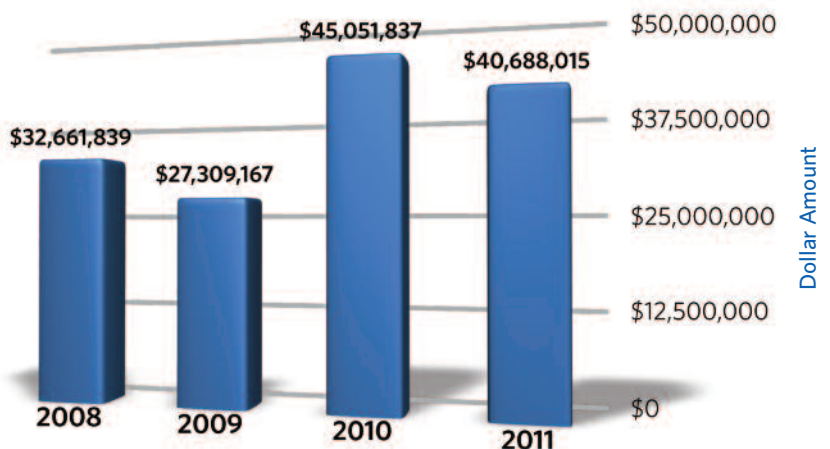
SPONSORED RESEARCH STAYS STRONG

Despite the sharply reduced availability of federal stimulus funds in 2010-11, research grants and contracts won by primary engineering faculty remained strong, totaling **\$40,688,015**. The grants and contracts consisted of 186 new and continuing awards.

Research Awards by
Department Faculty:
\$40,688,015



Total Annual Grant Awards over Four Years



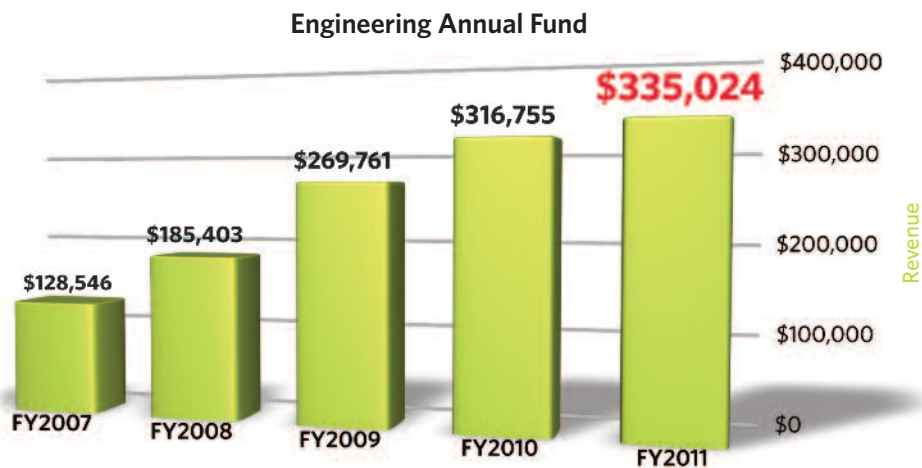
PHILANTHROPIC GIVING CONTINUES TO GROW

Although the economy has had a negative impact on philanthropic giving nationally over the past several years, donors continue to increase their support of the College of Engineering.

- The Engineering Annual Fund **grew by 161%** over the past four years.
- The number of donors who gave \$1,000 or more grew by 22%, **an increase of 165%** over the past four years.
- The College of Engineering received **more than \$4,803,451** in philanthropic support last year, one of the highest annual totals in its history.

DID YOU KNOW?

The College **ranked #18** in research dollars per faculty member at \$662,000 by *U.S. & News World Report*.



DID YOU KNOW?

The College's developed an outreach initiative to engage K-12 students in hands-on activities and give them a big picture of what engineers do in solving society's grand challenges. **Nearly 50 funded Technology Innovation Scholars** visit elementary, middle and high schools in Greater Boston and in their home communities and give interactive, fun engineering presentations to students.

LEADERS IN ENGINEERING

Boston University strives to be on the forefront of engineering higher education, represented by new initiatives introduced every year. A few highlights from 2010-2011 include:

- The College established an Assistant Deanship for Outreach & Diversity to focus on planning, developing and implementing programs under this initiative throughout the College. One unique program creates Technology Innovation Scholars — paid BU engineering students who inspire K-12 students to pursue engineering — and partners with *FIRST*® Robotics.
- The College established an Associate Deanship for Educational Initiatives at the undergraduate and graduate levels. One new initiative is to introduce sophomore ENG students to leaders from all facets of society whose base degree was in engineering.
- The suite of Professional Education programs expanded from two Master of Engineering degrees to a total of eight MEng programs and four new graduate certificate programs. A director of Professional Programs was hired to manage the initiative.
- As part of the College's mission to graduate Societal Engineers, research and coursework in global health is helping to implement simple, robust and affordable solutions to improve healthcare and quality of life in the developing world. Examples include adapting a noninvasive oral cancer detection system for use in Nicaragua and developing a low-cost, portable biosensing platform to diagnose select cancers, Alzheimer's and other illnesses.
- The College received a \$750,000 Kern Entrepreneurship Education Network grant to stimulate the entrepreneurial mindset among undergraduates. Faculty work with colleagues at six other institutions to find ways to integrate pedagogical innovations in engineering and entrepreneurship nationally.

DID YOU KNOW?

The College funds paid research positions for undergraduates engaged in hands-on work in faculty laboratories. Over the past five years, the number of undergraduates conducting such research has **nearly doubled to more than 100 students annually.**

DID YOU KNOW?

Students who graduated in the fall and spring semesters were admitted into top graduate schools and earned job offers from some of the highest-respected employers in the world. Here is just a sampling:

Graduate and Professional Schools

- California Institute of Technology
- Cornell University
- Duke University
- Harvard University
- Johns Hopkins University
- MIT
- Princeton University
- Stanford University
- Texas A&M

Employers

- Boeing
- Boston Scientific
- Johnson & Johnson
- GE Aviation
- General Motors
- Lockheed Martin
- MIT Lincoln Labs
- NASA
- Raytheon
- Teradyne
- US Air Force

EXAMPLES OF RESEARCH THAT GARNERED EXTERNAL SUPPORT THIS YEAR:

\$7.5 million from ONR to develop bio-inspired aerial vehicles

\$5.3 million from IARPA to apply novel imaging approaches to pinpoint and resolve defects on next generation integrated circuits

\$4.2 million from NIH to refine a nanoscale, low-cost, ultra-fast DNA sequencing method

\$3 million from the NSF for smartphone security initiative

\$2 million EFRI from the NSF to fund a sustainable building project

\$2 million from the National Cancer Institute to launch a nanomedicine training center

\$1.5 million from NIH to probe mechanisms of cardiovascular disease

\$1.5 million from DARPA to develop hand-held ultraviolet laser

\$1.2 million from ONR to develop powerful lasers for underwater communication





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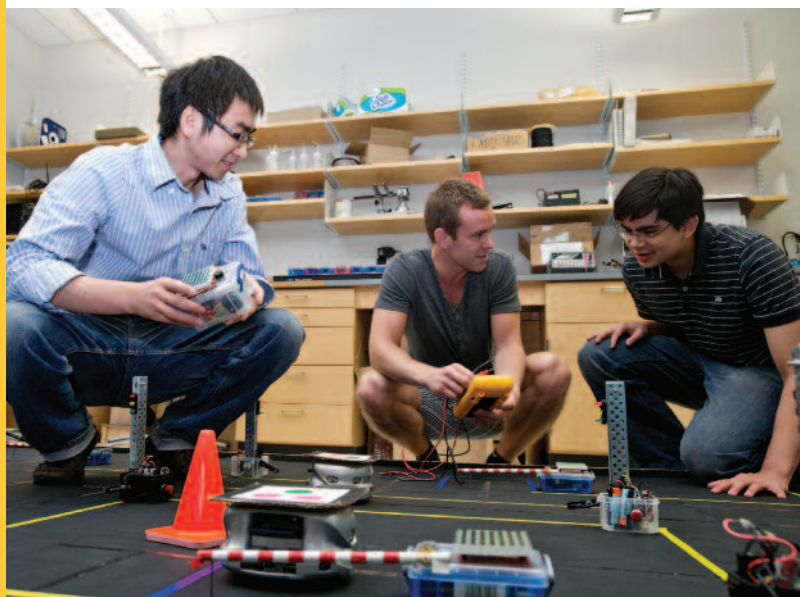
The College's faculty is comprised of highly successful and internationally recognized professors and researchers:

- 7** National Academy of Engineering or National Academy of Sciences members
- 2** MacArthur Award winners
- 13** IEEE Fellows
- 19** AIMBE Fellows
- 11** Acoustical Society of America Fellows
- 4** ASA Silver Medal winners
- 4** AAAS Fellows
- 4** Optical Society of America Fellows
- 27** NSF CAREER Award winners
- 1** Presidential Citizens Medal winner
- 5** Sloan Fellows
- 1** Howard Hughes Medical Institute Investigator
- 2** Presidential Early Career Awards for Scientists and Engineers
- 5** ONR Young Investigator Awards
- 10** American Physical Society Fellows
- 2** NSF Presidential Young Investigator Awards
- 3** DARPA Young Faculty Awards

SAMPLING OF FACULTY ACHIEVEMENTS

The College's rising trajectory is mirrored by the success of its faculty in winning competitive national and international honors, awards, grants and fellowships for their research and teaching. Some examples:

- Professor **James J. Collins** (BME) was elected a member of the National Academy of Engineering.
- Dean **Kenneth R. Lutchen** was elected president of the American Institute for Medical and Biological Engineering (AIMBE).
- Professor **Irving Bigio** (ECE, BME) and Professor **Malvin C. Teich** (ECE) were both elected by SPIE to the rank of Fellow.
- The North America MBE Advisory Board selected Professor **Theodore Moustakas** (ECE) as the winner of its 2010 MBE Innovator Award.
- The IEEE Photonics Society named Assistant Professor **Hatice Altug** (ECE) the 2011 winner of its Young Investigator Award.
- The IEEE Photonics Society appointed Professor **Selim Ünlü** (ECE) Editor-in-Chief of the IEEE Journal of Quantum Electronics, the society's flagship journal.
- Professor **John Baillieul** (ME) was selected for the IEEE Control Systems Society's 2011 Hendrik W. Bode Lecture Prize.
- The Alfred P. Sloan Foundation selected Assistant Professor **Xue Han** (BME) as winner of a 2011 Sloan Research Fellowship for her work in neuroscience. She is one of only 118 early-career researchers recognized nationally.
- The National Academy of Engineering selected several of the College's professors to participate in various symposia: Assistant Professor **Hatice Altug** (ECE) at the U.S. Frontiers of Engineering symposium; and Assistant Professor **Muhammad Zaman** (BME) at the 2011 Japan-America Frontiers of Engineering Symposium (JAFOE) and the highly competitive Frontiers of Engineering Education (FOEE) symposium.
- Professor **Christos Cassandras** (ECE), head of the Division of Systems Engineering at Boston University, was named president-elect of the IEEE Control Systems Society (CSS).



AT A GLANCE

Established in 1950

Students in 2010-2011

Undergraduate **1,312**

Master's **269**

Doctoral **342**

Degrees Granted in 2010-2011

Bachelor's **272**

Master's **142**

Doctoral **65**

Faculty

Tenured/Tenure-Track Faculty Positions **105**

Research Faculty **15**

Research Associates **72**

Alumni

Living Alumni **13,647**

Academic Degrees

Biomedical Engineering (BS, MEng, MS, PhD)

Computer Engineering (BS, MEng, MS, PhD)

Electrical Engineering (BS, MEng, MS, PhD)

Global Manufacturing (MS)

Interdisciplinary Engineering (BS)

Late Entry Accelerated Program (MS)

Manufacturing Engineering (MEng, MS)

Materials Science & Engineering (MEng, MS, PhD)

Mechanical Engineering (BS, MEng, MS, PhD)

Photonics (MEng, MS)

Systems Engineering (MEng, MS, PhD)

Undergraduate Concentrations

Aerospace Engineering

Energy Technologies & Environmental Engineering

Manufacturing Engineering

Nanotechnology

Dual Degrees

Doctor of Philosophy and Doctor of Medicine (MD/PhD)

MS in Manufacturing Engineering and MBA in Management Dual Degree Program (MS/MBA)

Boston University Dual Degree Program

Other Programs

Cooperative Education Program

Graduate Cooperative Education Program

Intercollegiate Program in Bioinformatics

Study Abroad for Engineering Students

Engineering/Medical Integrated Curriculum (ENGMEDIC)

Pre-Medical Engineering

Research Centers

Bimolecular Engineering Research Center

Center for Advanced Biotechnology

Center for Information and Systems Engineering

Center for Subsurface Sensing and Imaging Systems

Hearing Research Center

Center for Computational Neuroscience

NeuroMuscular Research Center

Center for Computational Science

Center for Nanoscience and Nanobiotechnology

Center for Remote Sensing

Center for Space Physics

Fraunhofer Center for Manufacturing Innovation

Photonics Center

Rafik Harii Institute for Computing and Computational Science & Engineering



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