

### **Bachelor of Science in Computer Science (Games)**

The goal of the BS in Computer Science (Games) program is to graduate students with a solid grounding in computer science and a cross-disciplinary background in game development. Topics covered in the cross-disciplinary game development portion of the degree program include game production, visual design for games and interactives, computer animation, videogame programming, game hardware architectures, game engine programming, serious game development, introductory and intermediate game design, and two semester long final game projects. Students graduating from this program will be capable of engineering next-generation games and simulations and their technologies in the entertainment and serious game fields. Additionally, graduates from this program will be able to further their education in graduate programs in game development and computer science. This degree will be offered by the School of Letters Arts and Sciences.

### **Requirements for the BS in Computer Science (Games)**

#### Computer Science & Computer Engineering (37 units)

CSCI 101L	(3)	Fundamentals of Computer Programming
CSCI 102L	(4)	Data Structures
CSCI 105	(2)	Object-Oriented Programming
CSCI 201L	(4)	Principles of Software Development
CSCI 271	(3)	Discrete Methods in Computer Science
CSCI 303	(3)	Design & Analysis of Algorithms
CSCI 377	(3)	Introduction to Software Engineering
CSCI 402x	(3)	Operating Systems
CSCI 460	(3)	Introduction to Artificial Intelligence
CSCI 480	(3)	Computer Graphics
EE/CSCI352L	(3)	Computer Organization & Architecture
EE 450	(3)	Intro to Computer Networks

#### Game Development (42 units)

CSCI 180	(3)	Survey of Digital Games & Their Technologies
CSCI/ITP 280	(4)	Intro to Videogame Production
CSCI 281	(3)	Pipelines for Games & Interactives
CSCI/ITP 380	(4)	Videogame Programming
CSCI 487/ITP 485	(4)	Programming Game Engines
CSCI 486	(3)	Serious Games Development
CSCI 491aL	(4)	Final Game Projects
CSCI 491bL	(2)	Final Game Projects
CTAN 452	(2)	Intro to Computer Animation
CTIN 484	(2)	Intermediate Game Development
CTIN 488	(4)	Game Design Workshop
CTIN 489	(2)	Intermediate Game Design Workshop
EE/CSCI 452L	(3)	Game Hardware Architectures
ITP 461x	(1)	Artificial Intelligence for Video Games
ITP 481x	(1)	Video Game Graphics

Math (11-12 Units)

MATH 125 (4) Calculus I  
MATH 126 (4) Calculus II  
MATH 225 (4) Linear Algebra/Diff. Equations

Or

EE 241 (3) Applied Linear Algebra for Engineering

Science (4 units)

PHYS 151LG (4) Fund. Of Physics I: Mechanics & Thermodynamics

Writing (7 units)

WRIT 140 (4) Writing and Critical Reasoning  
WRIT 340 (3) Advanced Writing - Communication for Engineers

General Education (20 units)\* \*\*

The major will comply with the university general education and diversity requirements.

\* GE requirements total 24 units. However, PHYS 151 also satisfies the Category 3 GE.

\*\*The foreign language requirement will be waived for students in this program.

Technical Electives

**Choose a minimum of 6 units from the following:**

CSCI 351(3) Programming & Multimedia on the WWW  
CSCI 410x (3) Translation of Programming Languages \*\*\*  
CSCI 477 (3) Design & Construction of Large Software Systems \*\*\*  
CSCI 485 (3) File and Database Management  
CSCI 490x (2-4) Directed Research  
CSCI 499 (3-4) Special Topics  
CTAN 330 (2) Fundamentals of Animation  
CTIN 401L (2) Interface Design for Games  
CTIN 403 (2) Advanced Visual Design  
CTIN 404L (2) Usability Testing for Games  
CTIN 405L (2) Design and Technology for Mobile Experiences  
CTIN 406L (2) Sound Design for Games 2  
CTAN 443 (2) 3D Animation & Character Design  
CTIN 458 (2) Business and Management of Games  
CTIN 459L (4) Game Industry Workshop \*\*\*  
CTIN 462 (4) Critical Theory and Analysis of Games  
CTIN 463 (4) Anatomy of a Game  
CTIN 459L (4) Industry Workshop  
CTIN 482 (2) Designing Online Multiplayer Game Environments  
CTIN 483 (4) Programming for Interactivity  
CTIN 492L Experimental Game Topics  
EE 320 (3) Digital Media Basics for Multimedia  
ENGR 395abc - Engineering Co-Op\*\*\* (students who take 3 units of Co-op may use it as one technical elective).

Other courses may be eligible subject to advisor approval.

**NOTE: Students are strongly encouraged to take at least one unit of internship**

**\*\*\* highly recommended**

\*Free elective units: (0-1 units)

\*Note: If a student chooses Math 225 (4), then no units of free electives would be needed to complete the degree requirements. If EE 241(3) is chosen, then the student would require 1 unit of free elective.

**TOTAL UNITS required for degree: 128**