GAME PROGRAMMING (BS)

Students in this program engage in the rigorous study of computer science basics, and then apply this knowledge to the demanding specialization of game programming. Programmers bring their technical understanding of game internals to the problem of delivering engaging game experiences to players. Areas of study include level design, game scripting, computer graphics development, game physics, and artificial intelligence programming.

Program Requirements	Quarter Hours
Liberal Studies Requirements	76
Major Requirements	100
Open Electives	16
Total hours required	**192**

Learning Outcomes

Students will be able to:

- Demonstrate proficiency with C++ programming language.
- Create and design large software systems using design pattern techniques.
- Design and implement real-time game engine.
- Apply graphics and rendering techniques to support game engine operations.
- Create and manage the development schedule of a large software project.

Liberal Studies Requirements

Honors program requirements can be found in the individual Colleges & Schools section of the University Catalog. Select the appropriate college or school, followed by Undergraduate Academics and scroll down.

First Year Program		Hours
Chicago Quarter		
LSP 110 or LSP 111	DISCOVER CHICAGO or EXPLORE CHICAGO	4
Focal Point		
LSP 112	FOCAL POINT SEMINAR	4
Writing		
WRD 103	COMPOSITION AND RHETORIC I [1]	4
WRD 104	COMPOSITION AND RHETORIC II [1]	4
Quantitative Reasoning		
Not Required		
Sophomore Year		
Race, Power, and Resistance		
LSP 200	SEMINAR ON RACE, POWER, AND RESISTANCE	4
Junior Year		
Experiential Learning		
Required		4
Senior Year		
Capstone		
Required in major [1]		

[1] Students must earn a C- or better in this course.

Learning Domains

Arts and Literature (AL) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/arts-and-literature/)

- 3 Courses Required
  - ANI 101
  - SCWR 100
  - 1 Additional Course

Historical Inquiry (HI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/historical-inquiry/)

- 2 Courses Required

Math and Computing (MC) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/math-and-computing/)

- Not Required

Philosophical Inquiry (PI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/philosophical-inquiry/)

- 2 Courses Required
  - FILM 228 or IT 228
  - 1 Additional Course

Religious Dimensions (RD) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/religious-dimensions/)

- 2 Courses Required

Scientific Inquiry (SI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/scientific-inquiry/)

- 1 Lab Course Required

Social, Cultural, and Behavioral Inquiry (SCBI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/social-cultural-and-behavioral-inquiry/)

- 3 Courses Required

Note

Specified required courses within Liberal Studies may have grade minimums (e.g. C- or better). Please consult your advisor or your college and major requirements.

Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the Experiential Learning requirement.

In meeting learning domain requirements, no more than one course that is outside the student's major and is cross-listed with a course within the student's major, can be applied to count for LSP domain credit. This policy does not apply to those who are pursuing a double major or earning BFA or BM degrees.

Major Requirements

First Year

Course	Title	Quarter Hours
CSC 241	INTRODUCTION TO COMPUTER SCIENCE I [1]	4
CSC 242	INTRODUCTION TO COMPUTER SCIENCE II [1]	4
CSC 300	DATA STRUCTURES I	4
GAM 226	FUNDAMENTALS OF GAME DESIGN	4
GAM 340	PRACTICAL SCRIPTING FOR GAMES	4
GAM 344	GAME DEVELOPMENT II (FORMERLY GAM 245)	4
MAT 140	DISCRETE MATHEMATICS I	4

[1] Students with one (1) semester programming experience may take CSC 243 and one (1) additional Major Elective in lieu of CSC 241 and CSC 242.

Second Year

Course	Title	Quarter Hours
ANI 230	3D DESIGN & MODELING	4
CSC 301	DATA STRUCTURES II	4
CSC 361	OPTIMIZED C++	4
CSC 373	COMPUTER SYSTEMS I	4
GAM 341	INTRODUCTION TO LEVEL DESIGN	4
Four (4) credit hours of Major Electives		4

Third Year

Course	Title	Quarter Hours
GAM 325	APPLIED 3D GEOMETRY	4
GAM 370	RENDERING AND GRAPHICS PROGRAMMING	4
GAM 372	OBJECT-ORIENTED GAME DEVELOPMENT	4
GAM 374	GAME ENGINE PROGRAMMING I	4
GAM 377	GAME ENGINE PROGRAMMING II	4
GAM 392	GAME MODIFICATION WORKSHOP	4
Four (4) credit hours of Major Electives		4

Fourth Year

Course	Title	Quarter Hours
CSC 386 & CSC 394	REAL-TIME NETWORKING (FORMERLY GAM 390) and SOFTWARE PROJECTS	8
or GAM 394 & GAM 395	GAME DEVELOPMENT CAPSTONE I and GAME DEVELOPMENT CAPSTONE II	
Twelve (12) credit hours of Major Electives		12

Major Electives

Major Electives must be chosen from the courses below:

Computer Science Electives

Course	Title	Quarter Hours
CSC 321	DESIGN AND ANALYSIS OF ALGORITHMS	
CSC 355	DATABASE SYSTEMS	
CSC 357	EXPERT SYSTEMS	
MAT 141	DISCRETE MATHEMATICS II	

Computer Systems Electives

Course	Title	Quarter Hours
CSC 343	INTRODUCTION TO OPERATING SYSTEMS	
CSC 348	INTRODUCTION TO COMPILER DESIGN	
CSC 353	ADVANCED DATABASE CONCEPTS	
CSC 362	OPTIMIZED C++ MULTITHREADING	
CSC 374	COMPUTER SYSTEMS II	
CSC 388	REAL-TIME MULTITHREADED ARCHITECTURE	

Game AI Electives

Course	Title	Quarter Hours
CSC 380	FOUNDATIONS OF ARTIFICIAL INTELLIGENCE	
CSC 358	SYMBOLIC PROGRAMMING	
GAM 376	ARTIFICIAL INTELLIGENCE FOR COMPUTER GAMES	

Game Design Electives

Course	Title	Quarter Hours
GAM 205	GAMES LITERACY	
GAM 231	HISTORY AND DESIGN OF ROLE-PLAYING GAMES	
GAM 329	PHYSICAL PROTOTYPING FOR GAMES	
GAM 342	ADVANCED LEVEL DESIGN	
GAM 351	EXPRESSIVE AUDIO SCRIPTING IN GAMES	
GAM 362	MAKING DEEP GAMES	
GAM 365	ADVANCED GAME DESIGN	
GAM 397	TOPICS IN GAME DESIGN	

Game Development Studio Electives

Course	Title	Quarter Hours
GAM 244	GAME DEVELOPMENT I	

Game Programming Electives

Course	Title	Quarter Hours
GAM 353	TOOL PROGRAMMING FOR GAME DEVELOPMENT	
GAM 368	AUGMENTED REALITY GAME DESIGN AND DEVELOPMENT	
GAM 369	VIRTUAL REALITY GAME DEVELOPMENT	

GAM 380	CONSOLE GAME DEVELOPMENT ENVIRONMENTS	
GAM 398	TOPICS IN GAME PROGRAMMING	

Graphics/Animation/Sound Electives

Course	Title	Quarter Hours
ANI 231	3D ANIMATION	
ANI 310	MOTION CAPTURE	
ANI 332	3D RIGGING	
ANI 333	ADVANCED 3D RIGGING	
GAM 250	SOUND DESIGN FOR GAMES I	

Multiplayer Games Electives

Course	Title	Quarter Hours
CSC 376	DISTRIBUTED SYSTEMS	
CSC 386	REAL-TIME NETWORKING (FORMERLY GAM 390)	

Mobile Games Electives

Course	Title	Quarter Hours
CSC 371	MOBILE APPLICATION DEVELOPMENT FOR IOS	
CSC 372	MOBILE APPLICATION DEVELOPMENT FOR ANDROID	
CSC 391	MOBILE APPLICATION DEVELOPMENT FOR IOS II	
CSC 392	MOBILE APPLICATION DEVELOPMENT FOR ANDROID II	
GAM 386	GAME PROGRAMMING FOR MOBILE DEVICES	

Physics Electives

Course	Title	Quarter Hours
GAM 350	PHYSICS FOR GAME DEVELOPERS	
PHY 150	GENERAL PHYSICS I	

Software Engineering Electives

Course	Title	Quarter Hours
SE 333	SOFTWARE TESTING	
SE 350	OBJECT-ORIENTED SOFTWARE DEVELOPMENT	
SE 359	AGILE SOFTWARE DEVELOPMENT	
SE 371	PRACTICES OF GLOBAL SOFTWARE DEVELOPMENT	

Usability Electives

Course	Title	Quarter Hours
GAM 312	PLAYTESTING	

Students must earn a grade of C- or higher in all major elective courses.

Open Electives

Open Elective credit hours are required to meet the minimum graduation requirements of 192 hours. Open Electives may be taken from any unit at DePaul.

Program Combination Restrictions

Students pursuing the BS in Game Programming are forbidden from pursuing the following secondary/double majors: BS Computer Science (all concentrations); BS Math and Computer Science. Students pursuing the BS in Game Programming are also forbidden from pursuing the Minor in Computer Science and the Minor in Game Design.