

Tufts University School of Engineering: A Leader in Engineering Education

The Tufts University School of Engineering is one of the premier engineering schools in the country, with a commitment to academic excellence in undergraduate and graduate education and to the development of technologies that shape the future. Known for its outstanding faculty, preeminent research, appeal to women, large number of students who transfer in, and excellence in preK-12 science and technology educational outreach, the School is a recognized innovator in creating engineering leaders, technologies, and connections to other disciplines.

The School of Engineering holds a variety of distinctions, including:

- It is one of the most attractive engineering schools for women students and teachers, with 32% female students (approximately twice the national average) and 16% female faculty (approximately four times the national average).
- It offers innovative courses that range from designing musical instruments to developing robotic LEGOs. Due in large part to this creative curriculum, more students transfer into the program than out of it. In fact, Tufts is the only engineering school in the country that gains instead of loses students.
- It boasts a faculty recognized as leading engineering educators and scholars, including the first engineering educator in 15 years to receive the prestigious Carnegie Foundation's Massachusetts Professor of the Year Award.
- It excels in research in the areas of bioengineering, thermal manufacturing, and environmental engineering.
- It successfully prepares students to become engineering leaders through its practice-oriented curriculum, teamwork initiatives, and leadership skill-building experiences.
- It offers a superbly integrated connection to liberal arts and health sciences within the university. At Tufts, the joining of "arts, sciences, and engineering" under one umbrella gives engineering students a strong liberal arts education and successfully links engineering to other disciplines.
- It is the nationally recognized leader in bringing engineering into the preK-12 curriculum. The Tufts Center of Engineering Educational Outreach provides curriculum development, teacher training, educational materials development, and science education restructuring in order to enhance the science, technology, and engineering experiences of young children.

The Tufts School of Engineering is located on the Medford, Massachusetts campus of Tufts University. Recognized among the premier universities in the United States, Tufts enjoys a global reputation for academic excellence and for the preparation of students as leaders in a wide range of professions. A growing number of innovative research initiatives and joint degree programs are available for both undergraduate and graduate school students not only in engineering, but in liberal arts, sciences, and the university's seven graduate and professional schools.

Tufts University School of Engineering Specializes in Innovative Programs

The Tufts University School of Engineering is known for its innovative programming, research initiatives, and joint degree programs at both the undergraduate and graduate levels. As one of few universities in the nation that combine arts, sciences, and engineering under one umbrella, Tufts excels at linking engineering with other disciplines and giving its students extensive opportunities for interdisciplinary research and experience.

The School of Engineering displays innovation and excellence in several research and educational arenas, including:

- **Bioengineering:** Drawing from the combined strengths of Tufts' engineering, nutrition, medical, dental, and veterinary schools, the extensive bioengineering program offers exciting interdisciplinary connections among engineering and many other biology-related fields, including biomedical engineering, biotechnology, and comparative biomechanics. Undergraduate and graduate students receive unique interdisciplinary perspectives by working with clinicians and industry-based faculty. The school's new Bioengineering Center provides state-of-the-art laboratories for sophisticated bioengineering research and links engineering to the many areas of biology. For example, in collaboration with Tufts' School of Veterinary Medicine and the University of Connecticut Health Services Center, the School of Engineering is currently studying the potential of silk proteins to bring about bone growth in vitro.
- **Thermal Manufacturing:** The School of Engineering is a national leader in thermal manufacturing—the application of thermal-fluid sciences and materials science to the design and control of manufacturing and materials processes. The School offers a laboratory wing devoted exclusively to thermal manufacturing, complete with facilities that allow undergraduate and graduate students to explore industrial-grade processes; in the industry-sponsored prototyping shop, teams of students work with faculty and industry experts to develop real-world product prototypes. Thermal manufacturing researchers at Tufts recently developed metal-matrix composite (MMC) coatings; these low-cost, highly effective coatings have superior adhesion and mechanical properties, and are being used in many industries, including automotive and aerospace manufacturing.
- **Environmental Engineering:** Tufts excels in water resources engineering and pollution prevention. Active research focuses on water quality modeling, surface and ground water monitoring, wastewater treatment, and air pollution monitoring. In 1998, the School opened its Pollution Prevention Laboratory, a premiere site for corporate and industry-sponsored programs. Currently, environmental engineering experts are studying the effects of seasonal precipitation forecasting on agricultural production in West Africa. In collaboration with the Mystic River Watershed Association (MRWA), the School has also established a Watershed Center to integrate research, service, and education while managing the problems of the Boston area's Watershed Basin.
- **Establishment of Engineering in preK-12 Curricula:** The School of Engineering leads the nation in bringing engineering to preK-12 science and technology education. Through its Center for Engineering Educational Outreach, which is designed to instill systemic change in public school science education, Tufts collaborates with corporations and other

leading entities to develop textbooks, curriculum materials, teacher training materials, software, and educational toys in order to influence science and engineering education on an international level.

- **Innovative Undergraduate Curriculum:** The School of Engineering's unique first-year curriculum offers a wide range of courses — from "Musical Instrument Design" to "Gourmet" and "Microbrewery Engineering" — that makes engineering appealing to first-year students, both male and female. Engaging classes such as these contribute significantly to the School's unusually high influx of students; at Tufts, more students transfer into the School of Engineering than out of it.
- **Creating Partnerships with Other Disciplines:** Tufts offers an unprecedented number of joint degree and research programs between the School of Engineering and its professional schools. Its connections with the Medical and Dental Schools, the Fletcher School of Law and Diplomacy, the School of Veterinary Medicine, and the School of Arts and Sciences have generated signature programs that attract outstanding students, take advantage of Tufts complex strengths, and produce graduates with unique and varied skills.
- **Creating Partnerships with Other Industries:** Known for its unique connections in the corporate and non-profit world, the School of Engineering has partnered with VIACOM to initiate multimedia programs and with Steinway and Sons and Selmer Instruments to develop musical instrument design courses. Its collaborations with LEGO and with Prentice Hall have created new educational materials, including programmable ROBOTIC LEGOs and hands-on exercises in middle school science textbooks. With an ongoing commitment to multi-disciplinary engineering education, Tufts continues to work with companies, industries, and government agencies to solve real-world problems and to develop educational opportunities and research projects for both undergraduate and graduate students.

