

B.S. in Meteorology

Students in the Bachelor of Science in Meteorology program gain knowledge in weather analysis and forecasting, data collection and research. The program prepares students for roles in the National Weather Service, the U.S. military, the aviation industry and media, and supports graduate study in atmospheric sciences and geosciences. Students may also pursue certifications or operations-focused minors in related areas such as emergency management and geographic information systems. The program meets guidelines established by the American Meteorological Society (AMS), the National Weather Service and the U.S. Air Force.

At the **Daytona Beach Campus**, students explore Earth's most impactful atmospheric phenomena across a wide range of spatial and temporal scales. Students investigate meteorological and climate data using statistical analysis and data visualization techniques in a meteorology lab equipped with workstations running state-of-the-art software and a broadcast studio equipped with industry standard graphics-generation systems. Through applied study and research, they develop a practical understanding of the overall Earth-atmosphere-ocean system while having the opportunity to focus on any aspect of it.

The B.S. in Applied Meteorology (<https://catalog.erau.edu/programs/undergraduate/bachelors/applied-meteorology/>) degree is offered at the **Prescott Campus**.

Program-Level Student Learning Outcomes

Students will:

- Analyze meteorological and climatological data using relevant statistical methods and tools.
- Demonstrate integrated understanding of the linked Earth–atmosphere–ocean system.
- Effectively communicate scientific information and its uncertainties in oral, written, and visual form while adhering to the principles of proper ethical behavior within the atmospheric sciences.
- Use one or more computer programming languages to investigate problems in the atmospheric sciences, analyze data, and create relevant visualizations.
- Apply numerical methods, guidance, and manual techniques to predict the future state of the atmosphere.
- Apply equations that govern physical atmospheric processes and responses to explain fundamental principles and behaviors of the atmosphere across spatial and temporal scale.
- Evaluate atmospheric processes, features, and phenomena across a multitude of spatial scales by utilizing diagnostic, prognostic, and technological tools such as surface observations (including METARs and TAFs), satellite data, upper air data, radar data, thermodynamic soundings, numerical weather model output, etc.

Daytona Beach Program Requirements

General Education Requirements	38
Core Requirements	48
Program Support Courses	14
Electives	20
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

Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper Level	3
Computer Science/Information Technology	3
CPSC 118 Fundamentals of Computer Programming	
or ENGR 115Introduction to Computing for Engineers	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences	6
PHYS 150 Physics with Calculus I	
PHYS 160 Physics with Calculus II	
Total Credits	38

Core Requirements

WEAX 201	Introduction to Meteorology	3
WEAX 272	Meteorological Instruments and Data Analysis	3
WEAX 325	General Meteorology	3
WEAX 327	Introduction to Weather Analysis and Forecasting	3
WEAX 365	Satellite and Radar Weather Interpretation	3
WEAX 367	Thermodynamic Meteorology	3
WEAX 368	Physical Meteorology	3
WEAX 374	Dynamic Meteorology I	3
WEAX 375	Dynamic Meteorology II	3
WEAX 378	Synoptic Analysis and Forecasting	3
WEAX 381	Climate Dynamics	3
WEAX 422	Meteorological Statistics and Data Analysis	3
WEAX 462	Numerical Weather Prediction	3
WEAX 466	Advanced Synoptic Analysis and Forecasting	3
WEAX 478	Boundary Layer and Mesoscale Meteorology	3
WEAX 482	Research Methods in Meteorology	3
Total Credits		48

Program Support Courses

CHEM 110	General Chemistry I	3
CHEM 110L	General Chemistry I Laboratory	1
MATH 243	Calculus and Analytical Geometry III	4
MATH 345	Differential Equations and Matrix Methods	4
PHYS 113L	Introductory Physics I Laboratory	1
UNIV 101	College Success	1
Total Credits		14

Electives

Choose One Lower or Upper Level Specified Elective:	3
CIVE 417 Air Pollution	
DSCI 412 Data Visualization	
DSCI 440 Data Mining	
GEOS 210 Introduction to Geographic Information Systems	
GEOS 310 Advanced Geographic Information Systems	
MATH 305 Introduction to Scientific Computing	
MATH 348 Numerical Methods	
MATH 392 Applied Linear Algebra	
MATH 412 Probability and Statistics	
MATH 453 High Performance Scientific Computing	
Any WEAX Course Numbered 200-499, Except WEAX 363	
Choose One Upper Level Specified Elective:	3
CIVE 417 Air Pollution	
DSCI 412 Data Visualization	

DSCI 440	Data Mining
GEOS 310	Advanced Geographic Information Systems
MATH 305	Introduction to Scientific Computing
MATH 348	Numerical Methods
MATH 392	Applied Linear Algebra
MATH 412	Probability and Statistics
MATH 453	High Performance Scientific Computing
Any WEAX Course Numbered 300-499, Except WEAX 363	
Open Electives	14
Total Credits	20

Suggested Plan of Study

Year One

Requirements	Credits
COMM 122 - English Composition	3
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
MATH 241 - Calculus and Analytical Geometry I	4
UNIV 101 - College Success	1
WEAX 201 - Introduction to Meteorology	3
Semester Hours	15

Requirements	Credits
COMM 219 - Speech	3
CPSC 118 - Fundamentals of Computer Programming	3
HUMN 14X Elective	3
MATH 242 - Calculus and Analytical Geometry II	4
Social Sciences - Lower Level	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 31

Year Two

Requirements	Credits
MATH 243 - Calculus and Analytical Geometry III	4
PHYS 113L - Introductory Physics I Laboratory	1
PHYS 150 - Physics with Calculus I	3
WEAX 325 - General Meteorology	3
Open Elective	3
Semester Hours	14

Requirements	Credits
MATH 345 - Differential Equations and Matrix Methods	4
PHYS 160 - Physics with Calculus II	3
WEAX 272 - Meteorological Instruments and Data Analysis	3
WEAX 365 - Satellite and Radar Weather Interpretation	3
WEAX 367 - Thermodynamic Meteorology	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 30

Year Three

Requirements	Credits
WEAX 327 - Introduction to Weather Analysis and Forecasting	3
WEAX 368 - Physical Meteorology	3
WEAX 374 - Dynamic Meteorology I	3
Specified Elective - Lower or Upper Level	3
Humanities/Social Sciences - Lower or Upper Level	3
Semester Hours	15

Requirements	Credits
COMM 221 - Technical Communication	3
WEAX 375 - Dynamic Meteorology II	3
WEAX 378 - Synoptic Analysis and Forecasting	3
Specified Elective - Upper Level	3
Open Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
Humanities/Social Sciences - Upper Level	3
WEAX 422 - Meteorological Statistics and Data Analysis	3
WEAX 462 - Numerical Weather Prediction	3
WEAX 466 - Advanced Synoptic Analysis and Forecasting	3
Open Elective	3
Semester Hours	15

Requirements	Credits
WEAX 381 - Climate Dynamics	3
WEAX 478 - Boundary Layer and Mesoscale Meteorology	3
WEAX 482 - Research Methods in Meteorology	3
Open Elective	3
Open Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30