

AERONAUTICS AND ASTRONAUTICS

The principal purpose of the undergraduate Interdisciplinary Major in Aeronautics and Astronautics is to prepare students who are strongly interested in aerospace for subsequent graduate study in the field. In particular, it is expected that students completing this undergraduate curriculum can then satisfy the requirements for the degree of Master of Science in Aeronautics and Astronautics at Stanford University in one additional academic year or, alternatively, complete the B.S. in General Engineering and the M.S. in Aeronautics and Astronautics as a co-terminal program in five years.

Another objective of the program is, of course, to provide interested undergraduates an opportunity to become acquainted with the challenges of the aerospace field, with aeronautical and astronautical principles, and with the faculty who teach and do research in aeronautics and astronautics.

The departmental requirements of this Major include a core set of courses required of every Aeronautics and Astronautics major, a set of depth areas from which two areas (four courses) must be chosen, and an engineering elective. Students are expected to consult closely with an advisor about how best to satisfy these and all the other requirements of the major, to submit a program planning sheet when declaring the major, and to have a final program planning sheet approved by the advisor and department at least one quarter prior to graduation.

(Students interested in aerospace are also encouraged to consider the undergraduate minor in Aeronautics and Astronautics, which is described in the "Minors" section of this Handbook.)

REQUIREMENTS

MATHEMATICS: 21 UNITS

FR, SO, JR

Mathematics through ordinary differential equations is required by depth courses. Some statistics is desirable. For a list of acceptable courses, see the Mathematics Requirement section of this handbook. Required: Differential Equations (Math 53 or 130, or ME100).

SCIENCE: 18 UNITS

FR, SO

A strong foundation in classical physics, particularly mechanics, is desirable for the depth program. Chemistry is needed for students without high school chemistry and is recommended for others. For a list of acceptable courses, see the Science Requirement section of this handbook. Required: Physics 41 and either 23 or 43, plus one further physics course.

TECHNOLOGY IN SOCIETY: 1 COURSE

For a list of acceptable courses, see the TIS Requirement section of this handbook.

ENGINEERING FUNDAMENTALS: 5 COURSES

<u>Course</u>	<u>Title</u>	<u>Prerequisites</u>	<u>Units</u>
E15	Dynamics	Phys 51, Math 43	5
E30	Engineering Thermodynamics	Phys 53, Math 43	3
E70A or 70X	Programming Methodology		5
(option)	two more courses chosen from Fundamentals section of this handbook		6-10

DEPARTMENTAL REQUIREMENTS: 39 UNITS

<u>Course</u>	<u>Title</u>	<u>Prerequisites</u>	<u>Units</u>
AA100	Introduction to Aeronautics & Astronautics	Math 42; elem. physics; or consent of instructor	3
ME33	Introduction to Fluids Engineering	E14, E30	4
ME131A	Heat Transfer	E30, ME33	5
ME131B	Fluid Mechanics	ME131A	3
AA290	Problems in Aero/Astro		3
CE180A	Introduction to Structural Analysis	E14, Math 43	3
or ME111	- or - Stress Strain and Strength		
E104	Dynamic Response	Phys 45	3
or ME161	- or - Dynamic Systems	E15, Math 43, (E40)	
or Phys110	- or - Intermediate Mechanics	Phys 41, Math 130	
Depth Area I	two courses from a department Depth Area (see Depth Area lists below)		6
Depth Area II	two courses from a second Depth Area		6
Elective	one engineering elective		3

TOTAL UNITS			39

DEPTH AREAS

Students should select four courses from the list below, two from each of two areas. One additional engineering elective (at least 3 units) should also be selected; this may be an additional course from any of the depth areas below, another course in Aeronautics and Astronautics, or an appropriate elective from another Engineering department. In any case, **the choice of depth areas and engineering elective should be determined in consultation with the Aeronautics and Astronautics major advisor.**

FLUIDS & CFD:	Applied Aerodynamics	AA 200A
	Compressible Flow	AA 210A
	Computational Fluid Dynamics	AA 214A
	Propulsion	AA 280 or 283
	Thermodynamics	ME 131C
STRUCTURES:	Analysis of Structures I	AA 240A
	Analysis of Structures II	AA 240B
	Mechanics of Composites	AA 256
DYNAMICS & CONTROLS:	Feedback Control Design	Engr. 105
	Classical Dynamics	AA 242
	Spacecraft Mechanics	AA 279
	Dynamics and Control of Aircraft and Spacecraft	AA 271A
SYSTEMS DESIGN:	Aircraft Design	AA 241A,B
	Spacecraft Design	AA 236A,B

FREE ELECTIVES: TO BRING TOTAL TO 180 UNITS

INSTRUCTIONS FOR DECLARING MAJOR IN ENGINEERING: AERONAUTICS & ASTRONAUTICS

1. Obtain your Stanford transcript (with your name printed on it) from the AXESS system and take it along with this form to the AA Student Services Office (Durand Building Rm 250)
2. You will be assigned to a faculty member who will serve as your academic advisor. Make an appointment with your advisor to discuss the Aero/Astro program. During that appointment, or soon thereafter, fill out a program sheet indicating how you plan to fulfill the major requirements, and obtain your advisor's signature. (Your interests may change as you gain experience, of course, and you may revise your degree plan in consultation with your advisor. You will submit a final program sheet two quarters before you graduate. It is important, however, that you begin planning now for your degree requirements.)
3. Bring your signed program sheet & this form to the A/A Student Services office for signature.
4. Take this signed form to the Registrar's Office at the Old Union. They will give you a Declaration of Undergraduate Major form. Fill out the form and turn in the white copy to the Registrar's Office.
5. Take the yellow copy of the Declaration of Undergraduate Major form to your former undergraduate advisor and pick up your undergraduate file.
6. Turn in your undergraduate file along with the yellow copy of the Declaration of Undergraduate Major form, your transcript and this memo to the A/A Student Services Office.

Date:

To: Registrar

_____ talked to Professor _____

on _____ and received advice about majoring in our department.
(date)

Please assist him/her in declaring an interdisciplinary major in Aeronautics and Astronautics.

Sally Gressens
Student Services, Aeronautics And Astronautics

