

MS Degree Requirements at Duke MEMS

To earn a Master of Science degree in the Department of Mechanical Engineering and Materials Science, a student must meet these major requirements:

1. **Ten** graded, graduate-level courses (30 credits), represented as follows:
 - a. **One** graduate-level mathematics or computation course,
 - b. The **MS Capstone course**: Experiment Design and Research Methods
 - c. **Eight** courses in engineering, the physical sciences, computation, or mathematics.
2. A **faculty-advised research project** that results in a thesis or non-thesis project
 - a. The **Thesis** consists of a written document and a successful defense in front of a committee
 - b. The **Non-Thesis Project** option requires a poster presentation and defense in front of a committee
3. **Eight** courses in engineering, the physical sciences, computation, or mathematics that define your concentration
4. Responsible Conduct in Research (**RCR**) training consisting of three zero-credit workshop courses:
 - a. **GS 714** and **GS 715**, preferably during orientation week.
 - b. Any 2-hour RCR workshop offered by the Graduate School during your first three semesters

Learn more about this degree at mems.duke.edu/masters. Typical schedules for both thesis and non-thesis MS students are shown here for reference.

M.S. Degree Requirements - Thesis

MS Degree = 30 Credits Course Work (*up to 6 credits of indy studies) + Research

MS Degree	Fall 1	Spring 1	Summer	Fall 2	Spring 2
Research	Identify MS Project and Advisor (<i>not</i> a course)	Indep. Study* (or Elective)		Indep. Study* (or Elective)	
Concentration	Math	Core	Internship, Practicum, or Research	Core	MS Research Defense
	Capstone (Counts as a Core!)	Core		(Possible to graduate at end of term)	
Electives	Elective	Elective		Elective	

M.S. Degree Requirements – Non-Thesis

MS Degree	=	30 Credits Course Work	+	Project Poster Defense	
MS Degree	Fall 1	Spring 1	Summer	Fall 2	Spring 2
Research	We recommend three courses during first term!	Indep. Study* (or Elective)	Internship, Practicum, or Research	Indep. Study* (or Elective)	Defending MS Research Thesis or Non-Thesis
Concentration	Math	Core		Core	
	Capstone (Counts as a Core!)	Core		Possibly defend thesis and graduate now	
Electives	Elective	Elective		Elective	

A unique aspect of this program is the level to which students can personalize their program in order to better market themselves for the career they want. This process of course selection is performed through **required advisement** with the Director of Master's studies during course registration and enrollment.

Research

An MS student must complete a research project guided by a primary or secondary faculty member in Duke MEMS. The project is defended either as a master's thesis or as a non-thesis poster. The MS advising relationship is established between the student and the faculty with mutual research interests, on a voluntary basis.

To identify a potential research adviser, visit the MEMS websites on faculty and research. A list of potential MS projects is maintained by the master's program coordinator and updated every semester. Students can directly contact a MEMS faculty member to explore research advising.

Responsible Conduct Training

An MS student is required to complete the Responsible Conduct of Research (RCR) training. This requirement is met by attending GS 714 and GS 715, preferably during orientation week, *and any other* two-hour forum offered by the Graduate School during their first three semesters.

Concentrations

An MS student has the option to select a focus area in their program, known as a concentration. The four departmental concentrations are:

1. Autonomous, Intelligent Machines and Systems,
2. Energy, Propulsion, and Structures for Earth and Space,

3. Multi-scale, Advanced, and Bio-Inspired Materials, and
4. Optimal Design of Physical and Virtual Systems.

A course-concentration map is continuously updated at the following website:

<https://mems.duke.edu/masters/concentrations>

By choosing a concentration, the student demonstrates sufficient technical depth by completing **five** core courses within their chosen focus. One of the core courses must be a graduate-level mathematics or computation course. The remaining four can be chosen from one of the departmental concentrations, and could potentially be offered by any other department within the Pratt School of Engineering.

One strength of the MS degree is its flexibility. Student also have the option of **defining their own concentration** through close advisement with the Director of Master's Studies. In so doing, the student can further refine their career goals and personalize their degree plan more precisely or leave options for more breadth in learning.

Electives

An MS student must complete 10 *graded* courses (30 credits). The five remaining courses are free electives as long as they are graduate-level courses in engineering, physical sciences, computation, or mathematics. All language courses are excluded.

Of the five electives, up to two can be independent studies. Only one independent study course will be approved in a particular semester. Contact the master's program coordinator to set up the independent studies.

Tuition

A master's student is required to pay **three** full semesters of tuition (except if 4+1). A full semester consists of 9 credits or more of graduate course work. The full-semester tuition is a flat rate, e.g. it costs the same tuition to register 9 or 12 credits in a particular semester. DMS approval is required to take more than 12 credits per semester.

Beyond the three semesters of full-time enrollment, tuition is charged on a per-credit basis. If the 30-credit requirement has been fulfilled, a 1-credit "continuation" can be used in the fourth semester to complete MS research. Although the MS degree can be completed in three semesters, most MS students choose to finish their course requirements in the first three semesters but stay on for a fourth semester for research.

Students in the 4+1 program may be able to count up to **four graduate courses** taken in their senior year toward the master's degree, as long as those courses are not double-counted in their BS degree.

Departmental Contacts

Please contact us with any questions. Include your program (MEng or MS) and the semester you first enrolled in the program.

Master's Program Coordinator

Stacey Traister: stacey.traister@duke.edu

Director of Master's Studies

Dr. George Delagrammatikas: george.delagrammatikas@duke.edu

Academic Calendar

The Academic Calendar is a vital source for you to plan your life at Duke. Mark important dates on your own calendar to avoid conflicts. Pay attention to Drop/Add deadline to each semester.

Academic Integrity

All Duke Students must abide by the Duke Community Standard. Never engage in prohibited behavior defined as Academic Dishonesty and/or Plagiarism.