CORE CLASSES

Course Code	Course Title	Fall	Spring	Summer
EML 3022	**Computer Aided Design** This course is intended for developing graphics design concepts in undergraduate students. Learning engineering drawing fundamentals, design views, design and analysis of mechanical engineering power transmission components using computer aided software.	X	X	X
EML 3035	**Programming Concepts** **PR: MAC 2281, PHY 2048** Solution of engineering and science problems using programming language such as Visual Basic or Maple. Topics include fundamentals of programming, controlling program flow and arrays. Restricted to majors; not repeatable for credit.	X	X	X
EML 3041	**Computational Methods** **PR: MAP 2302, EML 3035, EML 3500, EGN 3343** Techniques to solving engineering problems using numerical methods. Topics include roots of equations, matrix algebra, simultaneous linear equations, numerical integration and differentiation, and curve fitting.	X	X	X
EML 3262	**Kinematics/Dynamics of Machinery** **PR: EGN 3321, EML 3022, EML 3500, EGN 3343** Kinematics of machines and mechanisms; position, velocity, and acceleration analysis of mechanisms; cams; gear trains; inertia forces in mechanisms; flywheels; balancing of rotating masses.	X	X	X
EML 3303	**Mechanical Engineering Lab I** **PR: EGN 3443** **CR: EML 3701, EML 3500** Engineering laboratory measurements. Use of the library and the writing of technical reports. Experiments in the measurement of temperature, pressure, fluid flow, psychometrics, concentration, viscosity. Mass-energy balances of simple systems.	X	X	X
EML 3500	**Mechanics of Solids** **PR: EGN 3311** Stress and deflection analysis of machine parts, variable loads, endurance limits, fasteners, bearings, power transmission, code consideration of pressure and vacuum vessels, elements of design.	X	X	X
EML 3701	**Fluid Systems** **PR: EGN 3343, EGN 3321, EML 3500** Principles of fluid flow; piping and duct systems; fluid machinery; metering of compressible and incompressible flow; boundary layer theory; dimensional analysis; introduction to aerodynamics.	X	X	X
EML 4106C	**Thermal Systems and Economics** **PR: EGN 3343, EML 3500** Power and refrigeration cycles; fuels and combustion; internal combustion engine cycles; cogeneration; nuclear energy; methods of economic analysis.	X	X	X
EML 4123	**Heat Transfer** **PR: EML 3701, EML 3041** Conduction, convection and radiant heat transfer; thermal properties of materials; role of fluid flow in convective heat transfer; design and selection of heat exchangers.	X	X	X
EML 4220	**Vibrations** **PR: EML 3262, EML 3041** Natural frequency, damping and resonance in single degree-of-freedom systems. Vibration isolation and absorption. Lagrange's equations. Multi-degree of freedom systems. Introduction to vibration of continuous systems and predictive maintenance.	X	X	X
EML 4302	**Mechanical Engineering Lab II** **PR: EML 3303** Continuation of EML 3303 with emphasis on material and energy balances,	X	X	X

	stress analysis and vibrations. The Team-Project-Time Approach.			
EML 4312	**Mechanical Controls** **PR: EGN 3321, EGN 3373, EML 3041** Introduces the concept of dynamic systems. Modeling of dynamic systems. Laplace Transforms. Transfer Functions. Block Diagrams. Characteristic equation. Time response of first and second order systems. Stability of dynamic systems. Routh stability criterion. Frequency response of dynamic systems. Polar plots and Bode plots. Introduction to state space model.	X	X	
EML 4325	**Mechanical Manufacturing Processes** **PR: EGN 3365, EGN 3343, EML 3500** Description of mechanical material cutting, forming and fabrication methods, as used in modern industrial manufacturing processes.	X	X	X
EML 4501	**Machine Design** **PR: EML 3500, EML 3022, EML3262** Designed to teach students to apply the principles of engineering mechanics, materials and manufacturing to the design/analysis of machine elements and mechanical systems. Emphasis is given toward good design practice as well as pitfalls that can result in a catastrophic failure.	X	X	X
EML 4551	**Capstone Design** **PR: EML 4501, EML 4106C, EML 3701** Comprehensive design or feasibility project requiring application of previously acquired engineering knowledge; use of ANSYS, CAD AND Pro/E.	X	X	X