

B.S. in Space Operations

The Bachelor of Science in Space Operations integrates principles from the space industry and regulatory agencies, with coursework in mission operations, mission training and launch licensing. The interdisciplinary program prepares students to address operational challenges across multiple areas of the space industry. Students develop knowledge in space mission operations, management, policy and planning, including public, private and cooperative spaceflight.

At the **Daytona Beach Campus**, the Bachelor of Science in Space Operations is housed in the Department of Applied Aviation Sciences in the College of Aviation. This interdisciplinary, non-engineering program includes coursework in operations, safety, training, human factors, policy and planning within space research and exploration. The program is developed in collaboration with the commercial space industry and affiliated agencies, including NASA and the FAA Office of Commercial Space Transportation (FAA-AST).

Program-Level Student Learning Outcomes

Students will:

- Create space mission design, planning, and execution relevant to current industry practices.
- Evaluate spacecraft systems, applications, sustainability, and safety practices within the space operations industry.
- Analyze human spaceflight history, life support implications, and training regimens from historical and contemporary programs.
- Analyze space policy development and application to space activity.
- Identify space mission history, program development, and evolution to current trends.

Daytona Beach Program Requirements

General Education Requirements	38
Core Requirements	31
Program Support Courses	24
Minor	15-20
Electives	7-12
Total Credits	120

General Education Requirements

Communication	9
COMM 122 English Composition	
COMM 219 Speech	
COMM 221 Technical Communication	
Humanities - Lower Level	3
Social Sciences - Lower Level	3
PSYC 101 Introduction to Psychology	
Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper Level	3
Computer Science/Information Technology	3
Mathematics	6
MATH 111 Pre-calculus for Aviation	
MATH 112 Applied Calculus for Aviation	
Physical/Life Sciences	8
PHYS 113 Introductory Physics I	
PHYS 113L Introductory Physics I Laboratory	
PHYS/BIOL/CHEM 100-400 Level Lecture	
PHYS/BIOL/CHEM 100-400 Level Laboratory	
Total Credits	38

Core Requirements

SPAC 110	Introduction to Space Flight	3
SPAC 230	Space Policy and Law - History	3
SPAC 300	Satellite and Spacecraft Systems	3
SPAC 400	Introduction to Space Navigation	3
SPAC 410	Space Operations Planning and Analysis	3
SPAC 490	Senior Space Operations Project	3
UNIV 101	College Success	1
Choose Two of the Following:		6
SPAC 200	Planetary and Space Exploration	
SPAC 210	Space Transportation System	
SPAC 215	Space Station Systems and Operations	
SPAC 220	Life Support Systems	
Choose Two of the Following:		6
SPAC 330	Spaceflight and Operations Training	
SPAC 340	Russian Space Operations and Technology	
SPAC 390	Payloads and Integration	
CESC/CPSC/MATH/SFTW/SYSE 300-400 Level Course		
Total Credits		31

Program Support Courses

AVMG 424	Project Management in Aviation Operations	3
AVSF 210	Introduction to Aerospace Safety	3
CPSC 118	Fundamentals of Computer Programming	3
ENGR 115	Introduction to Computing for Engineers	3
HFCT 300	Human Factors Principles and Fundamentals	3
MGMT 201	Principles of Management	3
SCLM 452	Lean Six-Sigma in Aviation and Aerospace	3
STAT 222	Business Statistics	3
or MATH 412	Probability and Statistics	
Total Credits		24

Minors

Choose One Approved Minor *	15-20
Total Credits	15-20

* Approved Minors:

Minor in Applied Mathematics (<https://catalog.erau.edu/programs/undergraduate/minors/applied-mathematics/>) (20 credits)
 Minor in Aviation Law (<https://catalog.erau.edu/programs/undergraduate/minors/aviation-law/>) (15 credits)
 Minor in Computer Science (<https://catalog.erau.edu/programs/undergraduate/minors/computer-science/>) (16 credits)
 Minor in Human Factors (<https://catalog.erau.edu/programs/undergraduate/minors/human-factors/>) (15 credits)
 Minor in Project Management (<https://catalog.erau.edu/programs/undergraduate/minors/project-management/>) (15 credits)
 Minor in Systems Engineering (<https://catalog.erau.edu/programs/undergraduate/minors/systems-engineering/>) (15 credits)

Electives

Open Electives **	4-9
Open Elective - Upper Level	3
Total Credits	7-12

** Credit quantity depends on the minor chosen. In cases where individual minor courses are also required by the major, additional open elective credits will become available.

Suggested Plan of Study

Year One

Requirements	Credits
COMM 122 - English Composition	3
BUAN 125 - Foundations in Business Data Analytics	3
MATH 111 - Pre-calculus for Aviation	3
AVSF 210 - Introduction to Aerospace Safety	3
SPAC 110 - Introduction to Space Flight	3
UNIV 101 - College Success	1
Semester Hours	16

Requirements	Credits
MATH 112 - Applied Calculus for Aviation	3
PHYS 113 - Introductory Physics I	3
PHYS 113L - Introductory Physics I Laboratory	1
PSYC 101 - Introduction to Psychology	3
HUMN 14X Elective	3
SPAC 2XX Elective	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 32

Year Two

Requirements	Credits
COMM 221 - Technical Communication	3
HFCT 300 - Principles and Fundamentals	3
PHYS/BIO/CHEM 100-400 Level Lecture	3
PHYS/BIO/CHEM 100-400 Level Laboratory	1
SPAC 2XX Elective	3
Minor/Open Elective	3
Semester Hours	16

Requirements	Credits
SPAC 230 - Space Policy and Law - History	3
COMM 219 - Speech	3
ENGR 115 - Introduction to Computing for Engineers	3
STAT 222 - Business Statistics or MATH 412 - Probability and Statistics	3
Minor/Open Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 31

Year Three

Requirements	Credits
MGMT 201 - Principles of Management	3
SPAC 300 - Satellite and Spacecraft Systems	3
HUMN/GOVT/HIST/SOSC - Lower or Upper Level	3
SPAC 3XX Elective (or CESC/CPSC/MATH/SFTW/SYSE 300-400 Level Course)	3
Minor/Open Elective	3
Semester Hours	15

Requirements	Credits
SPAC 400 - Introduction to Space Navigation	3
CPSC 118 - Fundamentals of Computer Programming	3
SCLM 452 - Lean Six-Sigma in Aviation and Aerospace	3
Minor/Open Elective	3
SPAC 3XX Elective (or CESC/CPSC/MATH/SFTW/SYSE 300-400 Level Course)	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
SPAC 410 - Space Operations Planning and Analysis	3
AVMG 424 - Project Management in Aviation Operations	3
Minor/Open Elective	3
Minor/Open Elective	3
Minor/Open Elective - Upper Level	3
Semester Hours	15

Requirements	Credits
SPAC 490 - Senior Space Operations Project	3
HUMN/GOVT/HIST/SOSC - Upper Level	3
Minor/Open Elective	3
Minor/Open Elective	3
Semester Hours	12

Total Credits

Total Hours for All Requirements: 27