

Mechanical Engineering – Engineering Mechanics

MEEM 2110 - Statics

Force systems in two and three dimensions. Includes composition and resolution of forces and force systems, principles of equilibrium applied to various bodies, simple structures, friction, centroids, and moments of inertia. Vector algebra used where appropriate.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following College(s): Sch of Forest Res & Envir Sci, College of Engineering

Pre-Requisite(s): MA 2160

MEEM 2150 - Mechanics of Materials

Introduction to mechanical behavior of materials, including stress/strain at a point, principle stresses and strains, stress-strain relationships, determination of stresses and deformations in situations involving axial loading, torsional loading of circular cross sections, and flexural loading of straight members. Also covers stresses due to combined loading and buckling of columns.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following College(s): Sch of Forest Res & Envir Sci, College of Engineering

Pre-Requisite(s): MEEM 2110

MEEM 2200 - Thermodynamics

Introduces fundamental concepts of heat and power. Presents property relationships incompressible substances, simple pure substances, and ideal gases. Applies the first and second laws of thermodynamics to the analyses of processes for open and closed systems. Also covers thermodynamic cycles.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following College(s): College of Engineering

Pre-Requisite(s): MA 2160 and CH 1100 or CH 1110 or (CH 1150 and CH 1151)

MEEM 2500 - Integrated Design and Manufacturing

Focuses on practical aspects of design and manufacturing. Covers fundamentals of manufacturing processes and includes weekly lab providing hands-on experiences with manufacturing issues that influence component design. Incorporates computer-aided manufacturing tools.

Credits: 4.0

Lec-Rec-Lab: (0-3-3)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Engineering, Mechanical Engineering Tech, Engineering-Manufacturing, Mechanical Engineering, Industrial Technology, Biomedical Engineering, Engineering-Mechanical Design

Pre-Requisite(s): ENG 1102 and (MY 2100(C) or MET 1540(C) or TE 1020)

MEEM 2700 - Dynamics

First course in the principles of dynamics, covering the motion of a particle, the kinematics and kinetics of plane motion of rigid bodies, the principles of work and energy, impulse and momentum. Uses vector methods.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): PH 2100 and (MEEM 2110 or ENG 2120) and MA 3160(C)

MEEM 3000 - Mechanical Engg Laboratory

Presents basic laboratory skills, including analog and digital data acquisition, transducer selection and calibration, laboratory safety, and application of statistical principles to experimental data. Presents concept of investigating phenomenon through observation and interpretation of acquired data. Reinforces concepts in statics, strength of materials, thermodynamics, fluid mechanics, and dynamics.

Credits: 2.0

Lec-Rec-Lab: (0-1-3)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Mechanical Engineering

Pre-Requisite(s): (MEEM 2150(C) or ENG 2120) and MEEM 3230(C) and MEEM 3700(C) and EE 3010

MEEM 3210 - Fluid Mechanics

Presentation/development of the fundamentals of fluid dynamics, building on students' background in mechanics and thermodynamics. Makes applications to fluid statics, incompressible flows with friction (viscosity) and compressible flows without friction. Covers nondimensional representation of experimental results, power requirements for pumps and turbines, and energy losses in pipes.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Co-Requisite(s): MEEM 3220

Pre-Requisite(s): MEEM 2200 and MEEM 2700(C) and (MA 3520 or MA 3521 or MA 3530 or MA 3560)

MEEM 3220 - Energy Laboratory

Introduction to measurement techniques and the use of transducers to reinforce knowledge in the application of the principles of thermodynamics, fluid mechanics, and heat transfer.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following Major(s): Mechanical Engineering

Co-Requisite(s): MEEM 3210

Pre-Requisite(s): MEEM 2200

MEEM 3230 - Heat Transfer

Covers fundamental principles of steady-state and transient heat transfer, including conduction, convection, and radiation. Also covers applications to heat exchangers and extended surfaces.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 3210 and (MA 3520 or MA 3521 or MA 3530 or MA 3560)

MEEM 3501 - Product Realization I

Students apply mechanical synthesis, analysis, and manufacturing processes to the design of products, using case studies of existing products to develop the relationships between design, manufacturing, and product performance. They apply synthesis methods to the design of a new product.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 2700 and MEEM 2150 and MEEM 2500 and (MA 2320(C) or MA 2321(C) or MA 2330(C))

MEEM 3502 - Product Realization II

Students apply design and manufacturing principles to a complete mechanical system, using synthesis and analysis software, SPC, design for manufacturing, and assembly techniques in the redesign of various consumer products.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 3501 and (MA 3520(C) or MA 3521(C) or MA 3530(C))

MEEM 3700 - Mechanical Vibrations

Dynamic behavior of single degree-of-freedom systems. Free and forced vibration with an emphasis on harmonic motion. Vibration considerations in design; vibration isolation, balancing, and transmissibility. Free and forced vibration of multiple degree-of-freedom systems. Laplace transform solutions for periodic and transient inputs. Introduction to system modeling.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 2700 and (MA 2320 or MA 2321 or MA 2330) and (MA 3520 or MA 3521 or MA 3530 or MA 3560)

MEEM 3900 - Engineering Design Processes

This course introduces methods for concurrent design, manufacturing, and assembly that will be utilized later in their Senior Capstone Design or Enterprise project experience. Course topics will include thinking styles, teamwork, creative problem solving, brainstorming, Pugh method, technical report preparation, economic decision making, quality, analytical and experimental design optimization, DFA, DFM, GD&T, codes and fasteners, robust engineering, engineering ethics, patents and IP, and innovation in the workplace. A one semester 'paper only' design project is utilized to enhance the learning outcomes.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Mechanical Engineering

Pre-Requisite(s): MEEM 2500

MEEM 3999 - Mechanical Engineering Undergraduate Research Project

An undergraduate research experience during the junior year in mechanical engineering. Students work directly with faculty on active research projects/grants. A report will be submitted and graded.

Credits: 3.0; Repeatable to a Max of 6

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of department required; Must be enrolled in one of the following Major(s): Mechanical Eng-Eng Mechanics, Mechanical Engineering; May not be enrolled in one of the following Class(es):

Freshman, Sophomore, Senior

MEEM 4150 - Intermediate Mechanics of Materials

Basic concepts of three-dimensional stress and strain. Inelastic behavior of axial members, circular shafts and symmetric beams. Deflections of indeterminate beams. Unsymmetrical bending, shear flow and shear center for open sections. Energy methods for structures made up of one-dimensional elements. Introduction to theories of failures for anisotropic materials.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 2150

MEEM 4160 - Fund of Exp Stress Analysis

Transmits basic understanding of purposes and uses of experimental stress analysis and makes students familiar with methods used in the field to give experience in either design or analysis of strain- gauged transducer.

Credits: 3.0

Lec-Rec-Lab: (0-2-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Level(s): Undergraduate

Pre-Requisite(s): MEEM 2150

MEEM 4170 - Failure of Material in Mechanics

Identifies the modes of mechanical failure that are essential to prediction and prevention of mechanical failure. Discusses theories of failure in detail. Treats the topic of fatigue failure extensively and brittle fracture, impact and buckling failures at some length.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Pre-Requisite(s): MEEM 3501

MEEM 4180 - Engineering Biomechanics

Engineering mechanics applied to the human body in health and disease or injury, which includes mechanics of human biological materials and engineering design in musculo-skeletal system. Also studies on mechanics of posture (occupational biomechanics) and locomotion (sports biomechanics) using mathematical models of the human body. Credit may not be received for both MEEM4180 and BE3750.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 2150 and MEEM 2700

MEEM 4200 - Principles of Energy Conversion

Introduces basic background, terminology, and fundamentals of energy conversion. Discusses current and emerging technologies for production of thermal, mechanical, and electrical energy. Topics include fossil and nuclear fuels, solar energy, wind turbines, fuel and solar cells.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2005-2006 academic year

Pre-Requisite(s): MEEM 3230(C)

MEEM 4210 - Computational Methods in Thermal Sciences

Introduces computational methods used to solve thermodynamic, fluid mechanic, and heat transfer problems. Discusses theoretical and practical aspects. Modern computer-based tools are used to reinforce principles and introduce advanced topics in thermodynamics, fluid mechanics, and heat transfer.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 3230(C)

MEEM 4220 - Internal Combustion Engines I

Teaches the operation and design of various types of internal combustion engines through the application of applied thermodynamics, cycle analysis, combustion, mixtures of gases, fluid dynamics, and heat transfer.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 3210

MEEM 4240 - Combustion & Air Pollution

Introduces physico-chemical processes of combustion, including the phenomena of ignition, extinction, flame propagation, detonation, solid propellant combustion, fuel spray combustion, and pollutant formation. Also addresses analysis and design of an air pollution control system with a special focus on automotive emissions.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring, Summer

Restrictions: Must be enrolled in one of the following College(s): College of Engineering; May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

Pre-Requisite(s): MEEM 2200

MEEM 4250 - Heating/Ventilation/Air Cond

Elements of heat transfer for buildings. Thermodynamic properties of moist air, human comfort and the environment, solar energy fundamentals and applications, water vapor transmission in building structures, heating and cooling load calculations.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2004-2005 academic year

Pre-Requisite(s): MEEM 3230(C)

MEEM 4403 - Computer-Aided Design Methods

Students apply fundamental and advanced solid modeling techniques to construct solid models of mechanical systems, simulate the motion of the system, and document the design. Students use shared data to function in a concurrent design environment and identify major functional features of commercial CAD software.

Credits: 4.0

Lec-Rec-Lab: (3-0-2)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following Major(s): Mechanical Engineering, Mechanical Eng-Eng Mechanics, Engineering-Manufacturing; May not be enrolled in one of the following Class(es): Freshman, Sophomore

Pre-Requisite(s): ENG 1102

MEEM 4403D - Computer-Aided Design Methods (Distance Program)

Students apply fundamental and advanced solid modeling techniques to construct solid models of mechanical systems, simulate the motion of the system, and document the system's design. Students use shared data to function in a concurrent design environment and identify major functional features of commercial CAD software.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Must be enrolled in one of the following College(s): College of Engineering

Pre-Requisite(s): ENG 1102

MEEM 4404 - Mechanism Syn/Dynamic Modeling

Students apply kinematic synthesis techniques in design and analysis of mechanical systems. They develop synthesis software to link to dynamic analysis packages such as ADAMS, I-DEAS, Unigraphics, etc. They investigate influences of process variation on system output and learn methods to minimize the variation influences.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Fall, Spring

Pre-Requisite(s): MEEM 3502(C)

MEEM 4404D - Mechanism Syn/Dynamic Modeling (Distance Program)

Students apply kinematic synthesis techniques in design and analysis of mechanical systems. They develop synthesis software to link to dynamic analysis packages such as ADAMS, I-DEAS, Unigraphics, etc. They investigate influences of process variation on system output and learn methods to minimize the variation influences.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 3502(C)

MEEM 4405 - Intro to the Finite Element Method

Introduces the use of the finite element method in stress analysis and heat transfer. Emphasizes the modeling assumptions associated with different elements and uses the computer to solve many different types of stress analysis problems, including thermal stress analysis and introductory nonlinear analysis.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 3502 and (MA 2320 or MA 2321 or MA 2330) and (MA 3520 or MA 3521 or MA 3530 or MA 3560)

MEEM 4610 - Advanced Machining Processes

Covers mechanics of 2-D and 3-D cutting and their extension to commonly used conventional processes such as turning, boring, milling, and drilling. Topics include force modeling, surface generation, heat transfer, tool life and dynamics.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Spring

Pre-Requisite(s): MEEM 2500

MEEM 4610D - Advanced Machining Processes

Covers mechanics of 2-D and 3-D cutting and their extension to commonly used conventional processes such as turning, boring, milling, and drilling. Topics include force modeling, surface generation, heat transfer, tool life and dynamics. Credit may not be received for more than one of the following: MEEM 4610, 4610D and 5610.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: On Demand

Restrictions: Must be enrolled in one of the following Campus(s): Extended University Programs

Pre-Requisite(s): MEEM 2500

MEEM 4615 - Metal Forming Processes

Covers analytical and experimental study of metal forming processes, such as forging, extrusion, rolling, bending, stretch forming, and deep drawing as well as progressive die design for sheet metal stamping and design of dies for bulk forming.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Fall, Spring

Pre-Requisite(s): MEEM 2500 and MEEM 2150

MEEM 4615D - Metal Forming Processes (Distance Program)

Covers analytical and experimental study of metal forming processes, such as forging, extrusion, rolling, bending, stretch forming, and deep drawing as well as progressive die design for sheet metal stamping and design of dies for bulk forming.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: On Demand

Pre-Requisite(s): MEEM 2500 and MEEM 2150

MEEM 4625 - Precision Manuf and Metrology

Course presents theory and practice involved in manufacturing and measuring of precision components. Topics include precision machining processes, precision machine/mechanism design, and dimensional metrology. Also discusses current manufacturing challenges in the bearings, optics, and microelectronics industries.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 3700(C) and MEEM 3502(C)

MEEM 4630 - Human Factors

The usability of products and systems can be improved by considering human capabilities during their design. This course explores both the psychological and physical characteristics of human beings. It then presents how to apply human factors principles to the design process. Degree credit cannot be received for both MEEM4630 and SSE3400.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following College(s): College of Engineering; May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

MEEM 4635 - Design with Plastics

Covers various complexities in design of plastic parts and design of molds for manufacturing of plastic parts.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Pre-Requisite(s): MY 2100 and MEEM 2150 and MEEM 3210 and MEEM 3230(C)

MEEM 4640 - Micromanufacturing Processes

Introduces the processes and equipment for fabricating microsystems and the methods for measuring component size and system performance. Fabrication processes include microscale milling, drilling, diamond machining, and lithography. Measurement methods include interferometry and scanning electron microscopy.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Spring

Pre-Requisite(s): MEEM 3502(C)

MEEM 4650 - Quality Engineering

Introduction to the concepts and methods of quality and productivity improvement. Topics include principles of Shewhart, Deming, Taguchi; meaning of quality; control charts for variables, individuals, and attributes; process capability analysis; variation of assemblies; and computer-based workshops. Credit may not be received for both MEEM4650 and MEEM5650.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore

Pre-Requisite(s): MA 3710 or MA 3720

MEEM 4655 - Production Planning

Provides current issues, such as just-in-time production and reengineering, while covering fundamental production planning topics such as scheduling, job design, inventory and forecasting. Provides the fundamental essence of the firm—how its products are made and how they are delivered to customers.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring

Pre-Requisite(s): MEEM 3501(C)

MEEM 4660 - Data Based Modeling & Control

System modeling from observed data for computer-aided design and manufacturing, providing differential equation models. Analysis of manufacturing and dynamic systems, computer routines for modeling, forecasting with accuracy assessment, and minimum mean-squared error control. Underlying system analysis, including stability and feedback interpretation, periodic and exponential trends. Illustrative applications to real-life data.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

MEEM 4685 - Env Resp Design & Manuf

Examines the impact of engineering and design/manufacturing, decisions on the environment. Topics include sustainability; energy and material flows; risk assessment; life cycles, manufacturing process waste streams, and product design issues, including disassembly and post-use product handling and techniques for pollution prevention.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring - Offered alternate years beginning with the 2001-2002 academic year

Restrictions: May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior

MEEM 4700 - Dynamic Systems and Controls

Analysis of dynamic systems, use of Laplace transforms to solve differential equations, design of control systems using classic and modern approaches, comparison of control methodologies, application and comparison of time-and-frequency domain specifications to design, basic system identification, digital implementation issues. Emphasizes practical design and application issues.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Fall, Spring, Summer

Pre-Requisite(s): MEEM 3700

MEEM 4700D - Dynamic Systems and Controls (Distance Program)

Analysis of dynamic systems, use of Laplace transforms to solve differential equations, design of control systems using classic and modern approaches, comparison of control methodologies, application and comparison of time-and-frequency domain specifications to design, basic system identification, digital implementation issues. Emphasizes practical design and application issues.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: On Demand

Restrictions: Permission of department required

Pre-Requisite(s): MEEM 3700

MEEM 4701 - Analy and Exp Modal Analysis

Combined experimental and analytical approach to mechanical vibration issues; characterization of the dynamic behavior of a structure in terms of its modal parameters; digital data acquisition and signal processing; experimental modal analysis procedures; parameter estimation for obtaining modal parameters; model validation and correlation with analytical models; structural dynamics modification.

Credits: 4.0

Lec-Rec-Lab: (0-3-2)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 3000 and MEEM 3700

MEEM 4704 - Acoustics and Noise Control

Analysis and solution of practical environmental noise problems. Fundamental concepts of sound generation and propagation, the unwanted effects of noise, assessment of sound quality, and source-path-receiver concepts in noise control. Lecture, measurement laboratory, and team project directed at solving a real noise problem under a client's sponsorship.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring

Pre-Requisite(s): MA 3160 and MEEM 2700

MEEM 4705 - Introduction to Robotics and Mechatronics

Cross-discipline system integration of sensors, actuators, and microprocessors to achieve high-level design requirements, including robotic systems. A variety of sensor and actuation types are introduced, from both a practical and a mathematical perspective. Embedded microprocessor applications are developed using the C programming language.

Credits: 4.0

Lec-Rec-Lab: (0-3-3)

Semesters Offered: Fall

Pre-Requisite(s): MEEM 4700(C)

MEEM 4900 - Senior Design I

Students work in teams on "open-ended" engineering design projects - most with industrial sponsors - developing original and creative solutions to real engineering problems. Lectures include the design process, design tools, project management, engineering communication(oral/written), engineering ethics, and intellectual property.

Credits: 3.0

Lec-Rec-Lab: (2-0-3)

Semesters Offered: Fall, Spring

Pre-Requisite(s): MEEM 3000(C) and MEEM 3502(C)

MEEM 4900D - Senior Design I

Introduces computer-aided design (CAD) and finite element methods as tools for engineering design. Senior projects are selected/assigned with initial concepts evaluated using CAD methods. Covers project management methods and emphasized communications, oral and written

Credits: 3.0

Lec-Rec-Lab: (2-0-3)

Semesters Offered: On Demand

Restrictions: Must be enrolled in one of the following Campus(s): Extended University Programs

Pre-Requisite(s): MEEM 4405 and MEEM 4992D and MEEM 4993D

MEEM 4901 - Senior Capstone Design I

Students work in teams on "open-ended" engineering capstone design projects - most with industrial sponsors - developing original and creative solutions to real engineering problems.

Credits: 2.0

Lec-Rec-Lab: (0-0-6)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Mechanical Engineering

Pre-Requisite(s): MEEM 3000(C) and MEEM 3502(C) and MEEM 3900

MEEM 4910 - Senior Design II

Design projects started in MEEM4900 are completed and evaluated using computer-aided engineering methods, physical models, and/or prototypes as appropriate. Introduces evaluation and design optimization methods, enabling students to develop efficient and cost-effective designs. (Senior project ready as defined by major substitutes for prerequisites)

Credits: 3.0

Lec-Rec-Lab: (1-0-6)

Semesters Offered: Fall, Spring

Pre-Requisite(s): MEEM 4900

MEEM 4911 - Senior Capstone Design II

Design projects started in MEEM4901 are completed and evaluated using computer-aided engineering methods, physical models, and/or prototypes as appropriate.

Credits: 2.0

Lec-Rec-Lab: (0-0-6)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Mechanical Engineering

Pre-Requisite(s): MEEM 4901

MEEM 4990 - Special Topics in Mech Engg

Problems in mechanical engineering, engineering mechanics, manufacturing, or industrial engineering that are not covered in regular courses.

Credits: variable to 6.0; Repeatable to a Max of 6

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of department required; May not be enrolled in one of the following Class(es): Freshman, Sophomore

MEEM 4991D - Solid Modeling (Distance Program)

Develops a working knowledge of parametric solid modeling techniques for building, modifying, and constraining virtual automotive components and assemblies, including the use of parametric constraints, feature creation and editing techniques, and development of freeform features.

Credits: 6.0

Lec-Rec-Lab: (0-6-0)

Semesters Offered: On Demand

MEEM 4992D - Vehicle Packaging (Distance Program)

Explores the designer's role in vehicle packaging issues and practices, such as drive/passenger ergonomics, engine compartment serviceability, and clearance parameters; door, deck and hood requirements; suspension and exhaust system considerations; heating/cooling system provisions and limitations; and fuel system factors.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: On Demand

Pre-Requisite(s): (MEEM 4991D or ENG 1102) and (MA 1160 or MA 1040D)

MEEM 4993D - Design for Manufacturability (Distance Program)

Provides the background and concepts needed to select and apply the various methodologies and techniques of Design for Manufacturability (DFM) to the design of automotive components and systems as a means of improving the manufacturing effectiveness, productivity, and reducing cost.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: On Demand

Pre-Requisite(s): MEEM 2500 and MEEM 4992D and MY 2100

MEEM 4994D - Powertrain Packaging

Explores the designer's role in powertrain packaging issues and practices such as overview of major dynamic phenomenon that characterizes powertrain behavior. Emphasis on interaction between subsystems.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: On Demand

Pre-Requisite(s): (MEEM 4991D or MEEM 4403D) and (MEEM 2151D or MEEM 2150)

MEEM 4999 - Mechanical Engineering Senior Research Thesis

An undergraduate research experience during the senior year in mechanical engineering. Students begin work on an active research project/grant with faculty or continue work from the previous year. A thesis will be published in the department and archived.

Credits: 3.0; Repeatable to a Max of 6

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring, Summer

Restrictions: Permission of department required; Must be enrolled in one of the following Major(s): Mechanical Eng-Eng Mechanics, Mechanical Engineering; May not be enrolled in one of the following Class(es): Freshman, Sophomore, Junior