Freshman

MECH 1305: Graphic & Design Fundamentals
An introduction to solid modeling concepts and software, dimensioning, and basic computer-aided engineering. *Requires a grade of C or better.*

ENGL 1311 - Expository English Composition
Instruction in addressing academic writing tasks through the composing process, with emphasis on strategic use of language, of rhetorical form, and of authorial voice and point of view to inform and persuade effectively; development of critical thought through writing and reading complex discourse. *Requires a grade of C or better.*

MATH 1411 - Calculus I
Topics include limits, continuity, differentiation, and integration of functions of a single variable. *Requires a grade of C or better.*

CHEM 1305 - General Chemistry
The basic laws and theories of chemistry: characterization of the elements and their most important compounds. For students who need a foundation for work in advanced chemistry and related sciences. *Requires a grade of C or better.*

CHEM 1105 - Laboratory for CHEM 1305
Corequisite: CHEM 1305, if required in the student's degree plan. Laboratory fee required. *Requires a grade of C or better.*

UNIV 1301 - Seminar/Critical Inquiry
This course will engage entering students in critical inquiry concerning one or more related academic topics. The seminar will increase students' knowledge of the role of technology in the academic community. Information acquisition, critical thinking, and communication will be integrated in an active learning environment. Students will conduct library and electronic research to support one or more academic projects. Specific topics may vary with instructor. *Requires a grade of C or better.*

UNIV 2350 - Interdisciplinary Tech/Soc
Interdisciplinary Technology and Society (3-0) Students in this course will be introduced to approaches to technology assessment and will examine social, cultural, and environmental consequences of technology. Problem solving in small groups assigned to research, analyze, discuss, and arrive at possible solutions for a broad range of topics related to technology and society. Specific topics may vary with instructor. Strategies for effective uses of electronic technology in support of research are emphasized. *Requires a grade of C or better.*

MECH 1321 - Mechanics I-Statics
Principles of mechanics, vectors, force systems, equilibrium of particles and rigid bodies, force analysis of truss sturctures, distributed forces, centroids, and friction. *Prerequisite: MATH 1411. Requires a grade of C or better.*

HIST 1301 - History of U.S. to 1865
History of the United States to 1865 (3-0) (Common Course Number 1301) Survey of American history through the Civil War, emphasizing the European background, the colonial contribution, the American Revolution, the republican government, growth of democracy, the background and course of the Civil

War. With HIST 1302, fulfills the statutory requirement for American History. *Requires a grade of C or better.*

ENGL 1312 - Research & Critical Writing
Instruction in incorporating research into writing, with emphasis on (1) focusing questions, (2) using academic methods and resources, (3) learning to comprehend, analyze, synthesize, and critically evaluate materials, (4) shaping materials into coherent pieces of persuasive discourse appropriate to the writer's purpose and audience, and (5) understanding the logic and forms of documentation. *Prerequisite: ENGL 1311. Requires a grade of C or better.*

MATH 1312 - Calculus II
Continuation of MATH 1411. Topics include special methods of integration and applications; infinite series. *Prerequisite: MATH 1411. Requires a grade of C or better.*

PHYS 2420 - Introductory Mechanics
Dynamics of particles and rigid bodies using vectors and calculus, conservation of energy and momentum, and kinetic theory. *Prerequisite: MATH 1411. MATH 1411 may be taken concurrently with PHYS 2420. Requires a grade of C or better.*

Sophomore

MECH 2322 - Mechanics of Materials
Determination of stresses, deflections, and stability of deformable bodies, including axial loading, torsion, beam bending, column buckling, and principal and compound stresses and matrix structural analysis. *Prerequisite: MECH 1321. Requires a grade of C or better.*

MATH 2313 - Calculus III
Continuation of MATH 1312. Topics include solid analytic geometry, partial differentiation, and multiple integrals. *Prerequisite: MATH 1312. Requires a grade of C or better.*

MECH 2331 – Materials & Manufacturing Processes
Properties of engineering materials and failure theories. Introduction to manufacturing processes, manufacturing equipment and quality assurance. *Prerequisite: CHEM 1305. Requires a grade of C or better.*

MECH 2131 - Manufacturing Engineering Lab
Basic, automated, and advanced manufacturing concepts. Shop demonstration and practices. *Prerequisite: MECH 1305. Requires a grade of C or better.*

POLS 2310 - Introduction to Politics
An overview of the concepts, principles, and practices of politics as background for the study of American and Texas political institutions. The course may employ an international, comparative, or theoretical focus. *Requires a grade of C or better.*

MECH 2340 - Mechanics II – Dynamics
An introduction to dynamics (kinematics and kinetics) of particles and rigid bodies, work and energy, impulse and momentum. *Prerequisite: MECH 1321. Requires a grade of C or better.*

MECH 2311 - Intro to Thermal-fluid Science

An introduction to basic concepts of thermodynamics and fluid mechanics to include properties, property relationships, states, and fluids. Presentation of the basic equations of thermal-fluid science, continuity, first and second laws of thermodynamics, and momentum. *Prerequisite: MATH 1312. Requires a grade of C or better.*

MECH 2351 - Engineering Analysis I

Introduction to basic applications of mathematical principles and computational techniques to analyze and solve engineering problems; basics of differential equations; uses of mathematical software and programming languages for modeling and solving engineering problems. *Prerequisite: MATH 1312. Requires a grade of C or better.*

MECH 2342 - Electro Mechanical Systems

Circuit equations and network theorems. Introduction to digital logic circuits. Motors and generators. Principles of sensing, actuation, and control. *Prerequisite: MATH 1312. Requires a grade of C or better.*

CE 2326 – Engineering Economics

Application of economics to engineering and industrial problems which require knowledge of engineering for their solution. *Requires a grade of C or better.*

Junior

MECH 3323 - Solid Mechanics Lab

Displacement, velocity, acceleration, force, torque, strain, and stress measurements. Data acquisition, processing, and analysis. Statistical analysis of experimental data. *Prerequisite: MECH 2322.*

MECH 3352 - Engineering Analysis II

Concepts and modeling of ordinary and partial differential equations for a variety of engineering phenomena using finite difference, finite volume, and finite element techniques. Introduction to statistics, data analysis, and probability theories. *Prerequisite: MECH 2351.*

MECH 3312 - Thermodynamics

Continuation of MECH 2311. Application of principles of cycles and reactive systems; energy relationships and equilibrium requirements. *Prerequisite: MECH 2311.*

MECH 3314 - Fluid Mechanics

Fluid properties, fluid statics, fluid flow concepts and basic equations, dimensional analysis and dynamic similitude, viscous effects, fluid resistance, laminar and turbulent boundary layers, flow-through pipes. *Prerequisite: MECH 2311.*

HIST 1302 - History of U.S. Since 1865

History of the United States Since 1865 (3-0) (Common Course Number HIST 1302) Reconstruction, rise of big business, clash of economic interests, struggle for feform, imperialism and world power status. Progressivism, World War I, the Twenties, the New Deal, World War II, post-war America. With HIST 1301, fulfills the statutory requirement for American History. *Requires a grade of C or better.*

MECH 3313 - Thermo-Fluids Lab
A continuation of the Mechanical Engineering Lab series with practical measurement problems in the thermo-fluid area. *Prerequisite: MECH 2311.*

MECH 3345 - System Dynamics
Kinematics of single and multiple degree of freedom systems; vibrations, kinematic simulation software, and an introduction to control systems. *Prerequisite: MECH 2340 and MECH 2342.*

MECH 3334 - Mechanical Design
Stress analysis, deflection analysis, and strength of mechanical elements; design of screws, fasteners, and joints; clutches, brakes, couplings, and shafting. *Prerequisite: MECH 2331 and MECH 2322.*

Senior

MECH 4336 - Principles of Engineering Design
Design process and methodology from concept through analysis, layout, and report. Types of design problems, human element in design, computer aid in design, specification development, concept generation, concept evaluation, product generation, function and performance evaluation, design for manufacturing, design for assembly, design for life-cycle, sustainability, final product, documentation, ethics, safety, and economics. *Prerequisite: MECH 3334.*

MECH 4346 - Mechatronics
The integration of electronics and use of digital controls and microcontroller technology with mechanical systems; microprocessor control, control theory, actuators, and sensors. *Prerequisite: MECH 3345.*

MECH 4315 Heat Transfer
Introduction to heat transfer by conduction, convection, and radiation; steady and transient states; steady periodic states; heat transfer in engineering apparatus. *Prerequisite: MECH 3314 and MECH 3312.*

MECH 4326 - Finite Element Analysis
Introduction to finite element methods, discretization of governing equations and solution algorithms. Analysis of solid mechanics and structural problems using existing FEA computer programs. *Prerequisite: MECH 2351 and MECH 3334.*

MECH 4366 - Senior Design Project
Conceptual preliminary and final design solutions to engineering problems by students in teams. *Prerequisite: Must be in the last full semester and have a 2.0 GPA or better in major*

MECH 4316 - Thermal System Design
Design analysis, and optimization of fluid flow, heat transfer and energy processes of ducts and piping, heat exchangers, fluid machinery, power generation and environmental control systems. Use of computational fluid dynamics (CFD) tools to synthesize thermo-fluid system designs. *Prerequisite: MECH 4315.*

POLS 2311 - American Government & Politics
A survey of contemporary American, national, state, and local Constitutions of the United States and Texas. This course meets teacher certification requirements for out-of-state graduate students. *Requires a grade of C or better.*