



# ENGINEERING ONLINE

NC STATE UNIVERSITY

## Master of Science in Mechanical Engineering

### Program Overview

The Master of Science in Mechanical Engineering (MSME) distance education program is designed for students with an undergraduate degree in mechanical or aerospace engineering or a closely related field who wish to pursue a graduate degree in mechanical engineering. It is a 30 credit hour degree program that does not require a thesis, final oral exam or on-campus residency. The GRE requirement will be waived for distance students who have a BS engineering degree from an accredited institution.

### Admission Requirements

Prerequisites for admission to the MSME degree program include an undergraduate degree in engineering from an accredited institution with a minimum overall GPA of 3.0. Students majoring in other fields may need to complete a number of undergraduate mechanical engineering courses prior to being accepted for admission.

The Graduate School requires that all international applicants take the TOEFL or IELTS examination if they have not received a degree from a U.S. institution or completed one year of study in the United States, Canada or Great Britain. The program does not currently accept international students who reside outside the continental U.S. You can find out more about the admission requirements at <http://www.mae.ncsu.edu/admission/grad-admission.php>.

### Degree Requirements

- Completion of 30 credit hours of graduate level courses at the 500 or 700 level with an overall grade-point average of 3.0
- Completion of a minimum of four (4) core MAE courses from a concentration area and two additional MAE courses at the 500 or 700 level
- Completion of three credits of MAE 586 – Project Work in Mechanical Engineering
- The remaining three courses may consist of any department approved graduate level engineering or mathematics course offered through Engineering Online

MSME distance education students are permitted to take and attend courses on campus. However, approval must be obtained from the Director of Graduate Programs prior to registering. Under no circumstances can more than three courses taken on campus be applied to satisfy the off-campus student's degree requirements. All requirements for the degree must be completed within six years of enrolling in the first course appearing on the NC State graduate transcript. Admitted students must comply with the Graduate School regulations for continuous enrollment or must request a leave of absence not to exceed one year. You can find out more about the degree requirements at <http://www.mae.ncsu.edu/academics/#!ms>.

### Course Registration

It is preferable to seek admission to the MSME program as soon as possible to assure integration into the advising process. However, a person does not have to be admitted to a degree program to enroll in an online credit course. Prior to applying to Graduate School, a qualified individual may enroll in Engineering Online courses as a Non-Degree Studies (NDS) student. The NDS classification is designed for individuals who wish to undertake academic work but who are not currently admitted to a degree program. If the student is admitted to the MSME program, a maximum of twelve hours taken as a NDS student or from another institution may apply toward the 30 credit hour

requirement. Students register for online courses through Engineering Online. Those who wish to take only a few courses and not pursue a degree do not need to apply for formal program admission to NC State University. However, students who wish to earn the MSME degree must formally apply for admission to the Graduate School at <http://www.ncsu.edu/grad>. When completing the online application, please be sure to select the "Distance Track" version of the degree.

To register for an Engineering Online course, complete the registration form on the Engineering Online website at <http://engineeringonline.ncsu.edu> by clicking on "Registration." Students cannot register through the University MyPack Portal system for Engineering Online courses.

## Course Offerings

A list of distance education courses available for each semester can be found on the Engineering Online website. Full-time employed individuals may only enroll in two online courses per semester. It is highly recommended that new students enroll in only one course during their first semester.

The following courses will be available through the Engineering Online program in various semesters.

### Thermal Sciences and Energy Systems

MAE 501 Advanced Engineering Thermodynamics  
MAE 504 Fluid Dynamics of Combustion I  
MAE 505 Heat Transfer Theory and Applications  
MAE 531 Engineering Design Optimization  
MAE 550 Foundations of Fluid Dynamics  
MAE 553 Compressible Fluid Flow  
MAE 560 Computational Fluid Mechanics & Heat Transfer  
MAE 704 Fluid Dynamics of Combustion II

### Structural Mechanics, Materials, and Manufacturing

MAE 531 Engineering Design Optimization  
MAE 533 Finite Element Analysis I  
MAE 537 Mechanics of Composite Structures  
MAE 541 Advanced Solid Mechanics I  
MAE 543 Fracture Mechanics  
MAE 545 Metrology for Precision Manufacturing  
MAE 589 Design of Machines for Assembly  
MAE 589 Design for Mechanical Strength and Endurance  
MAE 742 Mechanical Design for Automated Assembly

### Dynamics, Vibrations, Controls, and Space Systems

MAE 513 Principles of Structural Vibration  
MAE 518 Acoustic Radiation I  
MAE 521 Linear Control & Design for MIMO Systems  
MAE 522 Non-Linear System Analysis and Control  
MAE 524 Principles of Mechatronic Control  
MAE 531 Engineering Design Optimization  
MAE 534 Mechatronics Design  
MAE 535 Design of Electromechanical Systems  
MAE 536 Micro/Nano Electromechanical Systems

### Aerodynamics, Fluid Mechanics, and Propulsion

MAE 501 Advanced Engineering Thermodynamics  
MAE 504 Fluid Dynamics of Combustion I  
MAE 531 Engineering Design Optimization  
MAE 550 Foundations of Fluid Dynamics  
MAE 551 Airfoil Theory  
MAE 553 Compressible Fluid Flow  
MAE 560 Computational Fluid Mechanics & Heat Transfer  
MAE 561 Wing Theory  
MAE 575 Advanced Propulsion Systems

### Other recommended courses

MA 501 Adv. Mathematics for Engineers and Scientists I  
MA 502 Adv. Mathematics for Engineers and Scientists II

For a list of distance education courses approved for the fall, spring or summer semester, visit the Engineering Online web site at <http://engineeringonline.ncsu.edu>.

## Course Logistics

Online courses are the same as on campus courses in terms of content, requirements and academic rigor. On-campus class lectures are captured, digitized and placed on the Internet for distance students to access at any time and from any location. Students must, however, follow the on-campus class schedule in terms of submitting homework and taking exams. Course assignments, lecture notes, and handouts are made available to distance students on the course website. All in-class exams must be proctored.

## Contact Information

- For more information about the MSME program available online, contact:

Dr. Paul Ro, Director of Graduate Programs  
Department of Mechanical and Aerospace Engineering  
Telephone: 919.515.5235  
Email: [paul\\_ro@ncsu.edu](mailto:paul_ro@ncsu.edu)  
Department website: <http://www.mae.ncsu.edu>

- For more information about the registration process, course offerings and course logistics, contact:

Richard Shryock, Associate Director of Distance Education Programs  
College of Engineering  
Telephone: 919.513.3815  
Email: [richard\\_shryock@ncsu.edu](mailto:richard_shryock@ncsu.edu)  
Engineering Online website: <http://engineeringonline.ncsu.edu>