NJIT
New Jersey's Science & Technology University

THE EDGE IN KNOWLEDGE

The Master of Science Program in Pharmaceutical Engineering

The Otto H. York Department of Chemical Engineering

Newark College of Engineering

New Jersey Institute of Technology

WHY PURSUE AN MS DEGREE IN PHARMACEUTICAL ENGINEERING?

Spurred by an explosion in new medical knowledge and an aging population, the pharmaceutical industry is one of the strongest and most exciting sectors of the economy. Pharmaceutical engineers play a vital role in the design, scale up and operation of pharmaceutical facilities where new drugs are developed, synthesized, and eventually manufactured under stringent conditions. NJIT's MS in Pharmaceutical Engineering, one of only a handful of similar programs in the United States, provides the foundation needed to work within the rigorous technological requirements of this highly regulated work environment.

WHY STUDY PHARMACEUTICAL ENGINEERING AT NJIT?

New Jersey is geographically at the heart of the nation's pharmaceutical industry and home to more of the world's leading pharmaceutical companies than any other state, and NJIT is at the national epicenter of this concentration of industrial pharmaceutical research and development. As the state's science and technology university, NJIT has strong ties with the pharmaceutical industry and works directly with industry advisors to ensure that the curriculum is relevant to industry needs.

WHO SHOULD ENROLL IN THE MS DEGREE IN PHARMACEUTICAL ENGINEERING?

Students who wish to specialize in pharmaceutical processing and manufacturing, as well as professionals working in the pharmaceutical industry or related fields.

IS PART-TIME STUDY AVAILABLE?

The program can be pursued on a full- or part-time basis. Evening and late afternoon classes accommodate working professionals.

WHO TEACHES THE COURSES?

Distinguished faculty from the Otto H. York Department of Chemical Engineering as well as industry experts from New Jersey-based pharmaceutical companies.

SUMMARY OF ADMISSIONS REQUIREMENTS

BS in chemical engineering or, in most cases, mechanical engineering from an accredited undergraduate program (Degrees in science or other engineering disciplines may require a bridge program. Typically, those with a science background are required to take three bridge courses to fill their engineering gap.)

- GPA of 3.0 on a 4.0 scale required
- GRE for applicants whose prior degree is from an institution outside the US
- TOEFL score of 550 (paper exam) or 213 (computer-based) for international students

PROGRAM SUMMARY

Program Objective: To educate professionals and provide them with the skills required to work in the pharmaceutical field, with particular emphasis on the engineering aspects of drug manufacturing, pharmaceutical development, pharmaceutical production, and pharmaceutical operations.
Degree Awarded: Master of Science in Pharmaceutical Engineering
Credits Required: 30

STUDY TRACKS (TWO ARE AVAILABLE)

Track 1: Process Development and Design for Drug Substance Manufacturing
Track 2: Process Development and Design for Drug Product Manufacturing

COURSE REQUIREMENTS:

•Five core courses common to both tracks (3 credits/course); 15 credits total):

PhEn 601	Principles of Pharmaceutical Engineering
PhEn 603	Pharmaceutical Unit Operations: Processing of Liquid and Dispersed-Phase Systems
PhEn 604	Validation and Regulatory Issues in the Pharmaceutical Industry
PhEn 606	Pharmaceutical Unit Operations: Solids Processing
PhEn 618	Principles of Pharmacokinetics and Drug Delivery

•Two additional core courses specific to the track selected (3 credits/course); 6 credits total):

Process Development and Design for Drug Substance Manufacturing

PhEn 612	Pharmaceutical Reaction Engineering
PhEn 614	Pharmaceutical Separation Processes

Process Development and Design for Drug Product Manufacturing

PhEn 602	Pharmaceutical Facility Design
PhEn 605	Pharmaceutical Packaging Technology

•Three additional elective courses (3 credits each) selected from the list of available courses (9 credits total). Students who choose to do a thesis must take 6 credits of PhEn 701 (Master's Thesis) in lieu of 6 credits of elective courses.

OPPORTUNITIES FOR RESEARCH

By doing a master's thesis, students may work with faculty members on research projects and gain valuable research experience. Qualified students may continue on to a PhD in chemical engineering or related disciplines. The NJIT-Industry Collaborative PhD program allows students to pursue a PhD while working full-time in industry.

FOR FURTHER INFORMATION, CONTACT:

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http://catalog.njit.edu/graduate/programs/pharmaceuticaleng.php

FOR AN APPLICATION

Graduate Admissions
(973) 596-3300
www.njit.edu/admissions/graduate/apply_online.php