PhD in Mechanical Engineering Plan of Study

See reverse for course options and information.

Student Name	UNCC ID

Select two mathematics courses (6 credit hours):

Mathematics Courses	Term	Hours
		3
		3

Select six MEGR courses (18 credit hours):

MEGR Courses	Term	Hours
		3
		3
		3
		3
		3
		3

Select seven elective courses (21 credit hours):

Elective Courses	Term	Hours
		3
		3
		3
		3
		3
		3
		3

Complete 21 credit hours of Doctoral Dissertation Research:

Doctoral Dissertation Research	Term	Hours
MEGR 8999		
MEGR 8999		
MEGR 8999		
MEGR 8999		
MEGR 8999		

Complete an additional six credit hours of coursework or dissertation research:

Additional Coursework/Research	Term	Hours
		3
		3
TOTAL DEGREE HOURS		**72**

Graduate Faculty Advisor Approval

Faculty Advisor Name	Signature	Date

Degree Milestones for Doctoral Degree

☐ **Qualifying Exam**

☐ **Committee Appointment**

☐ **Proposal Defense**

☐ **Final Defense**

☐ **Dissertation Submission/ETD**

☐ **Graduation Application**

Additional Required Coursework for Doctoral Students
These requirements do not apply to total required degree hours (72).

Requirement	Hours
GRAD 8990: Academic Integrity	0
GRAD 8302: Responsible Conduct of Research	2
MEGR 8000: Research Seminar	1

All Ph.D. students are required to register for MEGR 8000 each semester. This 1 credit hour course is graded on a pass/unsatisfactory basis, and does not count toward the required 72 degree hours.

Refer to the Course Delivery Schedule on the MEES website for additional options and details. The course schedule in Banner is the most up-to-date resource for course options and information.

NOTES:

INSTRUCTIONS: Submit this completed form via email to megrad@uncc.edu.

Mathematics Courses

Select two of the following (6 credit hours):

MEGR 7172: Computational Methods in Engineering (3)
MEGR 7174: Engineering Analysis I (3)
MEGR 7175: Engineering Analysis II (3)
MATH 6171: Advanced Applied Mathematics I (3)
MATH 6172: Advanced Applied Mathematics II (3)

MEGR Courses

Select six MEGR courses (18 credit hours):

Dynamics and Control

MEGR 7129: Structural Dynamics of Production Machinery (3)
MEGR 7130: Introduction to Control Systems (3)
MEGR 7145: Advanced Topics in Dynamics (3)
MEGR 7221: Vibration of Discrete and Continuous Systems (3)
MEGR 7222: Mechatronics (3)
MEGR 7223: Mathematical Concepts for Dynamics and Control (3)
MEGR 7224: Analytical Mechanics (3)
MEGR 7090: Flexures (3)

Machine Learning in Mechanical Engineering

MEGR 7130: Introduction to Control Systems (3)
MEGR 7145: Advanced Topics in Dynamics (3)
MEGR 7221: Vibration of Discrete and Continuous Systems (3)
MEGR 7222: Mechatronics (3)
MEGR 7223: Mathematical Concepts for Dynamics and Control (3)
MEGR 7224: Analytical Mechanics

Metrology and Manufacturing

MEGR 6181: Engineering Metrology (3)
MEGR 7182: Machine Tool Metrology (3)
MEGR 7183: Design of Precision Machines and Instruments I (3)
MEGR 7185: Gear Manufacturing and Metrology (3)
MEGR 7186: Data Analysis and Uncertainty (3)
MEGR 7191: Introduction to Optical Fabrication and Testing (3)
MEGR 7283: Advanced Coordinate Metrology (3)
MEGR 7284: Advanced Surface Metrology (3)
MEGR 7480: Advanced Manufacturing Processes and Equipment (3)
MEGR 7090: Tribology (3)

Motorsports Engineering

MEGR 7131: Automotive Power Plants (3)
MEGR 7132: Advanced Automotive Power Plants (3)
MEGR 7133: Applied Vehicle Aerodynamics (3)
MEGR 7134: Advanced Road Vehicle Dynamics (3)
MEGR 7135: Advanced Tire Mechanics (3)

Solid Mechanics and Materials Science

MEGR 6141: Theory of Elasticity I (3)
MEGR 6166: Mechanical Behavior of Materials I (3)
MEGR 7108: Finite Element Analysis and Applications (3)
MEGR 7163: Materials Characterization and Analysis (3)
MEGR 7169: Introduction to Transmission Electron Microscopy (3)
MEGR 7172: Computational Methods in Engineering (3)
MEGR 7173: Engineering Design Optimization (3)

Thermal Science and Fluid Mechanics

MEGR 7113: Dynamics and Thermodynamics of Compressible Flow (3)
MEGR 7114: Advanced Fluid Mechanics (3)
MEGR 7117: Statistical Thermodynamics (3)
MEGR 7213: Introduction to Computational Fluid Dynamics (3)
MEGR 7214: Turbulent Shear Flows (3)
MEGR 7215: Turbulence Modeling and Simulations (3)

Interdisciplinary Biomedical Engineering

MEGR 7119: Thermal Applications in Biomedical Engineering (3)
MEGR 7151: Orthopedic Biomechanics (3)
MEGR 7152: Mechanics of the Human Locomotor System (3)

Elective Courses

Select seven elective courses (21 credit hours):

MEGR 6090: Special Topics (3)
MEGR 7090: Special Topics (3)
MEGR 7173: Engineering Design Optimization (3)
ECGR 6115: Optimal Control Theory I (3)
EMGT 6924: Lean Six Sigma Practice and Management (3)
ENER 6120: Energy Generation and Conversion (3)
NANO 8102: Nanoscale Phenomena (3)
NANO 8104: Fabrication of Nanomaterials (3)
NANO 8301: Nanomedicine (3)
NANO 8351: Nanoscale Materials for Energy Applications (3)
NANO 8354: Solar Applications of Nanomaterials (3)
OPTI 5371: Waves and Optics (3)
OPTI 6206: Physical Optics Design and Simulation (3)
OPTI 6241: Optical System Function and Design (3)

Semester-by-Semester Plan

Semester 1:	Hours	Semester 2:	Hours
Total Hours		**Total Hours**	
Semester 3:	**Hours**	**Semester 4:**	**Hours**
Total Hours		**Total Hours**	
Semester 5:	**Hours**	**Semester 6:**	**Hours**
Total Hours		**Total Hours**	
Semester 7:	**Hours**	**Semester 8:**	**Hours**
Total Hours		**Total Hours**	
Semester 9:	**Hours**	**Semester 10:**	**Hours**
Total Hours		**Total Hours**	