Materials Science and Engineering, M.S.M.S.E., Ph.D.

Degrees Offered

• Master of Science, Materials Science and Engineering (M.S.M.S.E).
• Doctor of Philosophy, Materials Science and Engineering (Ph.D.).

Nature of the Program

Materials science and engineering is designed for students with undergraduate degrees in engineering or a closely related STEM discipline. MS&E research focuses on the study of metals, ceramics, glass, polymers, semiconductors, composites, nanomaterials and biomaterials to be implemented in a variety of applications including energy, civil, industrial and environmental. The area of study is diverse and multidisciplinary, since it incorporates aspects of chemistry, physics, electronics, mechanics, biology and medicine. The program will provide students with opportunities to investigate various aspects of materials science and engineering, which includes the processing, structure and properties of materials through computational modeling and/or experimental studies.

Students will be trained in core discipline areas using the most advanced materials processing, physical property testing and chemical/structure characterization equipment available. In addition to coursework in the core areas of materials science, students will choose a specialty area of focus to further his or her expertise. Specialty areas may be in either the chemical, mechanical or electrical engineering departments. The student's home department will be determined by the student's particular background, interests and research advisor.

The program is designed to be flexible, permitting students to acquire the knowledge and skills required to participate in cutting-edge technological areas, such as nanomaterials, ultra-high performance materials, smart materials, bio-inspired materials, environmental materials and energy materials. Students that complete the program will be prepared to perform at the highest levels within industry or within any research environment.

FACULTY

CHEMICAL AND BIOMEDICAL ENGINEERING

• Brian Anderson
• Cerasela Zoica Dinu
• Rakesh K. Gupta
• Robin Hissam
• Ahmed Ismael
• Charter Stinespring
• Hanjing Tian
• Yong Yang

LANE DEPARTMENT OF COMPUTER SCIENCE AND ELECTRICAL ENGINEERING

• Xian-An Cao
• Jeremy Dawson
• Parviz Famouri
• Dimitris Korakakis
• Yuxin Liu

MECHANICAL AND AEROSPACE ENGINEERING

• Ever Barbero
• Bruce Kang
• Xingbo Liu
• David Mebane
• Terence Musho
• Ming Pei
• Edward M. Sabolsky
• Kostas Sierras
Masters Admissions
Minimum requirements for admission as a regular student into the MSMSE are summarized as follows:

- An applicant for admission into the M.S. degree program must have earned a grade point average (GPA) of 3.0 or better (out of a possible 4.0) in all previous college work from an accredited or internationally recognized program.
- International applicants must submit proof of English language proficiency.
- All applicants are required to submit GRE general test scores with the engineering subject test score being optional. The GRE scores required for admission as a regular graduate student should be seventy-fourth percentile or higher in the Quantitative section. The GRE scores for the verbal and analytical sections will be taken into consideration in the admission process.

Doctoral Admissions
Minimum requirements for admission as a regular student into the doctor of philosophy degree with a major in materials science and engineering are summarized as follows:

- An applicant for admission into the Ph.D. degree program must have earned a grade point average (GPA) of 3.0 or better (out of a possible 4.0) in all previous college work if they holds a B.S. or M.S. degree, respectively, from an accredited or internationally recognized program.
- International applicants must submit proof of English language proficiency.
- All applicants are required to submit GRE general test scores with the engineering subject test score being optional. The GRE scores required for admission as a regular graduate student should be seventy-fourth percentile or higher in the Quantitative section. The GRE scores for the verbal and analytical sections will be taken into consideration in the admission process.

Direct-Track PhD Admissions
The Department of Mechanical and Aerospace Engineering (MAE) offers a materials science and engineering (MS&E) direct-track option from the bachelor of science (B.S.) to the doctor of philosophy (Ph.D.) degree for prospective qualified students holding a B.S. degree in an engineering discipline, materials science, mathematics or applied sciences from an accredited undergraduate program or an internationally recognized program. This is an accelerated track that provides outstanding candidates the option of earning a Ph.D. degree after graduating from an undergraduate program by engaging early in their Ph.D. dissertation research without having to complete a research thesis for a master of science (M.S.) degree. To qualify for the direct-track degree option, a candidate must have:

- Cumulative grade point average (GPA) of 3.5/4.0 or higher in his/her undergraduate studies, and
- Attain a minimum of seventy-fourth percentile in the quantitative section of the standardized Graduate Record Examination (GRE).
- Three recent reference letters, at least two of the three references should be from the institution last attended.
- International applicants must submit proof of English language proficiency.
- Students admitted into the direct-track option are considered to be Ph.D. students within the college.

MSMSE Major Code: 3062
PhD Major Code: 3063

For specific information on the following program, please see the links to the right:

- Materials Science and Engineering, M.S.M.S.E.

For specific information on the following program, please see the links to the right:

Materials Science and Engineering, Ph.D.