ME 176 Mechanical Engineering Freshman Design 1 Hour  
An introduction to mechanical engineering. The design process and basic professional tools are introduced through multiple projects. Permission of instructor only.  
Prerequisite(s): (MATH 117 (may be taken concurrently) or MATH 136 (may be taken concurrently) or MATH 137 (may be taken concurrently) or MATH 237 (may be taken concurrently) or MATH 331 (may be taken concurrently))  
Course Fee: $25  
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 180 Freshman Design II 3 Hours  
A continuation of the engineering design process, with an emphasis on electromechanical design and the use of professional engineering tools. Virtual and rapid prototypes will be developed through a series of integrated projects. Basic concepts in engineering experimentation will be introduced.  
Prerequisite(s): ME 176 with a minimum grade of C and MATH 136 with a minimum grade of C  
Course Fee: $275  
Recent Term(s) Offered: spring 2018; summer 2018; fall 2018; spring 2019; summer 2019; fall 2019; spring 2020; fall 2020

ME 200 Sophomore Design 3 Hours  
Enhances design abilities through individual and team design projects, develops structured problem-solving techniques and written, oral and graphical communication skills. Note: Pre Major must be satisfied in iCAP.  
Prerequisite(s): ME 180 with a minimum grade of C  
Course Fee: $120  
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 220 Engineering Thermodynamics I 3 Hours  
Fundamental principles of thermodynamics, first law, physical properties, ideal and real gases, second law, reversibility and irreversibility, and consequences of thermodynamic cycles.  
Prerequisite(s): (EM 221 or EM 222) and MATH 331 (may be taken concurrently)  
Recent Term(s) Offered: spring 2018; summer 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 240 Materials and Methods of Manufacturing 3 Hours  
Introduction to the science of engineering materials including structures from the atomic to macroscopic scales, properties, strengthening mechanisms, phase diagrams, and correlation between processing and properties. Introduction to manufacturing process selection and properties of materials.  
Prerequisite(s): MATH 136 with a minimum grade of C and (CHEM 116 with a minimum grade of C or CHEM 120 with a minimum grade of C)  
Corequisite(s): ME 241  
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 241 Materials and Methods of Manufacturing Lab 1 Hour  
Laboratory supporting ME 240. Experiments to develop understanding of materials science, engineering material properties and relationships between processing and properties. Exposure to manufacturing methods through experimentation and observation, including field trips to regional sites.  
Prerequisite(s): (CHEM 106 or CHEM 121)  
Corequisite(s): ME 240  
Course Fee: $35  
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 300 Junior Design 2 Hours  
Introduces the concept of design methodologies: Design for Assembly, Design for Manufacturing, etc. and applies these techniques to design projects. Written, oral, and graphical communication skills will continue to be developed, including skills in working with vendors for production of components to engineering specifications.  
Prerequisite(s): ME 200 with a minimum grade of C and ME 220 and ME 344  
Restriction(s): Enrollment is limited to students in Mechanical Engineering (543)  
Course Fee: $120  
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 310 Engineering Instrumentation and Experimentation 3 Hours  
The use of sensors and instruments to measure the behavior of mechanical systems is explored. Application of sensors, calibration of systems, and methods of data collection and analysis are covered with an emphasis on uncertainty analysis. Application of principals explored in corequisite laboratory, ME 347.  
Prerequisite(s): EM 303 and EE 210  
Corequisite(s): ME 347  
Course Fee: $160  
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 321 Engineering Thermodynamics II 3 Hours  
Prerequisite(s): ME 220 and MATH 331  
Recent Term(s) Offered: fall 2018

ME 325 Elements of Heat Transfer 4 Hours  
Discussion of basic physical laws of heat transfer including steady-state and transient heat flow; one-, two- and three-dimensional heat conduction in solids, free or forced convection in fluids, radiation and phase change. Analysis of heat exchangers.  
Prerequisite(s): ME 330  
Corequisite(s): ME 333  
Recent Term(s) Offered: fall 2018; fall 2019; fall 2020
ME 330 Fluid Mechanics 3 Hours
An introduction of physical laws governing the mechanical behavior of liquids and gases, with applications of conservation of mass, energy and momentum equations. Topics include fluid statics, internal and external fluid flow, flow measurement, scale modeling and similitude, hydraulic machinery analysis and pipe networks.
Prerequisite(s): ME 220 with a minimum grade of C and MATH 331 and MATH 237
Recent Term(s) Offered: spring 2018; summer 2018; spring 2019; summer 2019; spring 2020; summer 2020
Course Fee: $25
Recent Term(s) Offered: spring 2018; summer 2018; spring 2019; summer 2019; spring 2020; summer 2020
Corequisite(s): ME 220

ME 332 Fluid Mechanics Laboratory 1 Hour
An applied laboratory in the modeling, prediction, and measurement of fluid mechanics components and systems, with emphasis on the preparation of engineering reports, uncertainty analysis, and the experimental design plan process. System level experiments include fluid property measurements, pipe flow and turbomachinery characteristics.
Prerequisite(s): MATH 331 and ME 220 with a minimum grade of C and MATH 237 and ME 310
Corequisite(s): ME 330
Course Fee: $25
Recent Term(s) Offered: fall 2018; fall 2019; fall 2020

ME 333 Thermo-Fluids Laboratory 1 Hour
An applied laboratory in the modeling, prediction, and analysis of thermal fluid systems, with an emphasis on the preparation of engineering reports, uncertainty, and the experimental design process. System level experiments include fluid property measurements, pipe flow, turbomachinery, heat transfer principles and heat exchanger characteristics.
Prerequisite(s): ME 310 and ME 330
Corequisite(s): ME 325
Course Fee: $25
Recent Term(s) Offered: fall 2018; fall 2019; fall 2020

ME 344 Mechanical Design 3 Hours
Fundamentals of design with methods of approximation. Introduction to optimum design considerations. Synthesis and problems on the design of various mechanical elements.
Prerequisite(s): EM 303 with a minimum grade of C and ME 240 with a minimum grade of C
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 347 Mechanical Systems Laboratory 1 Hour
Implementation of fundamental principles and physical laws governing the response of mechanical system components to external forces and constraints. Students will learn how to plan, conduct, and report on a variety of experiments and projects to measure the performance characteristics of mechanical systems.
Prerequisite(s): ME 241 and MATH 331 (may be taken concurrently)
Corequisite(s): ME 310
Course Fee: $35
Recent Term(s) Offered: spring 2018; fall 2018; spring 2019; fall 2019; spring 2020; fall 2020

ME 366 Mechanics for Electrical Engineers 3 Hours
A combined course in statics and dynamics. Topics from statics include vector algebra, distributed and internal forces, trusses, frames, and beams. Topics from dynamics include kinematics/kinetics in various reference systems, work/energy, and impulse/momentum. (This course is not for civil or mechanical engineering majors.)
Prerequisite(s): PHYS 255 and MATH 237 (may be taken concurrently)
Recent Term(s) Offered: None

ME 400 Mechanical Engineering Design 2 Hours
A formal introduction to product development methodologies and project management techniques, building upon experiences in previous design courses. Students will perform team design projects as well as complete the design specifications for their senior capstone project.
Prerequisite(s): ME 300
Recent Term(s) Offered: spring 2018

ME 412 Mechanical Engineering Senior Project 3 Hours
Students work in design teams to develop a robust solution to a complex system design problem. Focus will be on the design-build-test of the proposed solution. Students expected to demonstrate all aspects of professional engineering practice.
Prerequisite(s): ME 400 and ME 325 (may be taken concurrently)
Recent Term(s) Offered: spring 2018; summer 2018; fall 2018

ME 416 UK-Dynamic Systems Elective 3 Hours
Advanced special topics delivered in the program by UK faculty to acquaint the undergraduate student with significant problems and developments of current interest in the dynamic systems area of mechanical engineering.
Prerequisite(s): EM 313 and MATH 331
Course Fee: $120
Recent Term(s) Offered: None

ME 494 WKU ME Selected Topics 2 Hours (repeatable max of 6 hrs)
Advanced special topics delivered in the fall semester by WKU faculty to acquaint the undergraduate student with significant problems and developments of current interest in mechanical engineering. Course is repeatable (with different topics) two times. Note: Permission of instructor is required.
Recent Term(s) Offered: None

ME 495 WKU ME Selected Projects 1 Hour (repeatable max of 3 hrs)
An advanced special project course delivered by WKU faculty to allow undergraduate students the opportunity to execute a relevant project of current interest in mechanical engineering. This course accompanies a ME 494 course, and together will satisfy one technical elective requirement. Course is repeatable (with different topics) two times. Note: Permission of instructor is required.
Recent Term(s) Offered: None

ME 496 WKU – ME Selected Topics (Fall) 3 Hours (repeatable max of 9 hrs)
Advanced special topics delivered in the fall semester by WKU faculty to acquaint the undergraduate student with significant problems and developments of current interest in mechanical engineering. Course is repeatable (with different topics) two times. Note: Permission of instructor is required.
Recent Term(s) Offered: fall 2018; fall 2019; summer 2020; fall 2020
ME 497  WKU – ME Selected Topics (Spring)  3 Hours (repeatable max of 9 hrs)
Advanced special topics delivered in the spring semester by WKU faculty to acquaint the undergraduate student with significant problems and developments of current interest in mechanical engineering. Course is repeatable (with different topics) two times. Note: Permission of instructor is required.
Recent Term(s) Offered: winter 2018; spring 2018; summer 2018; winter 2019; spring 2019; summer 2019; winter 2020; spring 2020

ME 498  UK – ME Selected Topics (Fall)  3 Hours (repeatable max of 9 hrs)
Advanced special topics delivered in the fall semester by UK faculty to acquaint the undergraduate student with significant problems and developments of current interest in mechanical engineering. Course is repeatable (with different topics) two times. Note: Permission of instructor is required.
Recent Term(s) Offered: fall 2018; fall 2019

ME 499  UK – ME Selected Topics (Spring)  3 Hours (repeatable max of 9 hrs)
Advanced special topics delivered in the spring semester by UK faculty to acquaint the undergraduate student with significant problems and developments of current interest in mechanical engineering. Course is repeatable (with different topics) two times. Note: Permission of instructor is required.
Recent Term(s) Offered: spring 2018; spring 2019