

# AEROSPACE ENGINEERING 4-Year Plan for Undergraduates

## 2016 catalog/graduation requirements

Fall 15 Credits	Calculus I Math 165 4 Credits	Chemistry for Engineers Chem167/177 4 Credits	Engineering Problem Solving AerE 160/H 3 Credits	Library Instruction Libr 160 1 Credit	English Composition I Engl 150 3 Credits	Engineering Orientation Engr 101	First Year
	Spring 15 Credits	Calculus II Math 166 4 Credits	Classical Physics I Phys 221 5 Credits	Aerospace Analysis I AerE 161/H 3 Credits	General Education GenEd 3 Credits	Advising Seminar AerE 192/H	
Fall 18 Credits	Multi-variable Calculus Math 265 4 Credits	Classical Physics II Phys 222 5 Credits	Intro to performance & design AerE 261 3 Credits	Statics for Engineers EM 274 3 Credits	English Composition II Engl 250 3 Credits	Second Year	
	Spring 16 Credits	Differential Equations Math 267 4 Credits	Dynamics EM 345 3 Credits	Intro to Material Sci & Engrg MatE 273 3 Credits	Mechanics of Materials EM 324 3 Credits		General Education GenEd 3 Credits
Fall 17 Credits	Flight Structures AerE 321 3 Credits	Structures Lab AerE 322 2 Credits	Thermodynamics ME 231 3 Credits	Aerodynamics AerE 310 3 Credits	Astrodynamics AerE 351 3 Credits	Aircraft Flight Dynamics AerE 355 3 Credits	Third Year
	Spring 18 Credits	Advanced Flight Structures AerE 421 3 Credits	Numerical Methods AerE 361 3 Credits	Aerospace Systems AerE 362 3 Credits	Aerodynamics Lab AerE 344 3 Credits	Gas Dynamics AerE 311 3 Credits	
Fall 15 Credits	Technical Elective TechE 3 Credits	Technical Elective TechE 3 Credits	Design Methodology AerE 461 3 Credits	Aerospace Vehicle Propulsion AerE 411 3 Credits	Technical Comm Engl 314 3 credits	Fourth Year	
	Spring 15 Credits	Technical Elective TechE 3 Credits	Technical Elective TechE 3 Credits	Design of Aerospace Systems AerE 462 3 Credits	General Education GenEd 3 Credits		General Education GenEd 3 Credits

Basic Program	Course Groups	Aerospace Requirement	Technical Elective	Engineering Fundamentals
	Mathematics	Chemistry & Physics	General Education	Advising

**Basic Program - 21 credits** Must be completed (Basic Program GPA > 2.0 and Cumulative GPA > 2.0) before 200-Level Engr courses

Calculus I	Math 165	4	Calculus II	Math 165	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 250	Engl 250	3

**English Proficiency - 9 credits**

A grade of C or better in both English 150 and 250; part of basic program

English Comp I	Engl 150	3
English Comp II	Engl 250	3
Technical Comm	Engl 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.
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**Aerospace Engineering - 47 credits in 7 areas of study**

<b>Aerodynamics</b>	Aerodynamics	AerE 310	3
	Gas Dynamics	AerE 311	3
	Aerodynamics Lab	AerE 344	3
<b>Propulsion</b>	Propulsion	AerE 411	3
<b>Structures</b>	Flight Structures	AerE 321	3
	Structures Lab	AerE 322	3
	Adv Flight Structures	AerE 421	2
<b>Controls</b>	Flight Dynamics	AerE 355	3
	Control Systems	AerE 331	3
<b>Astroynamics</b>	Astroynamics	AerE 351	3
<b>Systems and Design</b>	Aerospace Systems	AerE 362	3
	Design Methodology	AerE 461	3
	Design of Aero Sys	AerE 462	3
<b>Analysis and Numerics</b>	Aerospace Analysis I	AerE 161/H	3
	Aerospace Analysis II	AerE 261	3
	Numerical Methods	AerE 361	3

**Technical Electives - 12 credits - Adviser Approval Required**

Make to Innovate Undergraduate Research	AerE 290- Freshman and Sophomores; Technical credits do not count towards graduation. AerE 490 - Juniors and Seniors; Max of 6 technical credits may count towards graduation. See Academic Adviser for registration procedure.
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Technical Electives	(A) Aerospace Electives (3): Propulsion - AerE 412, Experimental Mechanics - AerE417, Structures - AerE 422, 426, Composites - AerE 423, Controls - AerE 432, Space Dyn & Ctrl. - AerE 433, V/STOL - AerE 442, Comp. Fluid Dynamics - AerE 446, Turbo. Mach. - AerE 448, Astroynamics - AerE 451, Intro to Multi-disciplinary Design Optimization - AerE 463, Spacecraft Systems - AerE 464, Large Scale Complex Eng. Syst. - AerE 468, Wind Energy - AerE 481 (B) Technical/Engineering Electives (3): Select from list approved by the Department; group (A) courses may be used to satisfy this requirement. (C) Career (6): Select from the courses in (A) or (B) or from 300/400/500 level courses in the ISU Catalog.
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