MichiganEngineering
Atmospheric, Oceanic and Space Sciences

SGUS and MEng Core Courses: Required (17 credit hours)

Introduction to the Space and Spacecraft Environment
(AOSS/AERO/EECS-464; 4 credit hours)
An introduction to physical and aeronomical processes in the space environment, the course will offer discussion of theoretical tools, the Sun, solar spectrum, solar wind, interplanetary magnetic field, magnetosphere, ionosphere and upper atmospheres; atmospheric processes, densities, temperatures, and wind; and spacecraft interaction with radiation, spacecraft aerodynamics, spacecraft-plasma interactions.

Space Policy and Management
(AOSS/AERO-581; 3 credit hours)
The first part of the course will offer a comprehensive introduction to modern management methods used in large projects. The second part will concentrate on successful management examples of complex space projects. Adjunct faculty will usually teach this course with extensive experience in successful management of large projects. (*pre- or co-requisite is AOSS/AERO/EECS-464*)

Spacecraft Technology
(AOSS/AERO-582; 3 credit hours)
A systematic and comprehensive review of spacecraft and space mission technology, including trajectory and orbital mechanics, propulsion systems, power and thermal systems, structures, control, and communications. (*pre- or co-requisite is AOSS/AERO/EECS-464*)

Space System Design
(AERO/AOSS-583; 4 credit hours)
Students in this course lead team oriented high-level project design of a space system. They take into consideration launch facilities, booster systems, spacecraft subsystems and their integration, communications, ground control, data processing, and project management. Safety, environmental impact, economic, and political factors are also considered. One additional hour is spent on topics such as concurrent engineering, manufacturing, marketing, and finance, etc. Modern methods of concurrent engineering, manufacturing, marketing and finance, etc., are also incorporated. (*pre- or co-requisite is AOSS/AERO-582*)

Space Systems Project
(AOSS-592 or AERO-590; 3 credit hours)
Space science and application mission or industry related team project. Student teams participate in ongoing projects in the Aerospace Design Laboratory or in the Space Physics Research Laboratory in conjunction with industry and government sponsors. (*pre- or co-requisite is AOSS/AERO-582*)

Seminar
(AOSS-749 or AERO-850; 1 credit hour)
Participating students and faculty give seminars about selected space science and/or engineering related topics. All registered students must give at least one full-length presentation (45 minutes). An important purpose is to develop presentation skills.