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.					
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 **TWO** of the following areas: Solids & Materials, Fluids, and Motion						
Course Name	**Course Title & Information**	**Credits**	**Taken Semester/Year**	**Grade**	**Instructor**	**Area**
		3				Solids
		3				Solids

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

Student Name (print)	**Signature**		**Date**
Chairperson's Name (print)	**Signature**	**Last 4 ID #**	**Date**
Co-Chairperson's Name, if applicable (print)	**Signature**	**Last 4 ID #**	**Date**
Committee Member Name (print)	**Signature**	**Last 4 ID #**	**Date**
Committee Member Name (print)	**Signature**	**Last 4 ID #**	**Date**
Committee Member Name (print)	**Signature**	**Last 4 ID #**	**Date**
Committee Member Name (print)	**Signature**	**Last 4 ID #**	**Date**

EM Graduate Program Chair Signature **Date**

Graduate Coordinator Signature **Date**

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

B. Dynamics Courses

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

C. Fluid Mechanics Courses

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

D. Solid Mechanics Courses

ESM 4024 Advanced Mechanical Behavior of Materials
ESM 4154 Nondestructive Evaluation of Materials
ESM 5024 Introduction to Solid Mechanics
ESM 5044G Advanced Mechanics of Composite Materials
ESM 5074 Mechanics of Laminated Composite Structures
ESM 5124 Theory of Elasticity
ESM 5134 Advanced Mechanics of Materials
ESM 5144 (MSE) Deformation and Fracture of Materials
ESM 5174 (CHEM) Polymer Viscoelasticity
ESM 5264 Mechanics of Adhesive Bonding and Interfaces
ESM 5454 Elastic Stability
ESM 6014 Nonlinear Elasticity
ESM 6044 Theory of Plates and Shells
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 5224 (BMES 5124) Advanced Musculoskeletal Biomechanics
ESM 5245G, 5246G Mechanics of Animal Locomotion
ESM 5305, 5306 Biomechanics of the Cardiovascular System
ESM 5405, 5406 Clinical Internship in Biomedical Engineering