# IOWA STATE UNIVERSITY Department of Aerospace Engineering

# 4-Year Plan for Undergraduates

2021 catalog/graduation requirements

**Physics** 

Education

15 Credits Chemistry Engineering Library **English** Engineering Calculus I for **Problem** Instruction Composition I Orientation Math 165 **Engineers** Solving **Libr 160 Engl 150 Engr 101** First Year Chem167/177 4 Credits AerE 160/H 3 Credits 1 Credit 4 Credits 3 Credits Spring 15 Credits Classical Num., General **Physics I** Graph., & Lab Calculus II **Aerospace Education Math 166 Techniques** Seminar Phys 231 & GenEd **AerE 161/H** 4 Credits 231L AerE 192/H 3 Credits 3 Credits **5 Credits** Multi-Classical 18 Credits Intro to Statics for English variable Physics II **Performance Engineers Composition II** Phys 232 & & Design AerE 261 **Calculus** Second Year **CE 274 Engl 250** Math 265 232L 3 Credits 3 Credits 3 Credits **4 Credits** 5 Credits Spring 16 Credits Intro to Technical **Differential** Mechanics **Dynamics Material Sci** Comm **Equations** of Materials & Engrg **ME 345** Engl Math 267 EM 324 3 Credits **MatE 273** 309/314 4 Credits 3 Credits 3 Credits 3 credits **Flight** 17 Credits **Structures** Thermo-Flight Aero-Astro-**Flight Dynamics & Structures** Lab dynamics dynamics I dynamics I **Experience** Control **AerE 321 AerE 322** ME 231 **AerE 310 AerE 351 AerE 355 AerE 301** 3 Credits 2 Credits 3 Credits 3 Credits 3 Credits 3 Credits 18 Credits Advanced Aerodynam-Comp. Tech-**Aerospace** Aero-Flight Con-**Flight** ics/Propulniques for **Systems** dynamics II trol Systems **Structures** Aero. Design sion Lab **AerE 362 AerE 311 AerE 331** AerE 361 **AerE 421** AerE 344 3 Credits 3 Credits 3 Credits 3 Credits 3 Credits 3 Credits 15 Credits **Aerospace Astronautics Technical** General Design **Vehicle** Requirement **Elective Education** Methodology **Propulsion** 3 Credits **AerE 461** TechE GenEd Fourth Year **AerE 411** 3 Credits 3 Credits 3 Credits (see chart, page 2) 3 Credits Spring 15 Credits Design of **Technical Technical** General General **Aerospace Elective Elective** Education Education **Systems** TechE TechE GenEd GenEd **AerE 462** 3 Credits 3 Credits 3 Credits 3 Credits 3 Credits Course Aerospace **Technical Engineering Basic** Fundamentals **Elective** Requirement **Groups** Program Chemistry & General **Mathematics** Seminars

#### Basic Program - 24 credits

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

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ı	Calculus I	Math 165	4	Calculus II	Math 166	4
	Chemistry	Chem 167/177	4	Physics I	Phys 221	5
	Engrg Prob Solving	AerE 160/H	3	English 150	Engl 150	3
	Engrg Orientation	Engr 101		Library Instruction	Libr 160	1

#### English Proficiency - 9 credits

Grade of C or better is required in both ENGL 150 and ENGL 250



English Comp I Engl 150 3
English Comp II Engl 250 3
Technical Comm Engl 309 or 314 3

## General Education - 12 credits



GenEd

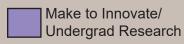
US Diversity (3); International Perspective (3); (6) from list approved by department. Two semester sequence in a single foreign language may be applied per ISU Foreign Language Requirements.

### Aerospace Engineering - 50 credits in 8 areas of study

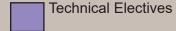


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Aerodynamics	Aerodynamics I	AerE 310	3	
	Aerodynamics II	AerE 311	3	
	Aerodynamics/Propulsion Lab	AerE 344	3	
Propulsion	Propulsion	AerE 411	3	
Structures	Flight Structures	AerE 321	3	
	Aero Structures Lab	AerE 322	2	
	Adv Flight Structures	AerE 421	3	
Controls	Flight Dynamics & Control	AerE 355	3	
	Flight Control Systems	AerE 331	3	
Astrodynamics	Astrodynamics I	AerE 351	3	
Systems and Design	Performance and Design	AerE 261	3	
	Aerospace Systems	AerE 362	3	
	Design Methodology	AerE 461	3	
	Design of Aero Systems	AerE 462	3	
Software and Numerics	Num., Graph. Techniques	AerE 161/H	3	
	Comp. Techniques for Aero. Design	AerE 361	3	
Astronautics Requirement	One of:			
	(a) Rocket Propulsion	AerE 415	3	
	(b) Spacecraft Dynamics	AerE 433	3	

# Technical Electives - 9 credits - Adviser Approval Required



AerE 294- Freshman and Sophomores (credits do not count towards graduation). AerE 494 - Juniors and Seniors (maximum of 6 credits may count towards graduation). See Make to Innovate Coordinator for registration procedure.



Group-A Aerospace Electives (3 credits), group-B Technical/Engineering Electives (3 credits) and group-C Career Electives (3 credits). Consult advisers for the current approved technical elective list. Group A and B electives may be used for group C.