

B.S. in Simulation Science, Games, and Animation

Housed in the College of Arts and Sciences, Embry-Riddle's undergraduate Simulation Science, Games and Animation degree provides students with a solid foundation in computer game technology, going beyond basic programming or software concepts. Drawing on Embry-Riddle's expertise in aviation, engineering, and intelligence, students gain the knowledge needed to bring their ideas to life in virtual environments.

Graduates of this program are well prepared for careers in game design, entertainment, software development, and fields such as military and intelligence, high-tech manufacturing, and aviation. The degree combines STEM coursework with art and design components, delivering a comprehensive education in the field.

Embry-Riddle's **Prescott Campus** offers small class sizes, faculty mentorship, and strong integration across disciplines such as engineering, aviation, and cybersecurity. This environment allows Simulation Science, Games and Animation students to work on technically advanced, real-world projects beyond traditional entertainment applications. Surrounded by Arizona's natural landscape and a supportive campus community, students benefit from a focused academic setting that encourages creativity, innovation, and leadership development.

Program-Level Student Learning Outcomes

Students will:

- Construct interactive programs using software development principles and methods.
- Effectively exchange constructive criticism.
- Create appealing user experience employing principles and methods of engaging storytelling, worldbuilding, and interface design.
- Incorporate aesthetic concepts in content creation.
- Collaborate to maturely exchange and interact with different ideas through conflict, analysis and consensus.
- Apply software design principles to produce functional and informative user experiences.
- Use prototyping to test and refine new ideas for larger scale-development.
- Synthesize technical and creative domains to solve design problems.

Prescott Program Requirements

General Education Requirements	38
Core Requirements	85
Technical Elective	3
Total Credits	126

Program Details

The Bachelor of Science in Simulation Science, Games, and Animation program requires successful completion of a minimum of 126 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. The curriculum integrates coursework in simulation, game development, animation, computer programming, mathematics, software design, and media arts. The courses necessary to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students entering the program should be prepared to begin Calculus I and should have demonstrated proficiency in algebra and trigonometry. Students are responsible for ensuring that all prerequisite and degree requirements are met prior to enrollment in advanced coursework.

General Education Requirements

Communication	9
COMM 122 English Composition	
Humanities - Lower Level	3
Social Sciences - Lower Level	3
Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper-Level	3
PSYC 321 Psychology of Gaming	
Computer Science/Information Technology	3
CPSC 118 Fundamentals of Computer Programming	
Mathematics	7
CPSC 222 Introduction to Discrete Structures	
MATH 241 Calculus and Analytical Geometry I	
Physical/Life Sciences	7
Physical/Life Sciences with Lab	
PHYS 113 Introductory Physics I or PHYS 226 Physics I	
Total Credits	38

Core Requirements

CPSC 125	Computer Science I	3
CPSC 125L	Computer Science I Laboratory	1
CPSC 225	Computer Science II	3
CPSC 315	Data Structures and Analysis of Algorithms	3
DSCI 412	Data Visualization	3
MATH 314	Applied Linear Algebra and Statistics	3
SIMS 115	Digital Illustration	3
SIMS 150	Games Systems I Introduction	3
SIMS 201	World Building I Modeling	3
SIMS 202	World Building II Materials	3
SIMS 203	World Building III Mechanics	3
SIMS 205	Game Design Workshop	3
SIMS 215	Interactive Media I	3
SIMS 251	Game Systems II Multi-player	3
SIMS 304	World Building IV Motion	3
SIMS 315	Interactive Media II	3
CPSC 350	Computer Modeling and Simulation / Systems Modeling	3
SIMS 331	Simulation II Procedural Modeling	3
SIMS 335	Game Engine Architecture	3
SIMS 351	Game Systems III Production	3
SIMS 401	Character Design and Production	3
SIMS 403	Set and Environment Design	3
SIMS 415	User Interface Design	3
SIMS 421	Modeling and Simulation II	3
SIMS 450	Game Systems IV: Mixed Reality	3
CPSC 455	Artificial Intelligence	3
SIMS 490	Capstone I and Laboratory	4
SIMS 491	Capstone II and Laboratory	4
UNIV 101	College Success	1
Total Credits		85

Technical Elective

Upper-level course in SIMS, CPSC, DSCI, SFTW, MATH, or CISE	3
Total Credits	3

Suggested Plan of Study

Year One

Requirements	Credits
COMM 122 - English Composition	3
CPSC 118 - Fundamentals of Computer Programming	3
SIMS 115 - Digital Illustration	3
SIMS 201 - World Building I Modeling	3
Humanities - Lower Level	3
UNIV 101 - College Success	1
Semester Hours	16

Requirements	Credits
CPSC 125 - Computer Science I	3
CPSC 125L - Computer Science I Laboratory	1
MATH 241 - Calculus and Analytical Geometry I	4
SIMS 150 - Games Systems I Introduction	3
SIMS 201 - World Building I Modeling	3
SIMS 215 - Interactive Media I	3
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33

Year Two

Requirements	Credits
CPSC 222 - Introduction to Discrete Structures	3
CPSC 225 - Computer Science II	3
PHYS 113 - Introductory Physics I or 226 - Physics I	3
SIMS 203 - World Building III Mechanics	3
SIMS 251 - Game Systems II Multi-player	3
Semester Hours	15

Requirements	Credits
MATH 314 - Applied Linear Algebra and Statistics	3
PSYC 101 - Introduction to Psychology	3
SIMS 205 - Game Design Workshop	3
SIMS 304 - World Building IV Motion	3
SIMS 315 - Interactive Media II	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Year Three

Requirements	Credits
CPSC 315 - Data Structures and Analysis of Algorithms	3
CPSC 350 - Computer Modeling and Simulation / Systems Modeling	3
SIMS 335 - Game Engine Architecture	3
SIMS 351 - Game Systems III Production	3
SIMS 401 - Character Design and Production	3
Semester Hours	15

Requirements	Credits
CPSC 455 - Artificial Intelligence	3
PSYC 321 - Psychology of Gaming	3
SIMS 331 - Simulation II Procedural Modeling	3
SIMS 415 - User Interface Design	3
SIMS 450 - Game Systems IV: Mixed Reality	3
Semester Hours	15

Total Credits

Total Hours for All Requirements: 30

Year Four

Requirements	Credits
Communication	3
DSCI 412 - Data Visualization	3
SIMS 415 - User Interface Design	3
SIMS 490 - Capstone I and Laboratory	4
Technical Elective	3
Semester Hours	16

Requirements	Credits
Communication	3
Humanities/Social Sciences - Upper Level	3
Physical/Life Sciences with Lab	4
SIMS 421 - Modeling and Simulation II	3
SIMS 491 - Capstone II and Laboratory	4
Semester Hours	17

Total Credits

Total Hours for All Requirements: 33