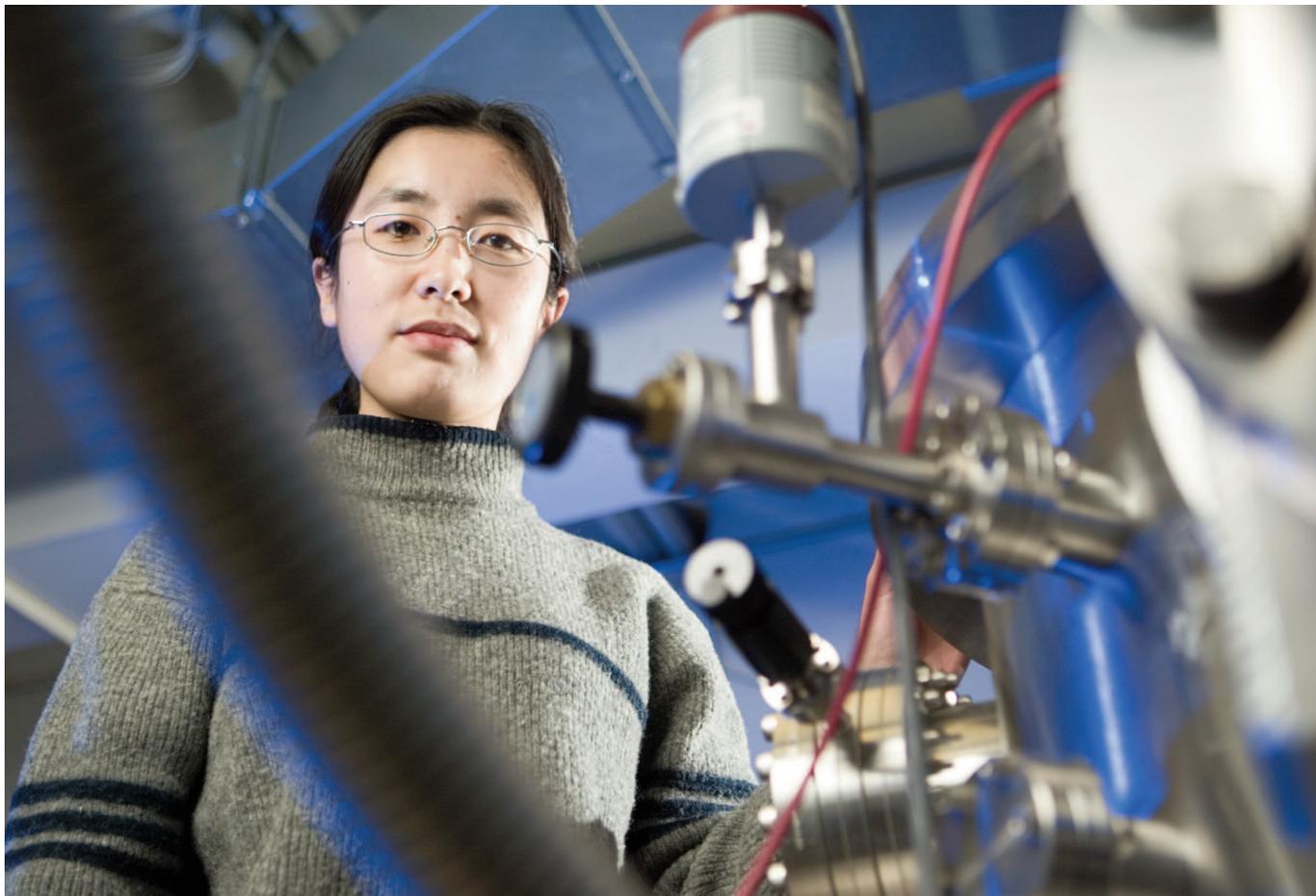


# Master of Science in Materials Science and Engineering



Interdisciplinary Programs

**New Jersey Institute of Technology**

## WHY STUDY MATERIALS SCIENCE AND ENGINEERING?

We are on the edge of a major transition in the discovery, development, and use of materials. Nanotechnology will create breakthrough materials for applications as diverse as data storage, use of catalytic processes in the petrochemical industry, precise targeting of tumors in cancer treatment and other important areas which affect our daily lives. New computational methods and laboratory techniques are being developed to develop new classes of composite materials, leading, for example, to the creation of flexible circuits and magnets. A graduate degree in Materials Science and Engineering will provide a sound base of skills essential to making an impact in this developing field. For now and the foreseeable future a broad range of opportunities will be available to graduates with degrees in the field of advanced materials.

## WHY STUDY MATERIALS SCIENCE AND ENGINEERING AT NJIT?

NJIT focuses on current areas of applications-oriented research working with nanomaterials, biomaterials, particulate materials, electronic and photonic materials, and polymers. Students in the Materials Science and Engineering Program study with nationally funded and internationally known researchers. The university's unique, state-of-the-art research resources include high resolution electron microscopes, cleanrooms, lithographic rooms, materials characterization instrumentation, and a broad range of film deposition systems. A Master of Science degree in Materials Science and Engineering provides graduates with a solid foundation of in-class and research facility experience.

## WHO SHOULD ENROLL IN THE MS PROGRAM IN MATERIALS SCIENCE AND ENGINEERING?

Students and working professionals with educational backgrounds in allied fields such as chemistry, physics, chemical engineering, and mechanical engineering will benefit most from the MS in Materials Science and Engineering. A bridge program is available for students from other disciplines.

## IS PART-TIME STUDY AVAILABLE?

Students can enroll on a full-time or part-time basis. Most courses are offered in the evening to accommodate working professionals.

## WHO TEACHES THE COURSES?

Faculty for the Materials Science and Engineering program are drawn from the university's Departments of Physics, and Biomedical, Chemical, Electrical and Mechanical Engineering. Program faculty have extensive experience in materials applications and research in such areas as nanotechnology, biomaterials, polymer processing and engineered particulates.

## Summary of Admission Requirements

- BS in chemistry, chemical engineering, materials science, mechanical engineering, physics, or related fields.
- GPA of 3.0 or above on a scale of 4.0
- GRE Scores (all applicants)
- TOEFL Score (international applicants) of 550 or above or 213 computer-based

## PROGRAM SUMMARY

The program provides graduate education and research opportunities for students and professionals in the experimental and analytical foundations of materials science and in the engineering, use, modification and application to structures and products of the technological age. The 30-credit program leads to the Master of Science in Materials Science and Engineering.

**Course Requirements** 30 Credits are Required

### Core Courses

MtSE 601 Fundamentals

MtSE 602 Thermodynamics

MtSE 619 Nano-Scale Characterization

### Additional MtSE Courses

MtSE 610 Mechanical Properties of Materials

MtSE 648 Nano-Materials

MtSE 681 Composite Materials

MtSE 682 Introduction to Ceramics

MtSE 688 Mathematics and Statistical Methods.

MtSE 719 Physical Principles of Characterization

MtSE 722 Science and Technology of Thin Films

MtSE 724 Diffusion and Solid State Kinetics

MtSE 780 Comp. Tech. in Math Sci

MtSE 788 Applied Comp. Methods

**Additional MtSE courses, relevant to materials engineering and science departments include:**

Chem 626 Chemistry of Contemporary Materials

ChE 702 Polymer Blends and Composites

Phys 762 Electronic Structure of Solids

## OPPORTUNITIES FOR RESEARCH

By choosing a master's thesis or project, students have an opportunity to gain valuable hands-on research experience working with faculty on cutting-edge projects. Specialized research centers and facilities based at NJIT include:

- The Polymer Processing Institute
- New Jersey Center for Engineered Particulates
- The Center for Membrane Technologies
- The Microelectronics Research Center
- The Electro-Hydrodynamics Laboratory
- The Vision and Neural Engineering Laboratory
- The Stem Cell Research Program
- New Jersey Center for Biomaterials

## IS FINANCIAL AID AVAILABLE?

Financial support may be available for qualified full-time students and might include: the Provost's Fellowship; a research assistantship; loans and work-study; cooperative education industry positions; and curricular practical training. A number of financial support options are available for targeted groups. These include Minority Academic Career (MAC) Fellowships and National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM) Fellowships. For further information on financial assistance programs, visit <http://www.njit.edu/admissions/graduate/graduatefinancialaid.php>

## FOR FURTHER INFORMATION, CONTACT:

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## TO APPLY:

Office of Graduate Admissions  
(973) 596-3300 or on-line at  
[www.njit.edu/admissions/applyonline.php](http://www.njit.edu/admissions/applyonline.php)