GAME PROGRAMMING CONCENTRATION

Computer Science, Bachelor of Science in Computer Science - Game Programming Concentration Requirements

The game programming concentration provides students with the basic concepts involved in the video game development process. The required courses give the student an introductory knowledge of both 2D and 3D game programming, as well as resource management, concepts of designing games, and general graphics theory. The elective courses allow the student to focus on a particular aspect of game development: game design, game/player interaction, game programming, or graphics. This concentration is only open to undergraduate Computer Science majors in the College of IS&T.

Code	Title	Credits
General Education Requirements - 34 Hours Required		
Minimum of "C-"required		
Fundamental Skills		**15**
Writing – 6 hrs.		
ENGL 1150	ENGLISH COMPOSITION I	
ENGL 1160	COLLEGE RESEARCH AND INFORMATION LITERACY	
Oral Communication – 3 hrs.		
CMST 1110	PUBLIC SPEAKING FUNDS	
or CMST 2120	ARGUMENTATION AND DEBATE	
Quantitative Literacy – 3 hrs.		
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING	
or MATH 1130	QUANTITATIVE LITERACY	
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS	
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	
Data Literacy – 3 hrs.		
Select one from the following:		
STAT 1100	DATA LITERACY AND VISUALIZATION	
STAT 1530	ELEMENTARY STATISTICS	
Until Fall 2028, students can satisfy this requirement with an approved data literacy course, or any approved natural or social science general education course.		
Breadth of Knowledge		**13**
Social Science – 3 hrs.		
Humanities – 3 hrs.		
Natural & Physical Science (must complete a lab) – 4 hrs.		
Arts – 3 hrs.		
Individual and Social Responsibility		**6**
Cultural Knowledge – 3 hrs		
Civic Knowledge and Engagement – 3 hrs.		
MAJOR REQUIREMENTS - 85 Hours Required		
**Course will satisfy UNO's General Education requirement		
^Course requires pre-requisite(s)		
All of the following:		**42**
CIST 1400	INTRODUCTION TO COMPUTER SCIENCE I (^)	
CSCI 1620	INTRODUCTION TO COMPUTER SCIENCE II (^)	
CSCI 2240	INTRODUCTION TO C PROGRAMMING (^)	
CIST 3000	TECHNICAL WRITING & COMMUNICATION FOR IS&T (^)	
CIST 3110	INFORMATION TECHNOLOGY ETHICS (** ^)	
CSCI 3320	DATA STRUCTURES (^)	
CSCI 3660	THEORY OF COMPUTATION (^)	
CSCI 3720	COMPUTER ORGANIZATION	
CSCI 3550	COMMUNICATION NETWORKS (^)	
or CSCI 4350	COMPUTER ARCHITECTURE	
CSCI 4100	INTRODUCTION TO ALGORITHMS (^)	
CSCI 4220	PRINCIPLES OF PROGRAMMING LANGUAGES (^)	
CSCI 4500	OPERATING SYSTEMS (^)	
CSCI 4830	INTRODUCTION SOFTWARE ENGINEERING (^)	
CSCI 4970	CAPSTONE PROJECT (^)	
CSCI 4000	ASSESSMENT (^)	
Game Programming Concentration - 18 Hours		
All of the following:		**9**
CSCI 2510	INTRODUCTION TO GAME PROGRAMMING (^)	
CSCI 3510	ADVANCED GAME PROGRAMMING (^)	
CSCI 4620	3D COMPUTER GRAPHICS (^)	
Select 3 courses from the following (limit of 1 non-CS course):		**9**
CSCI 1280	INTRODUCTION TO COMPUTATIONAL SCIENCE (** ^)	
CSCI 2620	2D GRAPHICS: IMAGE PROCESSING (^)	
CSCI 4250	HUMAN COMPUTER INTERACTION (^)	
CSCI 4260	USER EXPERIENCE DESIGN (^)	
CSCI 4450	PRINCIPLES OF ARTIFICIAL INTELLIGENCE (^)	
CSCI 4480	ALGORITHMS FOR ROBOTICS (^)	
CSCI/MATH 4660	AUTOMATA, COMPUTABILITY, AND FORMAL LANGUAGES (^)	
CSCI 4850	DATABASE MANAGEMENT SYSTEMS (^)	
ART 3140	COMPUTER-GENERATED IMAGERY (CGI) I: INTERACTIVE 3D VIRTUAL SPACES (^)	
ART 3160	GAME DESIGN AS ART (^)	
PHIL 3230	PHILOSOPHY AND POPULAR MEDIA	
Extension Courses - Complete 3 credit hours		**3**
Complete 3 additional hours of upper-level CSCI coursework (3XXX or 4XXX level) not used to meet other degree or concentration requirements. [1]		
Math Courses - All of the following:		**15**
MATH 1950	CALCULUS I (^)	
CSCI 2030	MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (^)	
CSCI 2040	INTRODUCTION TO MATHEMATICAL PROOFS (^)	
MATH 2050	APPLIED LINEAR ALGEBRA (^)	
CIST 2500	INTRODUCTION TO APPLIED STATISTICS FOR IS&T (^)	
Science Courses - Complete 7 credit hours from the following list, representing at least 2 disciplines with a minimum of 1 laboratory course**		**7**

PHYS 1050	INTRODUCTION TO PHYSICS (**)
PHYS 1054	INTRODUCTION TO PHYSICS LABORATORY (** ^)
PHYS 1110	PHYSICS FOR LIFE SCIENCE I (** ^)
PHYS 1154	GENERAL PHYSICS LABORATORY I (** ^)
PHYS 2110	GENERAL PHYSICS I - CALCULUS LEVEL (** ^)
CHEM 1010	CHEMISTRY IN THE ENVIRONMENT AND SOCIETY (** ^)
CHEM 1014	CHEMISTRY IN THE ENVIRONMENT AND SOCIETY LABORATORY (** ^)
CHEM 1140	FUNDAMENTALS OF COLLEGE CHEMISTRY (** ^)
CHEM 1144	FUNDAMENTALS OF COLLEGE CHEMISTRY LABORATORY (** ^)
CHEM 1170	GENERAL CHEMISTRY I-II (** ^)
CHEM 1180	GENERAL CHEMISTRY I (** ^)
CHEM 1184	GENERAL CHEMISTRY I LABORATORY (** ^)
BIOL 1450	BIOLOGY I (** ^)
BMCH 2400	HUMAN PHYSIOLOGY & ANATOMY I (**)
GEOL 1170	INTRODUCTION TO PHYSICAL GEOLOGY (**)
GEOL 1100	EARTH SYSTEM SCIENCE (**)
GEOL 1104	EARTH SYSTEM SCIENCE LAB (**)
GEOG 1030	OUR DYNAMIC PLANET: INTRODUCTION TO PHYSICAL GEOGRAPHY (**)
GEOG 1050	HUMAN-ENVIRONMENT GEOGRAPHY (**)
GEOG 1090	INTRODUCTION TO GEOSPATIAL SCIENCES (**)
GEOG 3510	METEOROLOGY (**)
GEOG 3514	INTRODUCTION TO METEOROLOGY LABORATORY (** ^)
ELECTIVES	
Elective hours as required to reach a total of 120 hours	

[1] Upper-level CSCI transfer credits can also be applied towards this requirement.