

# Engineering Mechanics Graduate Plan of Study, Master's

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Student ID last 4 numbers: \_\_\_\_\_ MS option: Thesis \_\_\_ Non-thesis \_\_\_

CORE Course						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor	
ESM 5014	Intro to Continuum Mechanics	3				
MATH Course						
Any ONE, 3 credit MATH 5000-6000 level course. See Grad Manual for additional courses that may count.						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor	
		3				
Diversity and Inclusion Requirement						
Satisfies graduate school requirement for students who entered in Fall 2019 and after. For those who entered before 2019, you will only need to take this if you will earn your degree in Spring 2022 or after.						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor	
ENGE 5304	Graduate Student Success in Multicultural Environments	1				
Additional ESM Courses						
Pick ONE ESM 5000-6000 level course in <b>TWO</b> of the following areas: Solids & Materials, Fluids, and Motion						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor	Area
		3				Motions
		3				Motions
Seminar						
Minimum of 2, one-credit hour seminars. Does not count toward 30 required hours.						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor	
ESM 5944		1				
ESM 5944		1				
Additional 5000-6000 courses taken at Virginia Tech Maximum of 6 credits as Independent Study or Special Study. If more space is needed, add additional courses to the "research section"						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor	
Research (at least 6 hours needed if doing thesis)						
Do NOT list research hours separately by semester. Combine all research hours you plan to accumulate by your final semester and record that number with the year and semester you plan to graduate. For example, 30 will completed by spring 2030.						
Course Name	Course Title & Information	Credits	Taken Semester/Year	Instructor		
4000 Level Courses						
No more than 6 credits						

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Course Name	Course Title & Information	Credits	Taken Semester/Year	Grade	Instructor

**Transfer Courses (list institution above)**  
Cannot exceed number of credit hours taken at Virginia Tech

Course Name and Title	Credits	Taken Semester/Year	Grade	VT Equivalent Course

Name of institution these courses are being transferred from: \_\_\_\_\_

### Engineering Mechanics Advisory Committee

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<b>Student Name (print)</b>	<b>Signature</b>	<b>Date</b>
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<b>Chairperson's Name (print)</b>	<b>Signature</b>	<b>Last 4 ID #</b>	<b>Date</b>
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<b>Co-Chairperson's Name, if applicable (print)</b>	<b>Signature</b>	<b>Last 4 ID #</b>	<b>Date</b>
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<b>Committee Member Name (print)</b>	<b>Signature</b>	<b>Last 4 ID #</b>	<b>Date</b>
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<b>Committee Member Name (print)</b>	<b>Signature</b>	<b>Last 4 ID #</b>	<b>Date</b>
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<b>Committee Member Name (print)</b>	<b>Signature</b>	<b>Last 4 ID #</b>	<b>Date</b>
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<b>Committee Member Name (print)</b>	<b>Signature</b>	<b>Last 4 ID #</b>	<b>Date</b>
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<b>EM Graduate Program Chair Signature</b>	<b>Date</b>
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<b>Graduate Coordinator Signature</b>	<b>Date</b>
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## Preapproved Engineering Mechanics Courses

Further descriptions are available on the [Engineering Mechanics course listing in the graduate catalog](#)

### A. Mathematics Courses

All MATH 5xxx and 6xxx courses	ESM 5754 Introduction to Perturbation Methods
ESM 5734 Introduction to the Finite Element Method	ESM 6314 Advanced Dynamics
ESM 5744 Energy and Variational Methods in Applied Mechanics	ESM 6714 Applied Tensor Analysis
	ESM 6734 Finite Element Analysis

### B. Dynamics Courses

ESM 4114 Nonlinear Dynamics and Chaos	ESM 5314 Intermediate Dynamics
ESM 4444 (AOE 4054, CEE 4444) Stability of Structures	ESM 5344 Wave Propagation in Solids
ESM (AOE) 5304 Mechanical and Structural Vibrations	ESM 5414 Nonlinear Systems
	ESM 6314 Advanced Dynamics

### C. Fluid Mechanics Courses

ESM 5054 Introduction to Fluid Mechanics	ESM 5554 Turbulence and Turbulent Flows
ESM 5504 Introduction to Ideal Flow	ESM 6514 Computational Methods for Viscous Flows
ESM 5514 Viscous Flow	
ESM 5524 Compressible Flow I	

### D. Solid Mechanics Courses

ESM 4024 Advanced Mechanical Behavior of Materials	ESM 5144 (MSE) Deformation and Fracture of Materials
ESM 4154 Nondestructive Evaluation of Materials	ESM 5174 (CHEM) Polymer Viscoelasticity
ESM 5024 Introduction to Solid Mechanics	ESM 5264 Mechanics of Adhesive Bonding and Interfaces
ESM 5044G Advanced Mechanics of Composite Materials	ESM 5454 Elastic Stability
ESM 5074 Mechanics of Laminated Composite Structures	ESM 6014 Nonlinear Elasticity
ESM 5124 Theory of Elasticity	ESM 6044 Theory of Plates and Shells
ESM 5134 Advanced Mechanics of Materials	ESM 6054 Fracture Mechanics
	ESM 6104 Mechanics of Composite Strength and Life
	ESM 6154 Analysis of Composite Materials

### E. Biomechanics Courses

ESM 4105, 4106 Engineering Analysis of Physiologic Systems	ESM 5405, 5406 Clinical Internship in Biomedical Engineering
ESM 5224 (BMES 5124) Advanced Musculoskeletal Biomechanics	
ESM 5245G, 5246G Mechanics of Animal Locomotion	
ESM 5305, 5306 Biomechanics of the Cardiovascular System	