

B.S. in Data Science

The Data Science program prepares students to analyze and interpret large volumes of data—an increasingly critical skill across all sectors.

At the **Daytona Beach Campus** in Florida, students study statistics, programming, and machine learning while benefiting from extensive research facilities, industry connections, and access to a large technology-focused campus environment.

At the **Prescott Campus** in Arizona, the program emphasizes smaller class sizes and hands-on, project-based learning within a STEM-focused academic setting that encourages collaboration between data science, engineering, and cybersecurity students.

The program is also available online through the **Worldwide Campus**, providing a flexible option for working professionals, military members, and remote learners to develop skills in data analysis, machine learning, and data-driven decision-making from anywhere. This interdisciplinary program focuses on the mathematics, statistics, and computer science necessary to understand and employ machine learning algorithms to model observations and make predictions. The program includes a specialization in Applied Data Science. Students who complete the program will gain a deep understanding of and expertise in the typical data science pipeline: gathering, processing, analyzing, and presenting data.

Program-Level Student Learning Outcomes

Students will:

- Acquire data from a variety of sources including public research, web pages, and social media.
- Assimilate skills acquired through the degree program in application to a capstone project providing solutions to real-world challenges.
- Communicate deftly with proficiency in both verbal and nonverbal communication.
- Convert unstructured and varied data into analysis-ready form.
- Implement data storage and processing architectures across clusters of commodity hardware and cloud resources.
- Use data to construct evidence-based solutions.
- Manage issues related to program performance, scalability, and high-availability.
- Use statistical theory and modern machine learning techniques to model observations and make predictions.
- Present actionable results of data analysis in multimedia formats to both technical and nontechnical audiences.
- Use software packages and libraries to support data analysis.

Daytona Beach Program Requirements

General Education Requirements	39
Core Requirements	33
Area of Concentration	18
Minor or Double Major	15
Electives	15
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
ENGR 115 Introduction to Computing for Engineers or CPSC 223Scientific Programming in C	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences *	7
Total Credits	39

* One course must include a Lab.

Core Requirements

CPSC 222	Introduction to Discrete Structures	3
CPSC 225	Computer Science II	3
CPSC 225L	Computer Science II Laboratory	1
CPSC 315	Data Structures and Analysis of Algorithms	3
CPSC 317	Files and Database Systems	3
DSCI 412	Data Visualization	3
DSCI 413	Statistics for Data Science	3
DSCI 490	Data Science Capstone	3
MATH 243	Calculus and Analytical Geometry III	4
MATH 392	Applied Linear Algebra	3
MATH 412	Probability and Statistics	3
UNIV 101	College Success	1
Total Credits		33

Area of Concentration

Applied Data Science

DSCI 390	Research Project in Industrial Mathematics	3
DSCI 440	Data Mining	3
MATH 210	Introduction to Data Science	3
MATH 360	Mathematical Modeling and Simulation I	3
MATH 305	Introduction to Scientific Computing	3
MATH 453	High Performance Scientific Computing	3
Total Credits		18

Minor or Double Major

All Students Must Declare & Complete Any Minor/Two Degrees of Same Rank/Double Major	15
Total Credits	15

Open Electives

Electives - Upper Level	6
Open Electives - Lower or Upper Level	9
Total Credits	15

Suggested Plan of Study

Year One

Requirements	Credits
COMM 122 - English Composition	3
MATH 241 - Calculus and Analytical Geometry I	4
UNIV 101 - College Success	1
ENGR 115 - Introduction to Computing for Engineers	3

Humanities - Lower Level (140 Series)	3
Semester Hours	14
Requirements	Credits
COMM 219 - Speech	3
MATH 210 - Introduction to Data Science	3
MATH 242 - Calculus and Analytical Geometry II	4
Humanities - Lower Level (140 Series)	3
Physical/Life Sciences	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 30

Year Two

Requirements	Credits
MATH 243 - Calculus and Analytical Geometry III	4
MATH 305 - Introduction to Scientific Computing	3
CPSC 222 - Introduction to Discrete Structures	3
Physical/Life Sciences	3
Physical/Life Sciences Lab	1
Semester Hours	14

Requirements	Credits
COMM 221 - Technical Communication	3
CPSC 225 - Computer Science II and CPSC 225L - Computer Science II Laboratory	4
MATH 412 - Probability and Statistics	3
Open Elective	3
Minor Course	3
Semester Hours	16

Total Credits

Total Hours for All Requirements: 30

Year Three

Requirements	Credits
MATH 392 - Applied Linear Algebra	3
DSCI 390 - Research Project in Industrial Mathematics	3
CPSC 315 - Data Structures and Analysis of Algorithms	3
Minor Elective	3
Open Elective	3
Semester Hours	15

Requirements	Credits
MATH 360 - Mathematical Modeling and Simulation I	3
DSCI 413 - Statistics for Data Science	3
CPSC 317 - Files and Database Systems	3

Minor Elective	3
Open Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
DSCI 412 - Data Visualization	3
DSCI 440 - Data Mining	3
DSCI 490 - Data Science Capstone	3
Minor Elective	3
Open Elective	3
Semester Hours	15

Requirements	Credits
MATH 453 - High Performance Scientific Computing	3
Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper Level	3
Minor Elective	3
Open Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Prescott Program Requirements

General Education Requirements	40
Core Requirements	32
Program Support	19
Track Electives	15
Open Electives	15
Total Credits	121

Program Details

The Bachelor of Science in Data Science program requires successful completion of a minimum of 121 credit hours. The program may be completed in eight semesters, or four years, assuming appropriate background and full-time enrollment. Students pursuing this undergraduate degree must earn a minimum cumulative grade point average (CGPA) of 2.00 for all work completed at the University. Students are required to complete a track of specialization and may select coursework from disciplines such as Business, Computer Science, Cyber Security, Economics, Intelligence, Mathematics, Physics, or Psychology, subject to program approval. The courses necessary to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students are encouraged to participate in applied practicum experiences, such as internships, cooperative education opportunities, or undergraduate research, to gain practical experience and enhance career readiness.

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	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences	8
Two Courses Must Include Labs	
Total Credits	40

Core Requirements

CPSC 222	Introduction to Discrete Structures	3
CPSC 125	Computer Science I	3
CPSC 125L	Computer Science I Laboratory	1
CPSC 315	Data Structures and Analysis of Algorithms	3
CPSC 317	Files and Database Systems	3
DSCI 412	Data Visualization	3
DSCI 413	Statistics for Data Science	3
DSCI 490	Data Science Capstone	3
MATH 243	Calculus and Analytical Geometry III	4
MATH 335	Introduction to Linear and Abstract Algebra	3
MATH 412	Probability and Statistics	3
Total Credits		32

Program Support Courses

DSCI 150	Data Science I: Introduction	3
DSCI 151	Data Science II: Foundations	3
DSCI 244	Data Acquisition and Manipulation	3
DSCI 312	Machine Learning	3
DSCI 317	Statistical Software	3
DSCI 483	Cloud Computing	3
UNIV 101	College Success	1
Total Credits		19

Track Electives

Choose 5 electives from a single discipline, subject to Program Chair approval, including:	15
Business, Computer Science, Cyber Security, Economics, Intelligence, Math, Physics, or Psychology	
Total Credits	15

Open Electives

Open Electives - Upper Level		6
Social Science (SOSC) - Upper Level		3
CISE 460	Big Data Analytics and Machine Learning	3
SFTW 300	Software Engineering Practices	3
Total Credits		15

Suggested Plan of Study

Year One

Requirements	Credits
COMM 122 - English Composition	3
CPSC 118 - Fundamentals of Computer Programming	3
DSCI 150 - Data Science I: Introduction	3
MATH 241 - Calculus and Analytical Geometry I	4

UNIV 101 - College Success	1
Semester Hours	14

Requirements	Credits
COMM 219 - Speech	3
CPSC 125 - Computer Science I	3
CPSC 125L - Computer Science I Laboratory	1
DSCI 151 - Data Science II: Foundations	3
MATH 242 - Calculus and Analytical Geometry II	4
Humanities - Lower Level	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 31

Year Two

Requirements	Credits
CPSC 222 - Introduction to Discrete Structures	3
MATH 243 - Calculus and Analytical Geometry III	4
Physical/Life Sciences with Lab	4
Social Sciences - Lower Level	3
Track Elective	3
Semester Hours	17

Requirements	Credits
DSCI 244 - Data Acquisition and Manipulation	3
MATH 335 - Introduction to Linear and Abstract Algebra	3
MATH 412 - Probability and Statistics	3
SFTW 300 - Software Engineering Practices	3
Track Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 32

Year Three

Requirements	Credits
COMM 221 - Technical Communication	3
CPSC 315 - Data Structures and Analysis of Algorithms	3
DSCI 312 - Machine Learning	3
Physical/Life Sciences with Lab	4
Track Elective	3
Semester Hours	16

Requirements	Credits
CISE 460 - Big Data Analytics and Machine Learning	3
DSCI 317 - Statistical Software	3
DSCI 413 - Statistics for Data Science	3
Humanities/Social Sciences - Upper Level	3

Track Elective	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 31

Year Four

Requirements	Credits
CPSC 317 - Files and Database Systems	3
DSCI 412 - Data Visualization	3
DSCI 483 - Cloud Computing	3
Track Elective	3
Open Elective - Upper Level	3
Semester Hours	15

Requirements	Credits
DSCI 490 - Data Science Capstone	3
Social Sciences - Upper Level	3
Humanities - Upper Level	3
Open Elective - Upper Level	3
Semester Hours	12

Total Credits

Total Hours for All Requirements: 27

Worldwide Program Requirements

General Education Requirements	39
Core Requirements	31
Area of Concentration	19
Minor	15-22
Open Electives	9-16
Total Credits	120

Program Details

The Bachelor of Science in Data Science requires successful completion of a minimum of 120 credit hours. Students enrolled in the Worldwide Undergraduate Online program may complete the degree in 20 terms, or approximately four years, assuming full-time enrollment and continuous progress. Students pursuing this undergraduate degree must earn a minimum cumulative grade point average (CGPA) of 2.00 for all work completed at the University. The courses required to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students are responsible for ensuring that all prerequisite and degree requirements are satisfied prior to enrollment in advanced coursework. The suggested plan of study is provided as a guide. A student's actual plan of study may vary based on term of admission, course availability, transfer credit, and other academic considerations. Students should consult with their academic advisor to develop an individualized plan of study.

Students are required to complete an approved minor in consultation with their academic advisor. The Applied Data Science and Mathematics minors may not be selected to fulfill this requirement. The selected minor should complement the student's academic interests and career goals while satisfying degree requirements.

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 223 Scientific Programming in C	
Mathematics	8
MATH 241 Calculus and Analytical Geometry I	
MATH 242 Calculus and Analytical Geometry II	
Physical/Life Sciences	7
Total Credits	39

Core Requirements

CPSC 222	Introduction to Discrete Structures	3
CPSC 225	Computer Science II	3
CPSC 315	Data Structures and Analysis of Algorithms	3
CPSC 317	Files and Database Systems	3
DSCI 412	Data Visualization	3
DSCI 413	Statistics for Data Science	3
DSCI 491	Applied Data Science Capstone	3
MATH 243	Calculus and Analytical Geometry III	4
MATH 392	Applied Linear Algebra	3
MATH 412	Probability and Statistics	3
Total Credits		31

Area of Concentration

Applied Data Science

CPSC 251	Introduction to Programming for Data Science	3
CPSC 399	Special Topics in Computer Science	3
DSCI 201	Introduction to Data Science Applications	3
DSCI 310	Data Storytelling	3
DSCI 440	Data Mining	3
MATH 345	Differential Equations and Matrix Methods	4
Total Credits		19

Minor

All Students Must Declare and Complete a Minor	15-22
Total Credits	15-22

Open Electives

Open Electives - Upper Level *	
Open Electives - Lower or Upper Level *	
Total Credits	9-16*

* Open Elective Credits will vary based on Minor selected

Suggested Plan of Study

Year One

Requirements	Credits
CPSC 251 - Introduction to Programming for Data Science	3
MATH 241 - Calculus and Analytical Geometry I	4
Semester Hours	7

Requirements	Credits
DSCI 201 - Introduction to Data Science Applications	3

MATH 242 - Calculus and Analytical Geometry II	4
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Semester Hours	7
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Requirements	Credits
Humanities - Lower Level	3
MATH 243 - Calculus and Analytical Geometry III	4

Semester Hours	7
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Requirements	Credits
Physical/Life Sciences	3
COMM 122 - English Composition	3

Semester Hours	6
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Requirements	Credits
COMM 219 - Speech	3
Social Science – Lower Level	3

Semester Hours	6
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Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
Physical/Life Sciences	3
Physical/Life Sciences Lab	1

Semester Hours	4
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Requirements	Credits
MATH 345 - Differential Equations and Matrix Methods	4
COMM 221 - Technical Communication	3

Semester Hours	7
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Requirements	Credits
MATH 392 - Applied Linear Algebra	3
MATH 412 - Probability and Statistics	3

Semester Hours	6
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Requirements	Credits
DSCI 413 - Statistics for Data Science	3
DSCI 310 - Data Storytelling	3

Semester Hours	6
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Requirements	Credits
Humanities/Social Science – Lower or Upper Level	3
Minor/Open Elective	4

Semester Hours	7
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Total Credits

Total Hours for All Requirements: 30

Year Three

Requirements	Credits
CPSC 222 - Introduction to Discrete Structures	3

CPSC 223 - Scientific Programming in C	3
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Semester Hours	6
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Requirements	Credits
CPSC 225 - Computer Science II	3
Minor/Open Elective	3

Semester Hours	6
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Requirements	Credits
CPSC 315 - Data Structures and Analysis of Algorithms	3
DSCI 412 - Data Visualization	3

Semester Hours	6
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Requirements	Credits
CPSC 317 - Files and Database Systems	3
Minor/Open Elective	3

Semester Hours	6
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Requirements	Credits
Minor/Open Elective	3
Humanities/Social Sciences - Upper Level	3

Semester Hours	6
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Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
CPSC 399 - Special Topics in Computer Science	3
Minor/Open Elective	3

Semester Hours	6
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Requirements	Credits
Minor/Open Elective	3
Minor/Open Elective	3

Semester Hours	6
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Requirements	Credits
DSCI 440 - Data Mining	3
Minor/Open Elective	3

Semester Hours	6
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Requirements	Credits
Minor/Open Elective	3
Minor/Open Elective	3

Semester Hours	6
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Requirements	Credits
DSCI 491 - Applied Data Science Capstone	3

Semester Hours	3
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Total Credits

Total Hours for All Requirements: 27

Estimated Cost of Attendance

Estimated Cost of Attendance: California Student Information (<https://catalog.erau.edu/student-life/student-affairs/california-student/>)