Degree Proposal

Master of Science in Pharmaceutical Engineering

College of Engineering and Bouve College of Health Sciences

Executive Summary

Northeastern University's College of Engineering (COE) and Bouvé College of Health Sciences (Bouvé) are proposing a joint Master of Science (MS) program (non-thesis) in Pharmaceutical Engineering. This jointly developed program supports the growing industry need for engineers with advanced skills in state-of-the-art pharmaceutical design, manufacturing processes, regulatory, and quality. Using the Coop expertise within COE, the proposed MS degree contributes to the University's emphasis on experiential education and interdisciplinary knowledge, preparing students for professional advancement.

A market analysis was performed and it demonstrated that we have a clear market and opportunity within the Boston area. Few programs exist across the country, and our focus on using expertise in Chemical Engineering and Pharmaceutical Sciences, as well as our experiential opportunities, distinguish our proposed program. We have met with MassBioEd, MassLifeSci, and International Society for Pharmaceutical Engineering (IPSE) representatives to discuss the program objectives and distinguishing features from other programs. In addition, we have met with the Biotechnology program director to assure distinguishing features between the programs, which primarily includes engineering analysis and control.

Program Description

Northeastern University's College of Engineering (COE) and Bouvé College of Health Sciences (Bouvé) joint Master of Science (MS) program in Pharmaceutical Engineering will be a non-thesis degree program offered by the Department of Chemical Engineering in COE and the Department of Pharmaceutical Sciences in Bouvé. The program supports the growing industry need for engineers with advanced skills in state-of-the-art pharmaceutical design, manufacturing processes, regulatory & quality aspects. Students additionally benefit from the close research ties and workplace connections made possible by Northeastern's experiential education model and close proximity to the Boston area biotechnology and pharmaceutical companies. COE is taking the lead on the program and will use the coop faculty currently affiliated with the Chemical Engineering department to support the student's experiential learning. The MS in Pharmaceutical Engineering will be a 1.5-2-year full time degree program. The program is intended to begin in Fall 2023, with 32 total semester hours

Students in this degree program will have the opportunity to gain advanced interdisciplinary training in Chemical Engineering and Pharmaceutical Sciences, with core classes in both colleges (8 semester hours in Pharmaceutical Sciences, 10 in Chemical Engineering) and electives in 3 different colleges. Students will also have the opportunity

to stack a range of graduate certificate programs into the master's degree. These concentrations provide a distinctive competitive advantage for Northeastern University.

Program Contribution to the University's Mission

The MS in Pharmaceutical Engineering aligns well with the missions of both COE and Bouvé, as well as the University. The proposed MS degree contributes to the University's emphasis on experiential education and interdisciplinary knowledge, preparing students for professional advancement. Faculty from COE and Bouvé are deeply committed to training future leaders in pharmaceutical engineers, and the program has a core that requires courses from both disciplines.

The primary department that will oversee the students, including advising and coop, will be the Department of Chemical Engineering. Working closely with the Department of Pharmaceutical Sciences, we have developed a curriculum that brings together the expertise of both departments. We have also met with MassBioEd, MassLifeSci, and ISPE representatives to discuss any concerns about the program objectives and distinguishing features from other programs. The focus on engineering aspects of pharmaceutical development, operations, and manufacturing are clear distinguishing features from programs such as Biotechnology, which do not present engineering aspects.