MASTER OF SCIENCE IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING (STEM)

GW's mechanical and aerospace engineering program boasts areas of excellence in nanotechnology, biomimetics, biomedical engineering, and energy, in addition to its strengths in the discipline's traditional fields. Graduate students can pursue the following focus areas: aerospace engineering; design of mechanical engineering systems; fluid mechanics, thermal sciences and energy; industrial engineering; robotics, mechatronics, and controls; solid mechanics and materials science; and structures and dynamics.

Master's degree students learn excellent skills at the cutting edge of mechanical and aerospace engineering and benefit from GW's breadth of research in the discipline. Students may choose a thesis or non-thesis option for the master's degree.

This is a STEM designated program.

Visit the departmental website (https://www.mae.seas.gwu.edu/) for additional information.

ADMISSIONS

Admission deadlines:	Fall – January 15
	Spring – September 1
	Summer - March 1 (non-F1 visa seeking applicants)
Standardized test scores:	The Graduate Record Examination (GRE) is required of all applicants. (Institution code 5246).
	The Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction. Minimum scores:
	- Academic IELTS: an overall band score of 6.0 with no individual score below 5.0; applicants requesting funding consideration must have an overall band score of 7.0 with no individual score below 6.0; or
	- TOEFL: 550 on paper-based or 80 on Internet-based; applicants requesting funding consideration must have 600 on paper-based; or 100 on Internet-based; or
	- PTE Academic: 53; applicants requesting funding consideration must have 68.
Recommendations required:	Two (2) recommendations required. If possible, one recommendation should be from your advisor at the institution from which you earned your highest degree.
Prior academic records:	Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission.
	If academic records are in a language other than English, a copy in the original language and an English language translation must be uploaded. Transcript evaluations should not be uploaded. Applicants who have earned a degree from an Indian university are required to submit individual semester marksheets.
Statement of purpose:	In an essay of 250 to 500 words, state your purpose in undertaking graduate study at The George Washington University; describe your academic objectives, research interests, and career plans; and discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned.
Additional requirements:	Familiarity with computers and a bachelor's degree with a grade point average of at least 3.0 (on a scale of 4.0) in the last 60 hours of coursework. All applicants must choose an area of focus that most closely matches their interests and note this on the online application.
International applicants only:	Please review International Applicant Information (https://graduate.admissions.gwu.edu/international-student-application-requirements (https://graduate.admissions.gwu.edu/international-student-application-requirements/)) carefully for details on required documents, earlier deadlines for applicants requiring an I-20 or DS-2019 from GW.

For additional information about the admissions process visit the SEAS Admissions Frequently Asked Questions (https://graduate.engineering.gwu.edu/admissions-frequently-asked-questions/) page.

Contact for questions:

engineering@gwu.edu

202-994-1802 (phone)
202-994-1651 (fax)

Hours: 9:00 am to 5:00 pm, Monday through Friday

REQUIREMENTS

The following requirements must be fulfilled: Non-thesis option—33 credits; thesis option—30 credits, including 6 credits of thesis. In addition, students must select one focus area and complete the

required 9 credits of courses in that area. The remaining credits are selected by the student in consultation with a faculty advisor.

Normally, no more than two courses taken outside the Department of Mechanical and Aerospace Engineering may be counted toward the requirements for the graduate degree. In special circumstances this may be changed with the approval of the advisor.

Aerospace engineering

Code	Title	Credits
Required		
APSC 6212	Analytical Methods in Engineering II	
APSC 6213	Analytical Methods in Engineering III	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	
One of the following:		
MAE 6207	Theory of Elasticity I	
MAE 6221	Fluid Mechanics	
Electives		
Remaining credits are taken as elective courses in aeroacoustics, aeronautics, astronautics, propulsion, or space systems.		

Design of mechanical engineering systems

Code	Title	Credits
Required		
MAE 6243	Advanced Mechanical Engineering Design	
MAE 6251	Computer-Integrated Manufacturing	
One of the following:		
APSC 6212	Analytical Methods in Engineering II	
APSC 6213	Analytical Methods in Engineering III	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	
Electives		
Remaining credits are taken as elective courses in computer-aided design, computer-integrated design and manufacturing, mechanical engineering design, or robotics.		

Fluid Mechanics, thermal sciences, and energy

Code	Title	Credits
Required		
APSC 6213	Analytical Methods in Engineering III	
MAE 6221	Fluid Mechanics	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	
Electives		
Remaining credits are taken in elective courses, selected in consultation with the advisor.		

Industrial engineering

Code	Title	Credits
Required		
EMSE 6755	Quality Control and Experimental Design	
EMSE 6770	Techniques of Risk Analysis and Management	
MAE 6251	Computer-Integrated Manufacturing	
One of the following:		
APSC 6212	Analytical Methods in Engineering II	
APSC 6213	Analytical Methods in Engineering III	
Electives		
Remaining credits are taken in elective courses, selected in consultation with the advisor.		

Solid mechanics and materials science

Code	Title	Credits
Required		
APSC 6213	Analytical Methods in Engineering III	
Two of the following:		
MAE 6210	Continuum Mechanics	
MAE 6238	Biomaterials	
MAE 6239	Computational Nanosciences	
MAE 6291	Special Topics in Mechanical Engineering	
ECE 6221	Introduction to Physical Electronics	
Electives		
Remaining credits are taken in elective courses, selected in consultation with the advisor.		

Structures and dynamics

Code	Title	Credits
Required		
APSC 6213	Analytical Methods in Engineering III	
MAE 6207	Theory of Elasticity I	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	
Electives		
Remaining credits are taken in elective courses, selected in consultation with the advisor.		

Robotics, mechatronics, and controls

Code	Title	Credits
Required		
MAE 6243	Advanced Mechanical Engineering Design	
MAE 6245	Robotic Systems	
MAE 6246	Electromechanical Control Systems	
Electives		
Remaining credits are taken in elective courses, selected in consultation with the advisor.		

Graduation and Scholarship Requirements—Students are responsible for knowing the University's minimum GPA requirement for graduation and scholarships (https://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_ms). Students should contact the department for additional information and requirements.