

**DEPARTMENT OF MECHANICAL ENGINEERING AND MECHANICS
GRADUATE DEGREE PROGRAMS: REQUIREMENTS FOR STUDENTS WHO
START THEIR DEGREES AS OF SUMMER
2020**

I. NEW MASTER OF SCIENCE DEGREE (APPLIES TO INCOMING STUDENTS AS OF SUMMER 2020)

The program for the Master of Science degree requires a minimum of 30 credit hours, distributed as follows.

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| Group I: Required Core Course in Engineering Mathematics: | | 3 |
| <u>ME 452</u> | Mathematical Methods In Engineering I | |
| Group II: Required Core Courses in Mechanical Engineering (2 courses): | | 6 |
| <u>ME 402</u> | Advanced Manufacturing Science | |
| <u>ME 413</u> | Numerical Methods in Mechanical Engineering | |
| <u>ME 423</u> | Heat and Mass Transfer | |
| <u>ME 430</u> | Advanced Fluid Mechanics | |
| <u>ME 433</u> | Linear Systems and Control | |
| <u>ME 453</u> | Mathematical Methods In Engineering II | |
| <u>MECH 406</u> | Fundamentals of Solid Mechanics | |
| <u>MECH 425</u> | Analytical Methods in Dynamics and Vibrations | |
| <u>MECH 450</u> | Advanced Mechanics of Materials | |
| Group III: Three other MEM courses at the 300 and 400 level. (Only once course may be at the 300 level). | | 9 |
| Group IV: Up to 4 free electives (12 credits) approved by the Graduate Program Coordinator or the Student's Advisor | | 12 |

There are four options** for the Master of Science degree:

1. MS-Thesis Option: 6 credits of ME490 (Thesis) must be taken as part of the free electives. If the student wishes to pursue a PhD, course requirements should follow the PhD requirements (2 math courses, 3 core courses, 2 depth courses, 1 breadth course).

2. MS-Project Option: 6 credits of ME460 (Project) must be taken as part of the free electives
3. MS-Applied Engineering Option: 6 credits of course-work in MEM taken as part of the free electives
4. MS-Interdisciplinary Engineering Option: 12 credits of course-work outside MEM to satisfy the free electives

**These options correspond to courses selected from Group IV of the foregoing overview: Up to 4 free electives (12 credits) approved by the Graduate Program Coordinator or the Student's Advisor

Students should ensure that all courses for the Master of Science degree satisfy the distribution requirements of the University for all Masters Degrees.

For students pursuing the Master of Science degree with a thesis, it is necessary to obtain the agreement of a faculty member willing to supervise the thesis research and to submit the Adviser Selection Form. Those pursuing the Master of Science degree with a project should secure the agreement of a faculty member who will supervise the (ME 460) project and submit the Graduate Engineering Project Permission Form. The availability of faculty for research and project supervision depends on the specialty within the area of mechanical engineering and the ongoing advisory commitments of the faculty member during a given semester. Those students who wish to pursue the Master of Science degree with a thesis or project should contact faculty members in their area of interest during their first semester of study.

Plan for Master of Science Degree All students pursuing this degree must complete a Department-level form entitled *Plan for Master of Science Degree* immediately prior to or at the beginning of the first semester of study towards the new Master of Science degree. The student will specify which of the four possible tracks toward the M.S. degree is being pursued and will indicate a preliminary plan of courses to satisfy the degree requirements. The purpose of this form is to ensure that both the student and the advisor are fully aware of the courses required for the selected track of the new Master of Science degree. It should be emphasized that the course plan is viewed as preliminary, and can be modified as the student progresses through the program.

Program for Master's Degree Form All Masters students must satisfy a University-wide requirement and complete the form entitled Program for Master's Degree when 18 credit hours have been taken, and no later than the semester preceding the graduation semester. If you decide to pursue the new Master of Science degree, you must submit a new (revised) Program for Master's Degree if you have already submitted this form for one of the existing Masters Degrees.

Department Requirement: All students are required to attend a minimum number of MEM seminars.

*Each degree candidate is responsible for ensuring that his/her program is compatible with the degree requirements given in the most recent version of the Lehigh University Catalog and the Graduate Student Handbook of the P. C. Rossin College of Engineering and Applied Science: (<http://go.lehigh.edu/enggradhandbook>)

II. UNIVERSITY REQUIREMENTS FOR ALL TYPES OF MASTERS DEGREES

In meeting the requirements for the Master of Science in Mechanical Engineering, the student must satisfy the following common University requirements, as outlined in the Graduate Student Handbook.

1. The minimum program for all Master's degrees includes:
 - Not less than 30 credit hours of graduate work; audit credits may not be used towards the degree. Research or thesis registration counts as part of the 400-level course requirement.
 - Not less than 24 credit hours of 300- and 400-level coursework of which at least 18 hours is at the 400-level.
 - Not less than 18 credit hours in Mechanical Engineering and Mechanics
 - Not less than 15 credit hours of 400-level coursework in Mechanical Engineering and Mechanics.
2. Eighteen (18) credit hours in the major field of Mechanical Engineering and Mechanics are required. These courses must be 300- and 400-level courses. The remaining twelve (12) credit hours may also be taken in Mechanical Engineering and Mechanics (300- and 400- level courses), or they may be taken in any other field in engineering in which courses for graduate credit are offered, subject to the approval of the student's advisor.
3. A graduate student may include in his or her program courses numbered 200 or higher outside of Mechanical Engineering and Mechanics. These courses must have sufficiently deep engineering/science content comparable to 200 level courses in Mechanical Engineering and Mechanics. Only courses numbered 300 or higher in Mechanical Engineering and Mechanics may be included in a student's program. A graduate student registered in 200 or 300 level courses may be assigned additional work at the discretion of the instructors. Courses taken outside of Mechanical Engineering and Mechanics are subject to approval by the advisor and the Departmental Graduate Committee.
4. All candidates for a Master's degree must submit the form entitled *Program for Master's Degree* as soon as possible after accruing 15 credit hours of courses but no later than the semester before the student graduates. This form is eventually approved by the Registrar. The timing for completion of this form is critical, as it allows for corrections to a student's course plan if necessary.
5. The Master's degree is not granted unless the candidate has earned grades of B- or better in at least eighteen hours of the work in his/her program and in **all** 300-level courses in Mechanical Engineering and Mechanics. No course in which the grade earned is less than C- is credited towards the degree.
6. A student who receives more than four grades below B- in courses numbered 200 or higher becomes ineligible to qualify for the Master's degree or to register for any other 400-level courses.