

AERONAUTICAL & ASTRONAUT. ENG. (AAE)

AAE 210, INTRODUCTION TO AEROSPACE ENGINEERING, 3 Credits

Topics will include the engineering fundamentals of aeronautics and astronautics, including an introduction to aerodynamics, propulsion, structures, orbital mechanics and mission planning. Current industry practices in aerospace vehicle specifications, manufacturing, flight testing and certification will be presented.

Prerequisite: ENGR 211 with C or better

AAE 411, AEROSPACE APPLICATIONS IN MECHANICAL ENGINEERING, 4 Credits

Explores the fundamentals of mechanical engineering applications to aerospace. Features an overview of modern aircraft and spacecraft analysis, with an emphasis on performance, stability, structures, materials, FAA and FAR standards. Applies current professional practices in the conceptual design of aerospace vehicles.

Prerequisite: ME 316 (may be taken concurrently) with C- or better

Equivalent to: ME 411

Recommended: ME 311

AAE 412, SPACE SYSTEMS ENGINEERING, 4 Credits

Introduction to space systems engineering. Topics will include the fundamentals of astronautics, orbital mechanics and trajectory design, flight dynamics, guidance and navigation, stability and control of spacecraft. Rocket propulsion concepts, including chemical rockets (liquid, gas and solid propellants), hybrid rocket engines and modern advances in satellite power systems will be discussed. Current design practices in space systems engineering will be emphasized.

Prerequisite: (ME 317 with C or better or ME 317H with C or better) and (ME 373 [C] or ME 373H [C])

AAE 413, AERO VEHICLES COMPONENTS DESIGN, 4 Credits

Develop mechanical design of aircraft subcomponents. Analyze and model aircraft components and evaluate their integration on aircraft. Apply real-world aircraft component design project with associated deliverables to customer, including basic requirements for Federal Aviation Administration (FAA) certification.

Prerequisite: ME 316 with C or better and ME 317 [C] and ME 331 [C] and ME 373 [C]

AAE 415, UAV ENGINEERING, 4 Credits

Develop a strong foundation in Unmanned Aerial Vehicles (UAV) systems technologies. Engineering evaluation of UAV systems, subcomponents, aircraft missions, operations and Federal Aviation Administration (FAA) requirements. Apply actual UAV models and subsystems to a real-world project on UAV deployment for humanitarian and environmental missions. Write a technical report as a team-project, developing and demonstrating critical thinking and engineering reporting skills in the subject. CROSSLISTED as AAE 415/HEST 415.

Prerequisite: ME 316 with C or better and ME 317 [C] and ME 331 [C] and ME 373 [C]

Equivalent to: HEST 415

AAE 512, SPACE SYSTEMS ENGINEERING, 4 Credits

Introduction to space systems engineering. Topics will include the fundamentals of astronautics, orbital mechanics and trajectory design, flight dynamics, guidance and navigation, stability and control of spacecraft. Rocket propulsion concepts, including chemical rockets (liquid, gas and solid propellants), hybrid rocket engines and modern advances in satellite power systems will be discussed. Current design practices in space systems engineering will be emphasized.

Recommended: (ME 373 or ME 373H) and (ME 317 or ME 317H)