

PROGRAM REQUIREMENTS FOR THE MS (ENMT)

PROGRAM STRUCTURE

Candidates for the degree of master of science in mechatronic systems engineering may elect either the thesis or non-thesis option. This choice may be made at any time, although a delay in declaration may impact the completion date. These programs are designed for completion in about seven quarters if two courses (6 or 7 quarter hours) are taken each quarter.

THESIS OPTION:

A thesis permits exceptional candidates an opportunity to gain depth in a chosen area of study. Thesis candidates work closely with a thesis advisor, and thus this option requires support from a qualified faculty member. The thesis option is required for all graduate research assistants (GRAs) and graduate teaching assistants (GTAs). A grade of C or better must be obtained in each course for that course to count toward the 45-quarter-hour requirement. The course work for the Specialty Track and Technical Electives must consist of a minimum of four 4000-level courses of at least 3 quarter hours each. To satisfy graduation requirements, candidates must maintain a course GPA of 3.0/4.0 (excluding thesis credits). The basic structure is as follows:

Specialty Track	18 QH
Technical Electives	9 QH
Advanced Mathematics Requirement	3 QH
Thesis	15 QH
	45 QH

NON-THESIS OPTION:

The more flexible of the two options, this is designed with the working professional in mind. A grade of C or better must be obtained in each course for that course to count toward the 45-quarter-hour requirement. To satisfy graduation requirements, candidates must maintain a course GPA of 3.0/4.0. The course work for the Specialty Track and Technical Elective Areas must consist of a minimum of six 4000-level courses of at least 3 quarter hours each. The basic structure of the minimum 45 quarter hours for the non-thesis option is as follows:

Specialty Track	18 QH
Technical Elective Area 1	12 QH
Technical Elective Area 2	9 QH
Advanced Mathematics Requirement	6 QH
	45 QH

SPECIALTY TRACK IN MECHATRONICS SYSTEM ENGINEERING

The specialty track is designed to emphasize the multidisciplinary core areas of mechatronic systems engineering. Courses for the specialty track are recommended below. Substitutions based on student experience and interest are allowable if they do not compromise the multidisciplinary nature of the program.

ENMT 3210 Mechatronics I	4 QH
ENMT 4220 Mechatronics II	4 QH
ENCE 3231 Embedded Microprocessors	3 QH
ENEE 4720 Modern and Digital Control Systems	4 QH
ENME 3545 Mechanisms	3 QH
	18 QH

TECHNICAL ELECTIVE AREAS

The technical electives are focused in two areas that fall into specializations within the traditional (CpE, EE, ME) disciplines. These courses provide students with depth in specific areas related to mechatronic systems engineering. Examples of Technical Elective Areas include Design (Optimization, Finite Element Analysis, Reliability), Smart Structures and Materials (Mechanical Behavior of Material, Fatigue, Composites, Structural Monitoring and Diagnostics) or Controls (Advanced Nonlinear Controls, Adaptive Control Systems, Robotics).

The courses will be chosen from regular engineering course offerings (ENGR, ENBI, ENME, ENMT, ENEE, ENCE, MTSC) at the 3000 level or higher. A partial list of courses that can serve as technical electives are:

- ENGR 3630 Finite Element Methods
- ENGR 3730 Robotics
- ENGR 4620 Optimization in Design
- ENGR 4745 Adv Nonlinear Control Systems
- ENGR 4800 Reliability
- ENCE 3501 VLSI Design
- ENCE 4341 Distributed Systems
- ENCE 4600 HDL Modeling and Synthesis
- ENEE 3030 Optoelectronics
- ENEE 3040 Semiconductor Micro technology
- ENEE 3670 Introduction to DSP
- ENEE 4415 Advanced DSP
- ENEE 4750 Adaptive Control Systems
- ENME 3560 Advanced Mechanisms & Mach
- ENME 4400 Fatigue
- ENMT 4300 MEMS
- MTSC 3210 Mechanical Behavior of Materials
- MTSC 4210 Composites I
- MTSC 4310 Design w/Materials w/Variable Prop

ADVANCED MATHEMATICS REQUIREMENT

All MS candidates must complete an advanced mathematics requirement. Advanced mathematics courses at the 3000 or higher level are selected with the prior approval of the student's advisor.