

University Senate

Proposed: November 18, 2016

Adopted: All 68 senators present
voted in favor

**RESOLUTION TO ESTABLISH AN
M.D./M.S. IN BIOMEDICAL ENGINEERING (P&S AND SEAS)**

WHEREAS, medical students are often interested in taking time off from medical school to augment their study in a complementary field, and

WHEREAS, the M.D./M.S. program in Biomedical Engineering is intended for medical students who wish to build a fundamental knowledge of biomedical engineering and medical device design and innovation, and

WHEREAS, the program will prepare medical students to become innovative leaders in science, engineering, and medicine, and

WHEREAS, biomedical engineering is an evolving discipline requiring collaboration among engineers, physicians, scientists and entrepreneurs in academia and industry to provide interdisciplinary solutions to complex biomedical problems, and

WHEREAS, the proposed five-year program will supplement the current training for medical students with world-class training identical to the current program for an M.S. in Biomedical Engineering, and

WHEREAS, only one similar program exists in the Northeast,

NOW, THEREFORE, be it resolved that the Senate approve the M.D./M.S. in Biomedical Engineering, and

BE IT FURTHER RESOLVED that the Education Committee review the program in five years.

Proponent:

Education Committee

M.D./M.S. in Biomedical Engineering

1) Purpose

A) Describe the purpose of the proposed program and the professional and educational assumptions that underlie it.

The purpose of the MD/MS program is to supplement the current training of medical students with graduate-level training in biomedical engineering. Medical students are often interested in taking time off from medical school to pursue study in a complementary field in order to enhance their training. The MD/MS program in Biomedical Engineering is intended for medical students who wish to build a fundamental knowledge of biomedical engineering and medical device design and innovation. Specifically, the program is designed to provide medical students with an interdisciplinary education, enriched by research endeavors focused on expanding the knowledge base of engineering and creating technological solutions that serve society and improve the human condition. The proposed program curriculum offers medical students opportunities to contribute to and drive medical innovation and support the promotion, development, and realization of the clinical potential of translational research. This MD/MS program will develop the research and engineering skills of medical students and prepare them to become innovative leaders in science, engineering, and medicine.

B) Discuss how the proposed program furthers the mission and plans of the department or school.

The mission of Columbia Engineering, The Fu Foundation School of Engineering and Applied Science at Columbia University in the City of New York, is to prepare talented students to become innovative, socially responsible leaders in industry, government, and academia. The education is grounded in the fundamental principles and creative approaches of engineering, while being critically informed by the broader perspective of a distinguished liberal arts education. This interdisciplinary education mission is enriched by a research endeavor focused on expanding the knowledge base of engineering and creating technological solutions that serve society. Columbia students, faculty, and alumni strive to improve the human condition locally, nationally, and globally with their enthusiasm to learn, to question, and to solve some of the world's most pressing current and future challenges.

The proposed program furthers the mission of the Department and School by providing an interdisciplinary educational experience to medical students such that they are able to contribute to and drive medical innovation and support the promotion, development, and realization of the clinical potential of translational research, with the ultimate goal of improving the human condition.

C) Discuss the relationship of the proposed program with the other curricular offerings of the school. Will it replace or duplicate, in full or in part, any existing program?

The proposed program will supplement the current training for medical students with world-class training in biomedical engineering at the graduate-level. This training will be identical to the current program for an MS in Biomedical Engineering.

2) Need

Biomedical engineering (BME) is an evolving discipline that involves collaboration among engineers, physicians, scientists and entrepreneurs, in academia and industry to provide interdisciplinary solutions to complex biomedical problems. Therefore, there is a need to provide clinical trainees with a fundamental knowledge of biomedical engineering in order to help them understand, identify, and develop innovative solutions. The proposed program will serve this unmet need by: 1) providing medical students with graduate-level training in biomedical engineering and 2) establishing interdisciplinary teams within the Department that will leverage the diverse skillsets of our graduate students. This program will provide medical students with the knowledge and skills necessary to identify and help address sophisticated clinical problems.

A) Have you received requests for the program? If so, describe the reasons for those requests and who made them.

Steven Shea, MD, Professor of Medicine, College of Physicians and Surgeons

Dr. Shea desires to provide medical students with an interdisciplinary education in medicine and engineering such that graduates are prepared to contribute to the development, research, and commercialization of medical innovations.

B) Do other institutions in the metropolitan area and in the Northeast offer similar programs? If so, describe how the program differs from those at the other institutions.

There is currently one MD/MS in Biomedical Engineering program in the Northeast at Dartmouth University, Thayer School of Engineering and The Geisel School of Medicine at Dartmouth, in New Hampshire. The program is different in that it is offered over 3 terms (between 3rd and 4th year of Medical School and Fall of 4th year). Additionally, the program requires only 6 courses in addition to research with thesis.