AEROSPACE SYSTEMS ENGINEERING (4900)

4900:165 Tools for Aerospace Systems Engineering (2 Credits)
Prerequisite: Permission. Corequisite: 3450:149. Computer applications, spreadsheets, CAD software, MATLAB, and introduction to aerospace engineering program and curriculum; outside speakers; project involving design and construction of small RC aircraft.

4900:166 Aerospace Systems Project Management (1 Credit)
Prerequisite: 4900:165. Teamwork and project planning; semester project involving continuation of design and construction of small RC aircraft in conjunction with SAE Aero Design.

4900:240 Aerospace Systems Engineering I (3 Credits)
Prerequisite: 3450:223. An introductory systems course focusing on systems thinking, systems engineering tools, reliability, life-cycle analysis and statistics.

4900:320 Aerospace Systems Engineering II (3 Credits)
Prerequisites: 4600:340, 4900:240 and admission to the College of Engineering. An extended study of systems topics including linear programming, optimization, decision making, critical path scheduling, and verification.

4900:336 Aerospace Structures (3 Credits)
Prerequisites: 4300:202, 3450:335. Basic theory and methods for analysis and design of aerostructures are covered. Topics include torsion, shear flow, buckling, fracture, and fatigue of beams and plates.

4900:340 Avionics I (3 Credits)
Prerequisites: 4400:307 and admission to the College of Engineering. Electronics for aircraft applications. Amplifiers, filters, regulators, current sources, buffers, sensor and actuator circuits, transmitters, and receivers.

4900:380 Aerospace Materials (3 Credits)
Prerequisites: 3150:151, 3150:152, 4300:202 and admission to the College of Engineering or permission. Theory in science and application of materials for aerospace structures, macroscopic behavior of materials, order and disorder in mechanical behavior, evaluating and quantifying mechanical response.

4900:420 Object Oriented Design & Management (3 Credits)
Prerequisites: 4900:320 and admission to the College of Engineering. An introduction to the area of object-oriented design and management of systems, including abstraction, inheritance, polymorphism, dynamic interactions, hierarchies, patterns, reflection, and distributed objects.

4900:440 Avionics II (3 Credits)
Prerequisites: 4600:412, 4900:340 and admission to the College of Engineering. Communication and control for aircraft applications. Fourier analysis, AM and FM principles, modulators demodulators, communication systems. Aircraft system dynamics, classical control system principles and applications.

4900:450 Aerospace Computations (3 Credits)
Prerequisites: 4300:202, 4600:315, 4600:360, 4600:411 and admission to the College of Engineering or permission of instructor. Introduction to finite element and finite volume methods in aerospace engineering; fundamental principles of FEM and FVM discussed and illustrated through structural, and aerodynamic applications.

4900:460 Aerospace Systems Manufacturing (3 Credits)
Prerequisites: 4600:360 or equivalent and admission to the College of Engineering or permission of instructor. Using computer systems to assist in creation, modification, analysis, or optimization of engineering designs, planning, management and control of manufacturing, CAD software with manufacturing applications.

4900:490 Aerospace Design Project (2 Credits)
Prerequisites: Senior standing and admission to the College of Engineering or permission. Detailed senior design project. Design, feasibility and cost analysis, final design and implementation; engine, airframe and aerodynamic testing.
Gen Ed: Tier 3 - Complex Systems

4900:497 Aerospace Honors Project (2 Credits)
Prerequisite: Senior standing in Honors College or permission. Individual creative project in Aerospace Systems, supervised by faculty member of the department. Includes design, feasibility and cost analysis, final design and implementation.
Gen Ed: Tier 3 - Complex Systems