

# Pharmaceutical Engineering

# NJIT

New Jersey Institute of Technology  
*A Public Research University*

The Master of Science in  
Pharmaceutical Engineering\*

Department of Chemical Engineering  
Department of Industrial and  
Manufacturing Engineering

Explore the next new frontier  
as a pharmaceutical engineer

**T**he 21st century will see an unprecedented revolution in the health sciences as the human genome yields its secrets. New knowledge will enable technologies for the prevention, diagnosis and cure of cancer, heart disease, nerve and spinal injuries, birth defects and other deadly or crippling diseases. The Master of Science in Pharmaceutical Engineering draws upon NJIT's expertise in areas ranging from chemical engineering to manufacturing and industrial engineering to prepare technical specialists to work in areas such as drug manufacturing, pharmaceutical development, pharmaceutical production, and pharmaceutical operations.

\*[www.njit.edu/che/pharme/](http://www.njit.edu/che/pharme/)

# Questions & Answers



## **WHY PURSUE AN M.S. 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 M.S. 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 NJIT's campus is located within miles of the headquarters and major facilities of 21 of the world's leading pharmaceutical companies. Jersey-based firms developed half of the new drugs approved by FDA in the last year. As the state's public technological research university, NJIT has strong ties with the pharmaceutical industry and works directly with industry advisors to ensure that the curriculum is relevant to the needs of the industry.

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## **WHO SHOULD ENROLL IN THE M.S. IN PHARMACEUTICAL ENGINEERING?**

Professionals working in the pharmaceutical industry or related fields and those who plan to pursue a career in the industry will benefit most from the program. The program is open to students with undergraduate degrees in selected engineering or science disciplines, although a bridge program may be necessary to meet the prerequisites within a specific program of study.

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### **WHO TEACHES THE COURSES?**

Distinguished faculty from the Department of Chemical Engineering ([www.njit.edu/Directory/Academic/Chem/faculty.html](http://www.njit.edu/Directory/Academic/Chem/faculty.html)), the Department of Chemistry and Environmental Science ([www.njit.edu/Directory/Academic/Chem/faculty.html](http://www.njit.edu/Directory/Academic/Chem/faculty.html)), and the Department of Industrial and Manufacturing Engineering ([www.njit.edu/Directory/Academic/IME/Faculty/index.html](http://www.njit.edu/Directory/Academic/IME/Faculty/index.html)) are the primary instructors. But the program also draws on faculty expertise from mechanical engineering, computer science, electrical engineering and management. In addition, industry experts from New Jersey-based pharmaceutical firms teach some courses and team-teach others.

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### **DO STUDENTS HAVE OPPORTUNITIES FOR RESEARCH AND DOCTORAL STUDIES?**

Students have the opportunity to work one-on-one with faculty researchers pursuing projects in cutting edge technologies with pharmaceutical industry applications, such as particle technology, mixing, crystallization, microflow technology, waterjet, MEMS, drug delivery systems, and membrane separation. Qualified, research oriented students will have the option of continuing their studies by pursuing a Ph.D. in chemical engineering, chemistry, or industrial engineering. The university also sponsors an Industry Collaborative Ph.D. program that allows students to pursue a doctoral degree while maintaining full-time employment.

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### **IS PART-TIME STUDY AVAILABLE?**

As with all graduate programs at NJIT, the M.S. in Pharmaceutical Engineering can be pursued on a full- or part-time basis. Most courses are scheduled for evenings, weekends, or late afternoons to accommodate working professionals.

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### **DOES THE PROGRAM OFFER FINANCIAL AID?**

Various financial support and graduate award options are available to graduate students. For further information, see the Graduate Studies web site at [www.njit.edu/Admissions/fin.htm](http://www.njit.edu/Admissions/fin.htm).

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## PROGRAM SUMMARY

Degree Awarded: Master of Science in Pharmaceutical Engineering

Credits Required: 30

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

Study Tracks: Pharmaceutical Operations or Pharmaceutical Production and Development.

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## SUMMARY OF ADMISSIONS REQUIREMENTS

B.A. or B.S. from an accredited undergraduate program

GPA of 3.0 on a 4.0 scale required

TOEFL score of 550 (international students)

GRE or GMAT (operations track only) strongly encouraged

For an application, contact the Office of Graduate Admissions,  
(973) 596-3300 or on-line at [www.njit.edu/Admissions/gradad.htm](http://www.njit.edu/Admissions/gradad.htm)

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## PHARMACEUTICAL OPERATIONS TRACK: CONCENTRATIONS

- Quality
  - Pharmaceutical Production
  - Manufacturing Operations
  - Systems
  - Logistics
  - Management
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## PHARMACEUTICAL PRODUCTION AND DEVELOPMENT TRACK: CONCENTRATIONS

- Drug Synthesis
  - Pharmaceutical Operations
  - Biochemical Engineering
  - Particle Technology
  - Fluid Technology
  - Quality Control
  - Information Technology
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## FOR FURTHER INFORMATION

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