

M.S. IN ENGINEERING (GENERAL ENGINEERING- ONLINE)

OVERVIEW

Dr. Carmen Cioc, Program Director

The College of Engineering at the University of Toledo offers a Master of Science degree in Engineering with a concentration in General Engineering that can be completed part-time, online. This engineering master's degree program is intended for students who are full-time employees seeking a master's degree to facilitate career advancement or achievement of personal educational goals. It is designed for current and future managers and engineers. This cross-disciplinary program combines a study in business management and engineering and presents an alternative to a traditional business management or technical Master of Science degree. To accommodate students who are full-time employees, course work for this degree program may be taken completely online via distance learning.

ADMISSION REQUIREMENTS

To be admitted to the Masters of Science in Engineering program, applicants must have a bachelor's degree in engineering, engineering technology or a closely related field (e.g., one of the mathematical, physical or biological sciences). Applicants must be employed in an engineering-related industry. Admissions are made on an individual basis and take into account the applicant's previous record, the intended area of study, and the needs and capacity of the College of Engineering.

Applicants should have a minimum grade point average (GPA) of 2.7 in previous undergraduate work from appropriately accredited academic institutions or from an academic institution with high academic standards deemed appropriate and acceptable by the College of Engineering and the College of Graduate Studies. Applicants having a GPA less than 2.7 who demonstrate potential for graduate study may be admitted to the master's program on a provisional or other basis, at the option of the college. Students with an undergraduate GPA below 2.7 must register and take the GRE. Information on the GRE is available on the GRE Web site: <http://www.gre.org>. Students who graduated with a bachelor's degree from The University of Toledo do not need to submit official transcripts. Students who did not graduate from The University of Toledo need to contact the office of the registrar at their undergraduate institution to arrange for transmission of the undergraduate transcripts.

Students entering the program without a B.S. in engineering will be required to have at least: calculus, through ordinary differential equations (2 semesters); physics (2 semesters); chemistry and/or engineering materials (1 semester); and any three out of the following six: statics, dynamics, electronics, electric circuits, fluid mechanics and thermodynamics. Students lacking one or more of the above courses must take the necessary courses before entering the program.

Students can apply for non-degree student status and take up to nine credit hours of graduate-level classes that may be applied to their graduate degree program. Students with non-degree status can be admitted to the program as regular graduate students at a later date.

For additional information regarding this program, please consult the College of Engineering's website at <http://www.utoledo.edu/engineering/graduate-studies/> for specific program guidelines developed in cooperation with the College of Business and Innovation.

DEGREE REQUIREMENTS

The Part-Time Master of Science in Engineering with a concentration in General Engineering program requires 30 credit hours of graduate level course work. The project option requires the completion of a minimum of 24 credit hours of approved graduate course work and 6 credit hours of a work-related project. Specific curriculum requirements are provided below.

Code	Title	Hours
Engineering Core Courses: Minimum of 2 courses		6
GGEN 5500	Applications of Engineering Analysis	3
GGEN 5700	Applied Probability and Statistics	3
GGEN 6700	Management of Projects and Technological Innovation	3
Business Core Courses: Minimum of 1 course		3
ACCT 5000	Financial And Managerial Accounting	3
ACCT 5100	Financial Accounting and Analysis	3
BLAW 6100	Business, Government And Society	3
BUAD 6400	Results-Based Management	3
BUAD 6600	Supply Chain Management	3
EFSB 6590	New Venture Creation	3
FINA 5210	Economics For Business Decisions	3
OSCM 5520	Analysis of Manufacturing and Service Systems	3
Engineering Electives: Minimum of 4 courses		12
CIVE 5690	Sustainability Engineering	3
EECS 5240	Power Systems Operation	3
EECS 5260	Control Systems Design	3
EECS 5460	Power Systems Management	3
EECS 5480	Power Electronics 1	3
GGEN 6200	Environmental Efficiency for Buildings	3
MIME 5080	Operations Research I	3
MIME 5410	Alternative Energy	3
MIME 5820	Sustainability Analysis and Design	3
MIME 5830	Additive Manufacturing	3
Project or Coursework option		9
<i>Work-Related Project Option:</i>		
GGEN 6920	Special Projects in Engineering	6
Any additional course from categories above		3
<i>Coursework option</i>		
Any additional 3 courses from categories above		9

- The engineering core courses establish a common foundation in engineering mathematics and project management. The engineering

core courses are designed to update computer analysis skills, provide a background in applied statistics and to furnish tools for the management of projects and technological innovation.

- The business core courses cover a broad range of topics that are important for engineers that are taking on responsibilities outside of a traditional engineering technical track. The business core is intended to provide engineers, scientists and technologists with financial and managerial skills that can help the engineer succeed in today's marketplace.
- The engineering elective courses support a technical focus area. In addition to those listed in the table above, any graduate level course in bioengineering, chemical engineering, civil and environmental engineering, electrical engineering and computer science, general engineering, or mechanical, industrial and manufacturing engineering departments can be selected as an elective.

All students must complete 21 cr hr based on the engineering core, business core, and engineering electives as described above. Students completing a course work only degree will take an additional 9 cr hr of courses from the three categories.

Students electing the project option will take one additional course and will complete 6 cr hr of a work-related project (GNEN 6920). The topic and other specifics of the project require prior approval of the program director and should include approval and cooperation of the employer. The project may be completed over one or more semesters. Students may complete their course requirements in four semesters by taking the recommended two courses (6 cr hr) per semester.

For transfer credit, students should refer to the general policies of the College of Graduate Studies. No more than 9 cr hr toward the Master of Science in engineering may be earned at another university with a grade of B or better, and in no case may the project be satisfied by work already completed at another institution or on the job.

In order to be awarded the Master of Science in Engineering degree, the student must have at least a B average (minimum GPA of 3.0/4.0) for all graduate course credits in the program as well as for the entire graduate transcript. Only credit hours obtained with a letter grade of "C" or higher, or an "S" grade for the limited number of classes offered on a satisfactory or unsatisfactory basis, will fulfill degree requirements.

Course work only degree option:

First Year		
First Term		Hours
GNEN 5500	Applications of Engineering Analysis	3
GNEN 6700	Management of Projects and Technological Innovation	3
Hours		6
Second Term		
GNEN 5700	Applied Probability and Statistics	3

GNEN 6200	Environmental Efficiency for Buildings	3
Hours		6
Third Term		
ACCT 5000	Financial And Managerial Accounting	3
MIME 5080	Operations Research I	3
Hours		6
Second Year		
First Term		
MIME 5460	Advanced MATLAB for Engineers	3
OSCM 5520	Analysis of Manufacturing and Service Systems	3
Hours		6
Second Term		
GNEN 6980	Special Topics in Engineering	3
MIME 5820	Sustainability Analysis and Design	3
Hours		6
Total Hours		30

Project-based degree option:

First Year		
First Term		Hours
GNEN 5500	Applications of Engineering Analysis	3
GNEN 6700	Management of Projects and Technological Innovation	3
Hours		6
Second Term		
GNEN 5700	Applied Probability and Statistics	3
MIME 5460	Advanced MATLAB for Engineers	3
Hours		6
Third Term		
ACCT 5000	Financial And Managerial Accounting	3
MIME 5080	Operations Research I	3
Hours		6
Second Year		
First Term		
OSCM 5520	Analysis of Manufacturing and Service Systems	3
GNEN 6920	Special Projects in Engineering	3
Hours		6
Second Term		
MIME 5820	Sustainability Analysis and Design	3
GNEN 6920	Special Projects in Engineering	3
Hours		6
Total Hours		30

1. Students will obtain proficiency in solving complex engineering problems by applying advanced principles of engineering, science, and mathematics.
2. Students will obtain proficiency in applying engineering design, operations management, and business knowledge, to produce solutions

that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

3. Students will be able to recognize ethical and professional responsibilities in engineering situations and to make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
4. Students will obtain proficiency in analyzing and interpreting data and using engineering judgment to draw conclusions.
5. Students will be able to acquire and apply new knowledge as needed using appropriate learning strategies, and engaging in lifelong learning.
6. Students will be able to acquire key management skills including creating a collaborative and inclusive environment, establishing goals, planning tasks, and meeting objectives.