

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 (MS&E) 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.

Program Educational Objectives:

1. To provide high quality advanced master-level and Ph.D. level education to graduate engineering students to enable successful careers in technology development, innovation and research, with depth and breadth in one or several areas of the materials science and engineering discipline.
2. To develop the capacity of graduates to conduct independent research and/or technology development and innovation, through original contributions to the materials science and engineering discipline and to disseminate the results of their scholarly work.
3. To instill in graduates the drive for leadership in technology development, innovation and research and to contribute to the advancement of the profession in a societal and economic context.

FACULTY

CHEMICAL AND BIOMEDICAL ENGINEERING

- Cerasela Zoica Dinu
- Rakesh K. Gupta
- Robin Hissam

LANE DEPARTMENT OF COMPUTER SCIENCE AND ELECTRICAL ENGINEERING

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

MECHANICAL, MATERIALS & AEROSPACE ENGINEERING

- Ever Barbero
- Bruce Kang
- Xingbo Liu
- David Mebane
- Terence Musho
- Ming Pei

- Edward M. Sabolsky
- Kostas Sierros
- Xueyan Song

Admissions for 2026-2027

MASTERS ADMISSIONS

To be eligible for admission into the Master of Science in Materials Science and Engineering degree program, a candidate must fulfill the following requirements:

- A statement of purpose.
- Three recent reference letters, at least two of which should be from professors of the institution last attended.
- 3.0 or better grade point average (out of a possible 4.0) in any previous engineering degree, from an accredited or internationally recognized program.
- The GRE is not required for consideration of admission to the program; however, GRE scores can be used to support review for assistantships within the program.
- International applicants must meet the WVU requirement of English language proficiency (<https://graduateadmissions.wvu.edu/information-for-international-students/>).

DOCTORAL ADMISSIONS

To be eligible for admission into the doctoral program, a candidate must fulfill the following requirements:

- A statement of purpose.
- Three recent reference letters, at least two of which should be from professors of the institution last attended.
- Applicants must hold, or expect to receive (by the enrollment date) a M.S. degree in an engineering discipline from an institution which has an ABET accredited undergraduate program in engineering or an internationally recognized program in engineering (except for students qualified for the direct track to Ph.D. degree option, described below). Qualified candidates holding a M.S. degree in applied sciences can also be considered for admission into the Ph.D. program.
- 3.0 or better grade point average (out of a possible 4.0) in all previous engineering degrees (B.S. and M.S.), from accredited or internationally recognized programs.
- International applicants must meet the WVU requirement of English language proficiency (<https://graduateadmissions.wvu.edu/information-for-international-students/>).
- The GRE is not required for consideration of admission to the program; however, GRE scores can be used to support review for assistantships within the program.

DIRECT-TRACK BS-PHD ADMISSIONS

The Department of Mechanical, Materials and Aerospace Engineering (MMAE) offers a 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 institution. This is an accelerated track that provides outstanding candidates the option of earning a Ph.D. degree in less than five years 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, all applicants must have:

- A cumulative grade point average (GPA) of 3.5/4.0 or higher in his/her undergraduate studies.
- A statement of purpose.
- Three recent reference letters, at least two of which should be from professors of the institution last attended.
- The GRE is not required for consideration of admission to the program; however, GRE scores can be used to support review for assistantships within the program.
- International applicants must meet the WVU requirement of English language proficiency (<https://graduateadmissions.wvu.edu/information-for-international-students/>).

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.

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Materials Science and Engineering, Ph.D.