IOWA STATE UNIVERSITY
Department of Aerospace Engineering

4-Year Plan for Undergraduates

2023, 2024 & 2025 Catalogs / Graduation Requirements

Semester 1 15 Credits	* Calculus I MATH 1650 4 Credits	Chem for Engineers CHEM 1670 or 1770 & 1770L 4 Credits	Engineering Problem Solving AERE 1600/H 3 Credits	Intro to College Research LIB 1600 1 Credit	* English Composition I ENGL 1500 3 Credits	Engineering Orientation ENGR 1010	
Semester 2 16 Credits	* Calculus II MATH 1660 4 Credits	Classical Physics I PHYS 2310 & 2310L 5 Credits	Num., Graph., & Lab Techniques AERE 1610/H 4 Credits	GenEd from Dept List 3 Credits	Aerospace Seminar AERE 1920/H		
Semester 3 17 Credits	Calculus III MATH 2650 4 Credits	Classical Physics II PHYS 2320 4 Credits	Intro to Material Sci & Engr MATE 2730 3 Credits	Statics for Engineers CE 2740 3 Credits	* English Composition II ENGL 2500 3 Credits		
Semester 4 16 Credits	Differential Equations MATH 2670 4 Credits	Dynamics ME 3450 3 Credits	* Intro to Performance & Design AERE 2610 3 Credits	Mechanics of Materials EM 3240 3 Credits	* Technical Comm ENGL 3090 or 3140 3 credits		
Semester 5 17 Credits	Flight Structures AERE 3210 3 Credits	Structures Lab AERE 3220 2 Credits	Thermo-dynamics ME 2310 3 Credits	Aero-dynamics I AERE 3100 3 Credits	Astro-dynamics I AERE 3510 3 Credits	Flight Dynamics & Control AERE 3550 3 Credits	Flight Experience AERE 3010
Semester 6 18 Credits	Advanced Flight Structures AERE 4210 3 Credits	Comp. Tech-niques for Aero. Design AERE 3610 3 Credits	Aerospace Systems AERE 3620 3 Credits	Aerodynamics/ Propulsion Lab AERE 3440 3 Credits	Aero-dynamics II AERE 3110 3 Credits	Flight Control Systems AERE 3310 3 Credits	
Semester 7 15 Credits	TechElec from Dept List 3 Credits	Astronautics Requirement 3 Credits (see chart, page 2)	Modern Design Methodology with Aero Applications AERE 4600 3 Credits OR with Astro Applications AERE 4610 3 Credits		Aerospace Vehicle Propulsion AERE 4110 3 Credits	GenEd from Dept List 3 Credits	
Semester 8 15 Credits	TechElec from Dept List 3 Credits	TechElec from Dept List 3 Credits	Design of Systems Aero AERE 4700 3 Credits OR Space AERE 4620 3 Credits		GenEd from Dept List 3 Credits	GenEd from Dept List 3 Credits	

Course Groups

Basic Program	*Aerospace Requirement*	*Technical Elective*	*Engineering Fundamentals*
Mathematics	*Chemistry & Physics*	*General Education*	*Seminars*

* See back for specific grade requirements

Basic Program - 24 credits

Must be completed (Basic Program GPA ≥ 2.0 and Cumulative GPA ≥ 2.0) before 200-Level Engineering courses

Calculus I	MATH 1650	4	Calculus II	MATH 1660	4
Chemistry	CHEM 1670	4	Physics I	PHYS 2310/2310L	5
Engr. Prob Solving	AERE 1600/H	3	English Composition I	ENGL 1500	3
Engr. Orientation	ENGR 1010	R	Intro to College Research	LIB 1600	1

English Proficiency - 9 credits

English Comp I	ENGL 1500	3
English Comp II	ENGL 2500	3
Technical Comm	ENGL 3090/3140	3

Grade of C or higher is required in ENGL 1500, ENGL 2500 and ENGL 3090/3140.

General Education - 12 credits

GenEd

Visit https://www.aere.iastate.edu/forms/ for the approved GenEd List.
Must include U.S. Cultures and Communities (3 credits) and International Perspective (3 credits) requirement.
Two semester sequence in a single world language may be applied per ISU World Language Requirements.

Aerospace Engineering - 51 credits in 8 areas of study

Aerodynamics	Aerodynamics I - Incompressible Flow	AERE 3100	3
	Aerodynamics II - Compressible Flow	AERE 3110	3
	Aerodynamics/Propulsion Lab	AERE 3440	3
Propulsion	Aerospace Vehicle Propulsion	AERE 4110	3
Structures	Flight Structures	AERE 3210	3
	Aero Structures Lab	AERE 3220	2
	Adv Flight Structures	AERE 4210	3
Controls	Flight Dynamics & Control	AERE 3550	3
	Flight Control Systems	AERE 3310	3
Astrodynamics	Astrodynamics I	AERE 3510	3
Systems and Design	Performance and Design	AERE 2610	3
	Aerospace Systems	AERE 3620	3
	Design Methodology	AERE 4610	3
	Design of Aero Systems	AERE 4620	3
Software and Numerics	Num., Graph., & Lab Techniques	AERE 1610/H	4
	Comp. Techniques for Aero. Design	AERE 3610	3
Astronautics Requirement	One of:		
	(a) Rocket Propulsion	AERE 4150	3
	(b) Spacecraft Dynamics	AERE 4330	3

Technical Electives - 9 credits

Make to Innovate/ Undergrad Research

AERE 2940 - Freshman and Sophomores (credits do not count towards graduation).
AERE 4940 - Juniors and Seniors (maximum of 6 credits may count towards graduation).

Technical Electives

Group A Aerospace Electives (3 credits), Group B Technical/Engineering Electives (3 credits) and Group C Career Electives (3 credits).
Group A electives can be used for Group B and C. Group B electives can be used for Group C.
Visit https://www.aere.iastate.edu/forms/ for the approved Technical Electives List.

* Grade Requirements for Courses

Grade of C or higher is required in ENGL 1500, 2500, and 3090/3140.
Grade of C- or higher in MATH 1650 and 1660.
Grade of C or higher in AERE 2610.

Updated March 2025