MASTER OF ENGINEERING IN PHARMACEUTICAL ENGINEERING AND SCIENCE

Piscataway, New Jersey
United States of America
More than 58,000 students from all 50 states and more than 125 countries. 42,300 undergraduates and 14,500 graduate students.

One of 33 public member of the prestigious Association of American Universities (AAU) (comprehensive research universities)

Founded in 1766, Rutgers is the 8th oldest university in the U.S. It is also the sole university in the United States that's a colonial college, a land-grant institution, and a leading national public research university.

3 campuses in New Jersey: New Brunswick, Newark and Camden. 27 Affiliated schools and colleges.

- 20 Faculty
- Undergraduate Students: ~250 (2nd- 4th year)
- Graduate Students: ~80

Graduate Degree Programs
- MS in Chemical Engineering
- ME in Pharmaceutical Engineering
- PhD in Chemical Engineering
Active research programs in diverse fields including:

- Chemical engineering science
- Biotechnology & biomolecular engineering
- Pharmaceutical engineering
- Process systems engineering
- Complex fluids and nanomaterials

Host departments for several research programs and centers:

- NSF IGERT for Biointerfaces
- NSF IGERT for Nanopharmaceuticals
- NIH Biotechnology Training Grant
- DOE GAANN Fellowships in Pharmaceutical Engineering
- NSF Engineering Research Center for Structure Organic Particulate Systems
- Catalyst Manufacturing Science & Engineering Consortium
- NJ Center for Biomaterials
The pharmaceutical industry is increasingly looking for engineers and scientists with current and advanced training in pharmaceutical engineering. The Masters of Engineering in Pharmaceutical Engineering and Science (M.E.) at Rutgers University has been established to educate developmental scientists, engineers, managers and other professionals to provide them with advanced skills needed in the pharmaceutical product design and manufacturing fields.

Rutgers University provides the intellectual climate that prepares students for professional advancement. The Master of Engineering in Pharmaceutical Engineering and Science is a 30-credit degree program focused on professional development and cross-functional training in pharmaceutical and related life science industries. The program is appropriate for full-time and part-time students; many classes are offered in the evening.

- Pharmaceutical engineers work for pharmaceutical and drug manufacturing companies, many of which have global operations. The number of jobs for engineers in the drug manufacturing industry is expected to increase 9.4 percent from 2008 to 2018 (U.S. Bureau of Labor Statistics [BLS]).
- The average annual salary for chemical engineers employed in the Pharmaceutical and Medicine Manufacturing field is $93,000 (BLS May 2011).
- The pharmaceutical industry plays a major—and growing—role in the United States economy, with both the consumption and the production of its products. Total value of U.S. pharmaceutical drugs sold in 2009 was $300 billion, or about 40 percent of the worldwide market share. This is a 37 percent increase since 2003.
- The United States relies on imports to meet the demand for prescription drugs. By volume, 40 percent of the finished pharmaceuticals sold in the United States are imported; this figure is close to 80 percent for active and bulk pharmaceutical ingredients in finished drugs. The United States still leads the world in pharmaceutical production (39 percent), followed by the United Kingdom, Germany, France, and Japan (excerpt from BLS).
The combined program is designed to provide outstanding undergraduate students in science and engineering with an accelerated pathway to an advanced degree in pharmaceutical engineering. The opportunity to obtain an ME degree within a shortened time-frame benefits students as well as industry by providing cost-effective solutions to filling high-demand, technically challenging jobs in the pharmaceutical and healthcare fields.

**The Master of Engineering in Pharmaceutical Engineering and Science curriculum is designed to:**

1. Provide graduates with needed skills and tools to be innovative, competent, contributing engineers in the pharmaceutical industry.
2. Train graduate students to meet the constantly changing needs of industry for state-of-the-art research/manufacturing practices and protocols.
3. Deliver training and experience to graduates who wish to further their industrial career.
4. The Rutgers ME program is considering expand/divide the program in four tracks.

**The Master of Engineering in Pharmaceutical Engineering and Science ensures that its graduates will have acquired:**

- The ability to apply knowledge of mathematics, science and engineering to pharmaceutical processes
- The skills required to design a system, component or process to meet desired needs
- The competence to function on multidisciplinary teams
- The required skills to identify, formulate, and solve pharmaceutical engineering problems
- An in-depth understanding of professional and ethical responsibility
- The capability to communicate effectively
- A wide-ranging education required to understand the impact of engineering solutions in a global/societal context
- Recognition of the need to engage in lifelong learning
- Keen knowledge and understanding of contemporary issues
Requirements for the completion of the M.E. degree:

- Thirty course credits (including 15 core course credits) are required for the completion of the Master of Engineering in Pharmaceutical Engineering and Science degree.
- Fifteen elective course credits (selected from established engineering and science graduate courses. Below is a list of acceptable electives. With program approval, other elective courses may be selected from current Rutgers engineering and science graduate courses.
- Maintenance of an overall cumulative grade point average of at least 3.0.
- Maintenance of a grade point average of at least 3.0 in the core courses.
- Students who receive more than three (3) grades below B will be recommended for dismissal to the Graduate School.

Core courses (five required courses):

- 155:546 Pharmaceutical Process Design II (Pharmaceutical Unit Operations)
- 155:549 Advanced Engineering, Pharmaceutical Kinetics, Thermodynamics and Transport Processes
- 155:541 Pharmaceutical Materials Engineering
Admission Requirements

- Applicants to the M.E. should have an undergraduate degree in engineering, science or pharmacy.
- The Graduate School in New Brunswick requires a cumulative GPA of at least 3.0 on a 4.0 scale for admission. The GPA requirement may be waived for students who have significant work other relevant experience.
- Applicants are required to submit scores from the Graduate Record Examination (GRE) General Test. International students (and students from Puerto Rico) must also submit scores from the Test of English as a Foreign Language (TOEFL).
- A personal statement is required. Be sure to discuss your interested in Pharmaceutical Engineering in your personal statement.

International Students

The graduate faculty in Chemical and Biochemical Engineering is particularly interested in attracting well-qualified candidates to its advanced degree programs. Admission is competitive based on GRE general test scores, GPA in your undergraduate major, three letters of recommendation, and a personal statement. TOEFL or IELTS is required of all applicants whose undergraduate education was completed in a non-English speaking country.
For the electronic online application, go to:

http://gradstudy.rutgers.edu/

The online electronic application requires your biographical data, residency information, program, Personal statement, official transcript and three letters of recommendation or three names and email addresses of those who can recommend you. Also, include test scores (if available).

❖ Please be sure to apply on-line for the M.E. degree.

For more information contact us at:
E-mail: meadmissions@soemail.rutgers.edu
Phone: 732-445-6709/848-445-4949

Requirements for a complete application:

Rutgers graduate programs require a complete application which includes the following:

✓ Online application
✓ $65 non-refundable application fee
✓ One official transcript from each post-secondary institution attended
✓ Three letters of recommendation
✓ Personal statement
✓ Current test results, as required, TOEFL score
✓ Additional supporting materials, as required by the program
Entering Your Personal Information:

- Complete your application using the same biographical data as it appears on your passport.
- Last Name/Family Name
- First Name/Sur Name
- Middle Name
- Additional Other Name (any other name that may appear on your supporting materials). Date of Birth in the format of month/day/year.

You are required to provide a copy of your passport and of all dependents that will accompany you to Rutgers.

GPA:

Most international applicants will not have a GPA that is based on a 4-point scale. If this is the case, please enter 0.00 on the electronic application. GPA information is used for statistical purposes and your transcripts will clarify your academic achievement.

Credentials:

In order for your electronic application to be reviewed by the committee, it must be complete and submitted by the program’s deadline. Include your personal statement, letters of recommendation, and GRE test scores (if required), along with TOEFL scores. Refer to the Index of Programs for each program’s applicable deadlines. International applicants currently studying in a U.S. school will need a Foreign Student Advisers Form, as well as a current financial documentation form (sample at the end).
Rutgers requires TOEFL or IELTS for all applicants whose undergraduate education was completed in a non-English speaking country. Even if you hold a Master's-level degree from a U.S. or other English-speaking country you must take the TOEFL or IELTS test. Scores must be current within 2 years of the applied semester.

The only exemptions are for U.S. trained undergraduates and international applicants coming from English-speaking countries with a minimum of three years’ undergraduate education where the mode of instruction was English.

Applications missing required scores may not be reviewed by the admissions committee.

- The minimum Paper based TOEFL score is 575
- The minimum Computer based TOEFL score is 233
- The minimum IBT-internet based TOEFL is:
  - Writing 22
  - Speaking 23
  - Reading 21
  - Listening 17
- The acceptable IELTS score is bandwidth 7
Financial documentation is not required until admission is offered. However, we recommend that applicants submit or be ready to submit documents when the ME program is accepting rolling admissions.

If you are recommended for admission, you must document first-year funds for educational and living expenses. Funding for subsequent years must be projected and their source(s) identified. Current funding amounts are listed on the Financial Documentation Form online.

Certificates of Admission and Eligibility (I-20 and DS-2019) are provided after the financial documentation has been satisfied. Single students who are recipients of Rutgers assistantships and fellowships generally satisfy the financial certification requirements for admission.

Tuition and Fee: Tuition and fee amounts are updated each July. Current funding requirement for M.E Program in 2013, is:

- Fee and Tuition: $28,000/year
- Living expenses: $19,000/Year
- Total: $47,000/Year
After you are accepted in the program

1. Obtain Form I-20/DS-2019
2. Pay SEVIS I-901 Fee
3. Apply for a Student Visa to Enter the U.S.
4. Enter the United States
5. Apply for housing
6. Report to/Check-in with CIFSS, New Brunswick
7. International Student Orientation

Go to [http://gradstudy.rutgers.edu/faq.shtml#Admitted](http://gradstudy.rutgers.edu/faq.shtml#Admitted) for detailed information.

Housing Information [http://www.ruoncampus.rutgers.edu/living-at-rutgers/graduate-students](http://www.ruoncampus.rutgers.edu/living-at-rutgers/graduate-students)

Campus/ Local Information [http://www.ruoncampus.rutgers.edu/living-at-rutgers/campuses](http://www.ruoncampus.rutgers.edu/living-at-rutgers/campuses)

Getting Started [http://pharmeng.rutgers.edu/acadMoe.html](http://pharmeng.rutgers.edu/acadMoe.html)