

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

Automotive Systems Engineering (MSE)

Undergraduate Degree Required

Bachelor's degree in engineering from an ABET-accredited program with a minimum cumulative GPA of 3.0 (on a 4.0 scale)

Standardized Test Scores

GRE not required

Automotive Systems and Mobility (DEng)

Previous Degrees Required

- Bachelor's degree in engineering or computer science from an accredited program with an expected GPA of 3.0 or higher on a 4-point scale
- Master's degree in engineering or computer science from an accredited program with an expected GPA of 3.2 or higher on a 4-point scale

Standardized Test Scores

GRE (<http://www.ets.org/gre/>) required

Other Experience Required

At least 2 years of full-time equivalent engineering experience

Please note: Preference will be given to applicants who meet one of the following criteria:

- Scholarships provided by companies or government organizations
- Employer commitment in writing (ex. reduced working hours to 30 hours/week for three years)

Bioengineering (MSE)

Undergraduate Degree Required

Bachelor of Science (BS) in bioengineering or a related engineering or science discipline from an ABET-accredited program (<http://main.abet.org/aps/Accreditedprogramsearch.aspx>) with a grade point average of B (3.0) or better *

Students from non-bioengineering fields may be required to take preparatory courses before or after starting the program. If admission prerequisites are unfulfilled, the applicant must speak to an advisor (<https://umdearborn.edu/academics/graduate-studies/office-graduate-studies/graduate-program-specific-contacts/>).

Standardized Test Scores

GRE not required

Prerequisite Courses

- Anatomy & physiology with lab
- One year of calculus-based physics (2 courses; PHYS 150 and PHYS 151)
- One year of chemistry (2 courses; CHEM 134 and CHEM 136)
- Mathematics through calculus III (MATH 205 or MATH 215) AND ordinary differential equations (MATH 216)

- Engineering core, including the following courses at minimum:
- Solid mechanics and dynamics (ME 265)
- Thermo-fluid sciences (BENG 325)

Computer and Information Science (MS)

Undergraduate Degree Required

Bachelor's degree from an accredited program with a minimum GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Prerequisite Courses

- Calculus I & II *
- CIS 310 (Computer Organization)*
- CIS 350 (Data Structures and Algorithm Analysis)*
- CIS 450 (Operating Systems)*
- IMSE 317 (Engineering Probability and Statistics) or linear algebra*

Other Experience Required

Proficiency in at least 1 high-level programming language (preferably C/C++ 1&2 or Java 1&2)

**Prerequisite courses may be taken concurrently within 2 years of admission to program.*

Computer and Information Science (PhD)

Previous Degrees Required

- Bachelor or master's degree in engineering, applied mathematics, computer science, or a physical science
 - Bachelor's degree expected GPA of 3.2 or higher on a 4-point scale
 - Master's degree expected GPA of 3.5 or higher on a 4-point scale

Standardized Test Scores

GRE (<http://www.ets.org/gre/>) required

Prerequisite Courses

- 12 credit hours in Calculus
- Linear Algebra (MATH 217 or MATH 227 or equivalent)
- Data Structures (CIS 350 or equivalent)
- Computer Organization (CIS 310 or equivalent)
- Operating Systems (CIS 450 or equivalent)
- Calculus-based Probability and Statistics (IMSE 317 or equivalent)

Computer Engineering (MSE)

Undergraduate Degree Required

Bachelor's degree in Electrical and/or Computer Engineering with an overall GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Cybersecurity and Information Assurance (MS)

Undergraduate Degree Required

Bachelor's degree in a Science, Technology, Engineering, or Mathematics (STEM) field with an average of 3.0 on the 4.0 scale

Standardized Test Scores

GRE not required

Prerequisite Courses

- Probability and Statistics (IMSE 317 or STAT 326 or MATH 425 or equivalent) *required*
- Programming
 - CIS 200/CIS 2001 or equivalent *required*
 - CIS 350 or equivalent *recommended*
- Mathematics
 - Calculus II (MATH 116 or equivalent) *required*
 - Calculus III (MATH 215 or equivalent) *recommended*
 - Linear Algebra (MATH 227 or equivalent) *recommended*

**Prerequisite courses may be taken concurrently within 2 years of admission to program.*

Data Science (MS)

Undergraduate Degree Required

Bachelor's degree in a Science, Technology, Engineering, or Mathematics (STEM) field with an average of 3.0 on the 4.0 scale

Standardized Test Scores

GRE not required

Prerequisite Courses

- One course in programming (CIS 2001 OR CIS 200 or equivalent)
- Calculus II (MATH 116 or equivalent)
- Probability and Statistics (IMSE 317 OR STAT 326 OR MATH 425 or equivalent)
- Calculus III (MATH 215 or equivalent) *Recommended*
- Linear Algebra (MATH 227 or equivalent) *Recommended*

**Prerequisite courses may be taken concurrently within first 2 semesters in the program.*

Dual Degree - Business Administration (MBA)/Industrial Systems Engineering (MSE)

The College of Business and the College of Engineering and Computer Science offer an innovative dual degree program leading to the simultaneous award of a Master in Business Administration (MBA) and a Master of Science in Engineering-Industrial & Systems Engineering (MSE-ISE).

Undergraduate Degree Required

Bachelor's degree in engineering, a physical science, computer science, or applied mathematics

Standardized Test Scores

GMAT ([http://www.mba.com/us/the-gmat-exam/register.aspx?__hstc=202220878.786ca484f45d06c02d65869df70e46d5.1464036529725.1464036529725.1464036529725](http://www.mba.com/us/the-gmat-exam/register.aspx?__hstc=202220878.786ca484f45d06c02d65869df70e46d5.1464036529725.1464036529725.1464036529725.1464036529725)) required

Prerequisite Courses

- A course in probability and statistics (IMSE 510 or equivalent)*
- A course in operations research (IMSE 500 or equivalent)*

**If admission prerequisites are unfulfilled, the applicant must speak to an advisor (<https://umdearborn.edu/academics/graduate-studies/office-graduate-studies/graduate-program-specific-contacts/>).*

Electrical, Electronics and Computer Engineering (PhD)

Previous Degrees Required

- Bachelor or master's degree in electrical and/or computer engineering or computer science with an expected GPA of 3.2 or higher on a 4-point scale

Backgrounds in other engineering fields, physical science or mathematical science may be considered with the understanding that additional coursework may be required

Standardized Test Scores

GRE (<http://www.ets.org/gre/>) Required

Prerequisite Courses

- Ordinary Differential Equations (MATH 216 or equivalent)
- Linear Algebra (Math 227 or equivalent)
- Probability and Statistics (IMSE 317 or equivalent)
- Data Structures and Algorithms (IMSE 351 or equivalent)
- Knowledge in computer programming

Electrical Engineering (MSE)

Undergraduate Degree Required

Bachelor's degree in Electrical and/or Computer Engineering with an overall GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Energy Systems Engineering (MSE)

Undergraduate Degree Required

Bachelor of Science in engineering or equivalent

Standardized Test Scores

GRE not required

Engineering Management (MS)

Undergraduate Degree Required

Bachelor's degree in engineering OR a degree in math, computer science, or a physical science coupled with at least 5 years experience in engineering after completion of bachelor's degree

Standardized Test Scores

GRE not required

Prerequisite Courses

Calculus-based course in probability and statistics

Human Centered Design and Engineering (MS)

Undergraduate Degree Required

Bachelor's degree in cognitive science, computer science, art, design, engineering, business, or related areas with an overall GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Industrial and Systems Engineering (MSE)

Undergraduate Degree Required

Bachelor's degree in engineering, a physical science, computer science, or applied mathematics

Standardized Test Scores

GRE not required

Prerequisite Courses

- A course in probability and statistics (IMSE 510 or equivalent)*
- A course in operations research (IMSE 500 or equivalent)*

**If admission prerequisites are unfulfilled, the applicant must speak to an advisor (<https://umdearborn.edu/academics/graduate-studies/office-graduate-studies/graduate-program-specific-contacts/>).*

Industrial and Systems Engineering (PhD)

Previous Degrees Required

- Bachelor's degree with an overall GPA of 3.2 or higher on a 4-point scale
- Master's degree in engineering, applied mathematics, computer science, or a physical science with an expected GPA of 3.5 or higher on a 4-point scale

Standardized Test Scores

GRE (<http://www.ets.org/gre/>) required

Prerequisite Courses

- Knowledge of computer programming
- 12 credit hours in Calculus
- Linear Algebra (MATH 217 or MATH 227 or equivalent)
- Operations Research (IMSE 500 or equivalent)
- Calculus-based Probability and Statistics (IMSE 510 or equivalent)

Information Systems and Technology (MS)

Undergraduate Degree Required

Bachelor's degree in engineering, a physical science, computer science, applied mathematics, business administration, or liberal arts with a minimum cumulative GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Prerequisite Courses

- A course in Data Structures (IMSE 350/351, CIS 350/352, or equivalent)
- Knowledge of computer programming, such as C++ or Java (IMSE 255, IMSE/CIS 150, CIS 205 or equivalent)

Manufacturing Systems Engineering (MSE)

Undergraduate Degree Required

Bachelor of Science in engineering or a physical science from an accredited program with an average of B or better (3.0 GPA or higher)

Standardized Test Scores

GRE not required

Prerequisite Courses

- a background in probability and statistics*
- a background in engineering materials*

**If the applicant does not have a background in probability and statistics, they will be required to take a statistics course at the undergraduate level (IMSE 317 or equivalent). If the applicant does not have a background in engineering materials, they will be required to take ENGR 250 (or equivalent) as a prerequisite to AE 587 or ECE 385 (or equivalent) as a prerequisite to ECE 539.*

Mechanical Engineering (MSE)

Undergraduate Degree Required

Bachelor of Science in mechanical engineering or equivalent from an accredited school with a GPA of 3.0 or higher on a 4.0 scale

Standardized Test Scores

GRE not required

Mechanical Sciences and Engineering (PhD)

Previous Degrees Required

- Bachelor or master's degree in mechanical engineering or a closely related field with an expected GPA of 3.2 or higher on a 4-point scale

Backgrounds in other engineering fields or non-engineering fields may be considered with the understanding that additional coursework may be required

Standardized Test Scores

GRE (<http://www.ets.org/gre/>) required

Program and Project Management (MS)

Undergraduate Degree Required

Bachelor's degree in engineering, business, economics, math, computer science, or other physical sciences with a bachelor's cumulative GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Prerequisite Courses

Coursework in probability and statistics that can be satisfied by completing IMSE 510 as part of approved electives within the first two semesters of admission into the program

Other Experience Required

At least 2 years of practical work experience

Robotics Engineering (MSE)

Undergraduate Degree Required

Bachelor's degree in physical or mathematics sciences with a bachelor's cumulative GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Prerequisite Courses

- Ordinary Differential Equations (MATH 216 or equivalent)
- Linear Algebra (MATH 217 or equivalent)
- Probability and Statistics (IMSE 317 or equivalent)
- Dynamics (ECE 347 or equivalent)
- Data Structures and Algorithms (ECE 270 and ECE 370 or equivalent)

Software Engineering (MS)

Undergraduate Degree Required

Bachelor's degree in computer science and/or computer engineering with an overall GPA of 3.0 or higher

Standardized Test Scores

GRE not required

Prerequisite Courses

- Calculus I & II *
- CIS 310 (Computer Organization) *
- CIS 350 (Data Structures and Algorithm Analysis) *
- CIS 450 (Operating Systems) *
- IMSE 317 (Engineering Probability and Statistics) or linear algebra *

Other Experience Required

Proficiency in calculus, linear algebra, statistics, and physics.

**Prerequisite courses may be taken concurrently within 2 years of admission to program*