

B.S. in Aerospace Engineering

The Bachelor of Science in Aerospace Engineering is offered at the Daytona Beach, Florida, campus and the Prescott, Arizona, campus of Embry-Riddle Aeronautical University.

Students will build a strong foundation in engineering theory and hands-on design while learning in aviation-focused environments supported by expert faculty and industry-connected resources.

The **Daytona Beach Campus** Aerospace Engineering department is the largest of its kind in the country, with students benefiting from state-of-the-art resources — the same tools in use by aerospace engineering professionals around the globe. The Bachelor of Science in Aerospace Engineering is accredited by the Engineering Accreditation Commission (<https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2025-2026/>) of ABET (<https://www.abet.org/>), under the commission's General Criteria and Program Criteria for Aerospace and Similarly Named Engineering Programs. Details about Program Educational Outcomes, Student Learning Outcomes and Enrollment Data can be found on our Aerospace Engineering Program Accreditation Information (<https://daytonabeach.erau.edu/college-engineering/aerospace/accreditation>) page.

The **Prescott Campus** Bachelor of Science in Aerospace Engineering empowers students to excel in various aspects of the field, offering a dynamic learning environment with high-tech facilities such as the Aerospace Experimentation and Fabrication Building (AXFAB) and state-of-the-art labs. The Aerospace Engineering program is housed in the Department of Aerospace Engineering in the College of Engineering. The Bachelor of Science in Aerospace Engineering is accredited by the Engineering Accreditation Commission (<https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2025-2026/>) of ABET (<https://www.abet.org/>), under the commission's General Criteria and Program Criteria for Aerospace and Similarly Named Engineering Programs.

Program-Level Student Learning Outcomes

Students will:

- Have an ability to communicate effectively with a range of audiences.
- Have an ability to function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.
- Have an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Have an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Have an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Have an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Have an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Daytona Beach Program Requirements

General Education Requirements	42
Core Requirements	47

Area of Concentration	40
Total Credits	129

Program Details

The Bachelor of Science in Aerospace Engineering program requires successful completion of a minimum of 129 credit hours. The program may be completed in eight semesters assuming appropriate background and full-time enrollment. Students must earn a cumulative grade point average of 2.5 or higher and must complete all required courses with a grade of "C" or better.

Remaining on Track for AE

Students must also achieve a grade point average of 2.50 or higher in the courses prescribed by the College of Engineering's Engineering Fundamentals Program, including those in the First-Year for Aerospace curriculum. In addition, students must achieve a grade point average of 2.50 or higher in the CHEM, ENGR, MATH, and PHYS courses prescribed in the First-Year for Aerospace curriculum prior to and upon completion of AERO 201.

General Education Requirements

Communication	9
COMM 122	English Composition
COMM 221	Technical Communication
COMM 219	Speech
Humanities - Lower Level	3
Social Sciences - Lower Level	3
Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper Level	3
Computer Science/Information Technology	3
ENGR 115	Introduction to Computing for Engineers
Mathematics	8
MATH 241	Calculus and Analytical Geometry I
MATH 242	Calculus and Analytical Geometry II
Physical/Life Sciences	10
CHEM 110	General Chemistry I
CHEM 110L	General Chemistry I Laboratory
PHYS 150	Physics with Calculus I
PHYS 160	Physics with Calculus II
Total Credits	42

Core Requirements

UNIV 101	College Success	1
ENGR 101	Introduction to Engineering	2
ENGR 120	Graphical Communications	3
or ENGR 200	Computer Aided Design of Aerospace Systems	
or ENGR 201	Computer Aided Design of Mechanical Systems	
ESCI 201	Statics	3
ESCI 202	Solid Mechanics	3
ESCI 204	Dynamics	3
ESCI 208	Thermodynamics	3
AERO 318	Aerospace Structures I	3
AERO 316	Aerospace Engineering Materials	3
or ESCI 320 & 320L	Engineering Materials Science and Engineering Materials Science Laboratory	
AERO 416 & 416L	Aerospace Structures and Instrumentation and Aerospace Structures and Instrumentation Laboratory	2
or ESCI 324 & 324L	Measurements and Instrumentation and Measurements and Instrumentation Laboratory	

AERO 442 & 442L	Experimental Dynamics and Control and Experimental Dynamics and Control Laboratory	2
or AERO 430	Control System Analysis and Design	
ELEC 327 & 327L	Electrical Engineering Fundamentals and Electrical Engineering Fundamentals Laboratory	4
or ELEC 335 & 335L	Electrical Engineering I and Electrical Engineering I Laboratory	
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
PHYS 250	Physics with Calculus III	3
PHYS 250L	Physics with Calculus III Laboratory	1
Technical Elective		3
Total Credits		47

Areas of Concentration

Aeronautics

AERO 313	Space Mechanics	3
AERO 314	Experimental Aerodynamics	1
AERO 314L	Experimental Aerodynamics Laboratory	1
AERO 418	Aerospace Structures II	3
AERO 420	Aircraft Preliminary Design	4
AERO 421	Aircraft Detail Design	4
MATH 441	Mathematical Methods for Engineering and Physics I	3
AERO 201	Aerospace Flight Vehicles	3
AERO 307	Incompressible Aerodynamics	3
AERO 308	Compressible Aerodynamics	3
AERO 403	Jet Propulsion	3
AERO 413	Airplane Stability and Control	3
AERO 432	Flight Dynamics and Control	3
AE Technical Elective		3
Total Credits		40

Astronautics

AERO 313	Space Mechanics	3
AERO 414	Space Propulsion	3
AERO 323	Spacecraft Systems	3
or ENGP 312	Space Systems Engineering	
AERO 426	Spacecraft Attitude Dynamics	3
AERO 427	Spacecraft Preliminary Design	4
AERO 445	Spacecraft Detail Design	4
MATH 392	Applied Linear Algebra	3
AERO 201	Aerospace Flight Vehicles	3
AERO 319	Aerodynamics for Engineers	3
AERO 314	Experimental Aerodynamics	1
AERO 314L	Experimental Aerodynamics Laboratory	1
AERO 429	Space Environmental Applications	3
AERO 434	Spacecraft Control	3
AE Technical Elective		3
Total Credits		40

Jet Propulsion

MATH 441	Mathematical Methods for Engineering and Physics I	3
AERO 201	Aerospace Flight Vehicles	3
AERO 307	Incompressible Aerodynamics	3
AERO 308	Compressible Aerodynamics	3

AERO 313	Space Mechanics	3
AERO 314	Experimental Aerodynamics	1
AERO 314L	Experimental Aerodynamics Laboratory	1
AERO 403	Jet Propulsion	3
AERO 413	Airplane Stability and Control	3
AERO 418	Aerospace Structures II	3
AERO 432	Flight Dynamics and Control	3
AERO 435	Jet Propulsion Preliminary Design	4
AERO 440	Jet Propulsion Detail Design	4
AE Technical Elective		3
Total Credits		40

Rocket Propulsion

MATH 392	Applied Linear Algebra	3
AERO 201	Aerospace Flight Vehicles	3
AERO 307	Incompressible Aerodynamics	3
AERO 308	Compressible Aerodynamics	3
AERO 313	Space Mechanics	3
AERO 314	Experimental Aerodynamics	1
AERO 314L	Experimental Aerodynamics Laboratory	1
AERO 323	Spacecraft Systems	3
AERO 414	Space Propulsion	3
AERO 426	Spacecraft Attitude Dynamics	3
AERO 434	Spacecraft Control	3
AERO 441	Rocket Propulsion Preliminary Design	4
AERO 451	Rocket Propulsion Detail Design	4
AE Technical Elective		3
Total Credits		40

Suggested Plans of Study

Area of Concentration: Aeronautics

Year One

Requirements	Credits
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 101 - Introduction to Engineering	2
ENGR 120 - Graphical Communications	3
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
UNIV 101 - College Success	1
COMM 122 - English Composition	3
Semester Hours	17

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
ENGR 115 - Introduction to Computing for Engineers	3
PHYS 150 - Physics with Calculus I	3
Social Sciences - Lower Level	3
Humanities - Lower Level (140 Series)	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
MATH 243 - Calculus and Analytical Geometry III	4
ESCI 201 - Statics	3
ESCI 208 - Thermodynamics	3
PHYS 160 - Physics with Calculus II	3
COMM 221 - Technical Communication	3
Semester Hours	16

Requirements	Credits
MATH 345 - Differential Equations and Matrix Methods	4
ESCI 202 - Solid Mechanics	3
ESCI 204 - Dynamics	3
AERO 201 - Aerospace Flight Vehicles	3
PHYS 250 - Physics with Calculus III	3
PHYS 250L - Physics with Calculus III Laboratory	1
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Three

Requirements	Credits
MATH 441 - Mathematical Methods for Engineering and Physics I	3
AERO 307 - Incompressible Aerodynamics	3
AERO 308 - Compressible Aerodynamics	3
AERO 313 - Space Mechanics	3
ELEC 327 - Electrical Engineering Fundamentals	3
ELEC 327L - Electrical Engineering Fundamentals Laboratory	1
Semester Hours	16

Requirements	Credits
AERO 314 - Experimental Aerodynamics	1
AERO 314L - Experimental Aerodynamics Laboratory	1
AERO 316 - Aerospace Engineering Materials	3
AERO 318 - Aerospace Structures I	3
AERO 403 - Jet Propulsion	3
AERO 413 - Airplane Stability and Control	3
COMM 219 - Speech	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Four

Requirements	Credits
AERO 416 - Aerospace Structures and Instrumentation Laboratory	1

AERO 416L - Aerospace Structures and Instrumentation Laboratory	1
AERO 418 - Aerospace Structures II	3
AERO 420 - Aircraft Preliminary Design	4
AERO 432 - Flight Dynamics and Control	3
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	15

Requirements	Credits
AERO 421 - Aircraft Detail Design	4
AERO 442 - Experimental Dynamics and Control	1
AERO 442L - Experimental Dynamics and Control Laboratory	1
Technical Elective	3
AE Technical Elective	3
Humanities/Social Sciences - Upper Level	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Area of Concentration: Astronautics

Year One

Requirements	Credits
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 101 - Introduction to Engineering	2
ENGR 120 - Graphical Communications	3
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
UNIV 101 - College Success	1
COMM 122 - English Composition	3
Semester Hours	17

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
ENGR 115 - Introduction to Computing for Engineers	3
PHYS 150 - Physics with Calculus I	3
Social Sciences - Lower Level	3
Humanities - Lower Level (140 Series)	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
MATH 243 - Calculus and Analytical Geometry III	4
ESCI 201 - Statics	3
ESCI 208 - Thermodynamics	3

PHYS 160 - Physics with Calculus II	3
COMM 221 - Technical Communication	3
Semester Hours	16

Requirements	Credits
ESCI 202 - Solid Mechanics	3
ESCI 204 - Dynamics	3
AERO 201 - Aerospace Flight Vehicles	3
PHYS 250 - Physics with Calculus III	3
PHYS 250L - Physics with Calculus III Laboratory	1
MATH 345 - Differential Equations and Matrix Methods	4
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Three

Requirements	Credits
MATH 392 - Applied Linear Algebra	3
AERO 313 - Space Mechanics	3
AERO 319 - Aerodynamics for Engineers	3
AERO 323 - Spacecraft Systems	3
ELEC 327 - Electrical Engineering Fundamentals	3
ELEC 327L - Electrical Engineering Fundamentals Laboratory	1
Semester Hours	16

Requirements	Credits
AERO 314 - Experimental Aerodynamics	1
AERO 314L - Experimental Aerodynamics Laboratory	1
AERO 316 - Aerospace Engineering Materials	3
AERO 318 - Aerospace Structures I	3
AERO 414 - Space Propulsion	3
AERO 426 - Spacecraft Attitude Dynamics	3
COMM 219 - Speech	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Four

Requirements	Credits
AERO 416 - Aerospace Structures and Instrumentation	1
AERO 416L - Aerospace Structures and Instrumentation Laboratory	1
AERO 427 - Spacecraft Preliminary Design	4
AERO 429 - Space Environmental Applications	3
AERO 434 - Spacecraft Control	3

Humanities/Social Sciences - Lower or Upper Level	3
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Semester Hours	15
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Requirements	Credits
AERO 442 - Experimental Dynamics and Control	1
AERO 442L - Experimental Dynamics and Control Laboratory	1
AERO 445 - Spacecraft Detail Design	4
Technical Elective	3
AE Technical Elective	3
Humanities/Social Sciences - Upper Level	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Area of Concentration: Jet Propulsion

Year One

Requirements	Credits
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 101 - Introduction to Engineering	2
ENGR 120 - Graphical Communications	3
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
UNIV 101 - College Success	1
COMM 122 - English Composition	3
Semester Hours	17

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
ENGR 115 - Introduction to Computing for Engineers	3
PHYS 150 - Physics with Calculus I	3
Social Sciences - Lower Level	3
Humanities - Lower Level (140 Series)	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
MATH 243 - Calculus and Analytical Geometry III	4
ESCI 201 - Statics	3
ESCI 208 - Thermodynamics	3
PHYS 160 - Physics with Calculus II	3
COMM 221 - Technical Communication	3
Semester Hours	16

Requirements	Credits
MATH 345 - Differential Equations and Matrix Methods	4
ESCI 202 - Solid Mechanics	3
ESCI 204 - Dynamics	3
AERO 201 - Aerospace Flight Vehicles	3
PHYS 250 - Physics with Calculus III	3
PHYS 250L - Physics with Calculus III Laboratory	1
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Three

Requirements	Credits
MATH 441 - Mathematical Methods for Engineering and Physics I	3
AERO 307 - Incompressible Aerodynamics	3
AERO 308 - Compressible Aerodynamics	3
AERO 313 - Space Mechanics	3
ELEC 327 - Electrical Engineering Fundamentals	3
ELEC 327L - Electrical Engineering Fundamentals Laboratory	1
Semester Hours	16

Requirements	Credits
AERO 314 - Experimental Aerodynamics	1
AERO 314L - Experimental Aerodynamics Laboratory	1
AERO 316 - Aerospace Engineering Materials	3
AERO 318 - Aerospace Structures I	3
AERO 403 - Jet Propulsion	3
AERO 413 - Airplane Stability and Control	3
COMM 219 - Speech	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Four

Requirements	Credits
AERO 416 - Aerospace Structures and Instrumentation	1
AERO 416L - Aerospace Structures and Instrumentation Laboratory	1
AERO 418 - Aerospace Structures II	3
AERO 432 - Flight Dynamics and Control	3
AERO 435 - Jet Propulsion Preliminary Design	4
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	15

Requirements	Credits
AERO 440 - Jet Propulsion Detail Design	4
AERO 442 - Experimental Dynamics and Control	1
AERO 442L - Experimental Dynamics and Control Laboratory	1
Technical Elective	3
AE Technical Elective	3
Humanities/Social Sciences - Upper Level	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Area of Concentration: Rocket Propulsion

Year One

Requirements	Credits
MATH 241 - Calculus and Analytical Geometry I	4
ENGR 101 - Introduction to Engineering	2
ENGR 120 - Graphical Communications	3
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
UNIV 101 - College Success	1
COMM 122 - English Composition	3
Semester Hours	17

Requirements	Credits
MATH 242 - Calculus and Analytical Geometry II	4
ENGR 115 - Introduction to Computing for Engineers	3
PHYS 150 - Physics with Calculus I	3
Social Sciences - Lower Level	3
Humanities - Lower Level	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
MATH 243 - Calculus and Analytical Geometry III	4
ESCI 201 - Statics	3
ESCI 208 - Thermodynamics	3
PHYS 160 - Physics with Calculus II	3
COMM 221 - Technical Communication	3
Semester Hours	16

Requirements	Credits
MATH 345 - Differential Equations and Matrix Methods	4
ESCI 202 - Solid Mechanics	3
ESCI 204 - Dynamics	3

AERO 201 - Aerospace Flight Vehicles	3
PHYS 250 - Physics with Calculus III	3
PHYS 250L - Physics with Calculus III Laboratory	1
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Three

Requirements	Credits
MATH 392 - Applied Linear Algebra	3
AERO 307 - Incompressible Aerodynamics	3
AERO 308 - Compressible Aerodynamics	3
AERO 313 - Space Mechanics	3
ELEC 327 - Electrical Engineering Fundamentals	3
ELEC 327L - Electrical Engineering Fundamentals Laboratory	1
Semester Hours	16

Requirements	Credits
AERO 314 - Experimental Aerodynamics	1
AERO 314L - Experimental Aerodynamics Laboratory	1
AERO 316 - Aerospace Engineering Materials	3
AERO 318 - Aerospace Structures I	3
AERO 414 - Space Propulsion	3
AERO 426 - Spacecraft Attitude Dynamics	3
COMM 219 - Speech	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Four

Requirements	Credits
AERO 416 - Aerospace Structures and Instrumentation	1
AERO 416L - Aerospace Structures and Instrumentation Laboratory	1
AERO 323 - Spacecraft Systems	3
AERO 434 - Spacecraft Control	3
AERO 441 - Rocket Propulsion Preliminary Design	4
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	15

Requirements	Credits
AERO 442 - Experimental Dynamics and Control	1
AERO 442L - Experimental Dynamics and Control Laboratory	1
AERO 451 - Rocket Propulsion Detail Design	4

Technical Elective	3
AE Technical Elective	3
Humanities/Social Sciences - Upper Level	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Prescott Program Requirements

General Education Requirements	42
Core Requirements	47
Area of Concentration	40
Total Credits	129

Program Details

The Bachelor of Science in Aerospace Engineering program requires successful completion of a minimum of 129 credit hours. The program may be completed in eight semesters assuming appropriate background and full-time enrollment. A minimum cumulative grade point average of 2.00 is needed for all required AERO, ENGR, ENGP, ESCI, and MECH courses, excluding technical electives. The courses necessary to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students must have a C or better in all prerequisites for all required AERO, ENGR, ENGP, ESCI, COMM 221, MECH, and SYSE courses.

General Education Requirements

Communication	9
COMM 122 English Composition	
COMM 221 Technical Communication	
COMM 420 Advanced Technical Communication I & COMM 430 and Advanced Technical Communication II	
Humanities - Lower Level	3
Social Sciences - Lower Level	3
ECON 225 Engineering Economics	
Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper Level	3
HUMN 330 Values and Ethics	
Computer Science/Information Technology	3
ENGR 115 Introduction to Computing for Engineers	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences	10
CHEM 113 General Chemistry for Engineering	
PHYS 161 Physics with Calculus I and II	
Math/Science Elective	
Total Credits	42

Core Requirements

The following course of study outlines the quickest and most cost-efficient route for students to earn their B.S. in Aerospace Engineering. Students are encouraged to follow the course of study to ensure they complete all program required courses and their prerequisites within four years.

ENGR 101	Introduction to Engineering	2
ENGR 120	Graphical Communications	3
or ENGR 200	Computer Aided Design of Aerospace Systems	
or ENGR 201	Computer Aided Design of Mechanical Systems	

ESCI 201	Statics	3
ESCI 202	Solid Mechanics	3
ESCI 204	Dynamics	3
ESCI 208	Thermodynamics	3
AERO 318	Aerospace Structures I	3
AERO 316	Aerospace Engineering Materials	3
or ESCI 320 & 320L	Engineering Materials Science and Engineering Materials Science Laboratory	
AERO 416 & 416L	Aerospace Structures and Instrumentation and Aerospace Structures and Instrumentation Laboratory	3
or ESCI 324 & 324L	Measurements and Instrumentation and Measurements and Instrumentation Laboratory	
AERO 442 & 442L	Experimental Dynamics and Control and Experimental Dynamics and Control Laboratory	3
or AERO 430	Control System Analysis and Design	
ELEC 327 & 327L	Electrical Engineering Fundamentals and Electrical Engineering Fundamentals Laboratory	3
or ELEC 335 & 335L	Electrical Engineering I and Electrical Engineering I Laboratory	
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
PHYS 250	Physics with Calculus III	3
PHYS 250L	Physics with Calculus III Laboratory	1
Technical Elective		3
Total Credits		47

Areas of Concentration

Aeronautics

AERO 313	Space Mechanics (OR Astro Elective)	3
AERO 314	Experimental Aerodynamics	1
AERO 314L	Experimental Aerodynamics Laboratory	1
AERO 418	Aerospace Structures II (OR Structures Elective)	3
AERO 420	Aircraft Preliminary Design	4
AERO 421	Aircraft Detail Design	4
AERO 301	Aerodynamics I	3
AERO 302	Aerodynamics II	3
AERO 317	Aircraft Flight Mechanics and Performance	3
AERO 423	Airplane Stability, Dynamics, and Control	3
ENGR 310	Advanced Engineering Computation	3
ESCI 206	Fluid Mechanics	3
MECH 360	Airbreathing and Rocket Propulsion	3
COE Technical Elective		3
Total Credits		40

Astronautics

AERO 313	Space Mechanics	3
AERO 414	Space Propulsion	3
AERO 323	Spacecraft Systems	3
or ENGP 312	Space Systems Engineering	
AERO 426	Spacecraft Attitude Dynamics	3
AERO 427	Spacecraft Preliminary Design	4
AERO 445	Spacecraft Detail Design	4
CPSC 223	Scientific Programming in C	3
ESCI 206	Fluid Mechanics	3
AERO 302	Aerodynamics II	3
CESC 325	Fundamentals of Applied Microcontrollers	3

CESC 325L	Fundamentals of Applied Microcontrollers Laboratory	1
AERO 324	Experimental Space Systems Engineering	2
AERO 324L	Experimental Space Systems Engineering Laboratory	1
COE Technical Elective		4
Total Credits		40

Suggested Plans of Study

Area of Concentration: Aeronautics

Year One

Requirements	Credits
CHEM 113 - General Chemistry for Engineering	3
COMM 122 - English Composition	3
ENGR 101 - Introduction to Engineering	2
MATH 241 - Calculus and Analytical Geometry I	4
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	15

Requirements	Credits
ECON 225 - Engineering Economics	3
ENGR 115 - Introduction to Computing for Engineers	3
MATH 242 - Calculus and Analytical Geometry II	4
PHYS 161 - Physics with Calculus I and II	4
Humanities - Lower Level	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 32

Year Two

Requirements	Credits
COMM 221 - Technical Communication	3
ESCI 201 - Statics	3
ESCI 208 - Thermodynamics	3
MATH 243 - Calculus and Analytical Geometry III	4
PHYS 250 - Physics with Calculus III	3
PHYS 250L - Physics with Calculus III Laboratory	1
Semester Hours	17

Requirements	Credits
AERO 317 - Aircraft Flight Mechanics and Performance	3
ENGR 310 - Advanced Engineering Computation	3
ESCI 202 - Solid Mechanics	3
ESCI 206 - Fluid Mechanics	3
MATH 345 - Differential Equations and Matrix Methods	4
Semester Hours	16

Total Credits

Total Hours for All Requirements: 33

Year Three

Requirements	Credits
AERO 301 - Aerodynamics I	3
AERO 318 - Aerospace Structures I	3
ELEC 335 - Electrical Engineering I	2
ELEC 335L - Electrical Engineering I Laboratory	1
ENGR 200 - Computer Aided Design of Aerospace Systems or 201 - Computer Aided Design of Mechanical Systems	3
ESCI 204 - Dynamics	3
Semester Hours	15

Requirements	Credits
AERO 302 - Aerodynamics II	3
AERO 314 - Experimental Aerodynamics	1
AERO 314L - Experimental Aerodynamics Laboratory	1
AERO 423 - Airplane Stability, Dynamics, and Control	3
ESCI 320 - Engineering Materials Science	2
ESCI 320L - Engineering Materials Science Laboratory	1
MECH 360 - Airbreathing and Rocket Propulsion	3
Mathematics or Physical/Life Sciences Upper Level Elective	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 32

Year Four

Requirements	Credits
AERO 420 - Aircraft Preliminary Design	4
AERO 430 - Control System Analysis and Design	3
COMM 420 - Advanced Technical Communication I	1
COMM 430 - Advanced Technical Communication II	2
ESCI 324 - Measurements and Instrumentation	2
ESCI 324L - Measurements and Instrumentation Laboratory	1
Structures Elective	3
Semester Hours	16

Requirements	Credits
AERO 421 - Aircraft Detail Design	4
HUMN 330 - Values and Ethics	3
Astro Elective	3
Technical Elective	3
Technical Elective	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 32

Area of Concentration: Astronautics**Year One**

Requirements	Credits
CHEM 113 - General Chemistry for Engineering	3
COMM 122 - English Composition	3
ENGR 101 - Introduction to Engineering	2
MATH 241 - Calculus and Analytical Geometry I	4
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	15

Requirements	Credits
ECON 225 - Engineering Economics	3
ENGR 115 - Introduction to Computing for Engineers	3
MATH 242 - Calculus and Analytical Geometry II	4
PHYS 161 - Physics with Calculus I and II	4
Humanities - Lower Level	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 32

Year Two

Requirements	Credits
COMM 221 - Technical Communication	3
ESCI 201 - Statics	3
ESCI 208 - Thermodynamics	3
MATH 243 - Calculus and Analytical Geometry III	4
PHYS 250 - Physics with Calculus III	3
PHYS 250L - Physics with Calculus III Laboratory	1
Semester Hours	17

Requirements	Credits
CPSC 125 - Computer Science I	3
CPSC 125L - Computer Science I Laboratory	1
ENGR 200 - Computer Aided Design of Aerospace Systems or 201 - Computer Aided Design of Mechanical Systems	3
ESCI 202 - Solid Mechanics	3
ESCI 204 - Dynamics	3
MATH 345 - Differential Equations and Matrix Methods	4
Semester Hours	17

Total Credits

Total Hours for All Requirements: 34

Year Three

Requirements	Credits
AERO 313 - Space Mechanics	3
AERO 318 - Aerospace Structures I	3
ELEC 335 - Electrical Engineering I	2
ELEC 335L - Electrical Engineering I Laboratory	1
ESCI 206 - Fluid Mechanics	3
Mathematics or Physical/Life Sciences Upper Level Elective	3
Semester Hours	15

Requirements	Credits
AERO 302 - Aerodynamics II	3
AERO 324 - Experimental Space Systems Engineering	2
AERO 324L - Experimental Space Systems Engineering Laboratory	1
CESC 325 - Fundamentals of Applied Microcontrollers	3
CESC 325L - Fundamentals of Applied Microcontrollers Laboratory	1
ENGP 312 - Space Systems Engineering	3
ESCI 324 - Measurements and Instrumentation	2
ESCI 324L - Measurements and Instrumentation Laboratory	1
Semester Hours	16

Total Credits

Total Hours for All Requirements: 31

Year Four

Requirements	Credits
AERO 414 - Space Propulsion	3
AERO 426 - Spacecraft Attitude Dynamics	3
AERO 427 - Spacecraft Preliminary Design	4
COMM 420 - Advanced Technical Communication I	1
COMM 430 - Advanced Technical Communication II	2
ESCI 320 - Engineering Materials Science	2
ESCI 320L - Engineering Materials Science Laboratory	1
Semester Hours	16

Requirements	Credits
AERO 430 - Control System Analysis and Design	3
AERO 445 - Spacecraft Detail Design	4
HUMN 330 - Values and Ethics	3
Technical Elective	3
Technical Elective	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 32