M.S. in Mechanical Engineering
Design Track

Course	Semester Year	MCEN credits	Out of dept credit	Total credits
Core Courses (12 hours)				
MCEN 5020 Methods of Engineering Analysis (3)				
MCEN 5055 Advanced Product Design (3)				
MCEN 5065 Graduate Design I (3) Pre-requisite Advanced Product Design				
MCEN 5075 Graduate Design II (3)				
MCEN 5027 Graduate Seminar				P/F
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Choose two of the following six:				
MCEN 5023 Solid Mechanics (3) or CVEN 5131 Continuum Mechanics & Elasticity (3)				
MCEN 5024 Materials Chemistry & Structure (3)				
MCEN 5045 Design for Manufacturability (3)				
MCEN 5115 Mechatronics & Robotics 1				
MCEN 5125 Optimal Design (3) or ASEN 5519 Design Optimization (3)				
MCEN 5173, ASEN 5007 or CVEN 5511 Finite Element Analysis (3)				
Enrichment Courses (9 hours)				
Elective Course (3 hours)				
Thesis Requirements (optional) **A Master's thesis may be substituted for the Graduate Design Projects Sequence**				
MCEN 6959 Masters Thesis (3)				
MCEN 6959 Masters Thesis (3)				
MCEN 5208 Introduction to Research (1)				P/F
30 hours are required for the M.S. degree. At least 18 must be in MCEN courses, or 15 must be in MCEN courses in addition to 6 MCEN thesis hours.				
P/F courses are not included in the 30 credit requirement. The Graduate Seminar is a MCEN Department requirement for graduation.		*(min. 18)*	*(max 9 with thesis, 12 without thesis)*	**30**

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Recommended Enrichment Courses: Additional courses may be approved on a petition basis.
MCEN 5023 Solid Mechanics (if not taken in the core)
MCEN 5024 Materials Chemistry & Structure (if not taken in the core)
MCEN 5032 Sustainable Energy
MCEN 5045 Design for Manufacturability (if not taken in the core)
MCEN 5115 Mechatronics & Robotics 1 (if not taken in the core)
MCEN 5125 Optimal Design (can also be ASEN 5519 Design Optimization) (if not taken in the core)
MCEN 5173 Finite Element Analysis (can also be ASEN 5007, or CVEN 5511) (if not taken in the core)
MCEN 5228 Anatomy and Physiology for Engineers 2
MCEN 5117 Anatomy and Physiology for Engineers 1
MCEN 5021 Fluid Dynamics
MCEN 5042 Heat Transfer
MCEN 5044 Mechanical Behavior of Materials
MCEN 5183 Mechanics of Composites
MCEN 5228 Aesthetics in Design
MCEN 5228 Mechanical Failure of Eng Materials
MCEN 5228 Biocolloids and Biomembranes
MCEN 5228 Biomedical Ultrasound
MCEN 5228 Medical Device Design
MCEN 5228 Materials in Medicine
MCEN 5228 Wind Energy
MCEN 5228 Microsystem Integration
MCEN 5228 Biomechanics
MCEN 5636 MEMS 1
ASEN 5022 Dynamics of Aerospace Structures
ASEN 5148 Spacecraft Design
ASEN 5158 Space Habitat Design
ASEN 5327 Computational Fluid Mechanics
ASEN 5519 Human Factors in Design
ECEN 5011 Design of Medical Devices
ECEN 5053 Assistive Technology for People with Disabilities
ECEN 5418 Automatic Control Systems 1
ECEN 5438 Robot Control
ECEN 5616 Optoelectronic System Design
CVEN 5050 Advanced Solar Design
CVEN 5565 Life-Cycle Engineering
CSCI 5412 Design, Creativity and New Media
CSCI 5839 User-Centered Design

One of the Engineering Management Courses below can be used as an Enrichment Course (a second could be selected as your Elective Course):
EMEN 5825 Entrepreneurial Business Plan Preparation (Fall)
EMEN 5710 Business Simulation (Summer)
EMEN 5030 Project Management (Fall)

Thesis Requirements (Optional)
A Master's Thesis may be substituted for the Graduate Design projects course sequence (MCEN 5065, MCEN 5075) or in some instances, completed in addition to the Graduate Design sequence. If the Thesis is to be substituted for the Graduate Design sequence, the thesis must be a design thesis (including design and fabrication work). For the thesis to be approved, a one-page abstract and proposed work plan need to be submitted to the design faculty. This proposal should be submitted as early as possible, but no later than the end of the student's second semester. Approval is not guaranteed, so please be proactive in submitting this proposal as soon as possible. In addition, one of the design faculty MUST be on the student's thesis committee.

These 6 Master's Thesis credit hours would replace 6 credit hours of Graduate Design above, or if completing both a thesis and Graduate Design, these Master's Thesis hours would replace 6 credit hours of enrichment courses above):
MCEN 6959 Master's Thesis (3)
MCEN 6959 Master's Thesis (3)

In addition all students who chose to write an MS thesis must register for:
MCEN 5208 Intro to Research (1) – This is a pass/fail seminar series offered in fall semesters that teaches ethics of research, hot to write a proposal, library skills, etc.