Computer Science

University of Central Missouri

Johnson County Community College Transfer Program to the University Central Missouri	Dr. Belinda Copus Chair, Department of Computer
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College of Health, Science, and Technology Computer Science B.S. (Four options)	copus@ucmo.edu
Academic Year 2024-2025	www.ucmo.edu/cs

Program Description

The Associate of Arts degree (A.A.) at JCCC is a general transfer degree and partners well with the first two years of most bachelor degree programs. Students who transfer to UCM with an Associate of Arts degree are considered to have met all 42 hours of UCM's General Education requirements, with the exception of Major/Minor-Required General Education courses and the Constitution Requirement. (See the UCM General Education Program guide for details.) The elective hours within the A.A. allow students to complete additional general education and lower division courses required for specific majors/minors.

Students who transfer to UCM without a degree (or a degree other than an AA) will have all coursework evaluated on a course-by-course basis. JCCC students not completing the AA degree should refer to the tables in the UCM General Education Program guide for course equivalents and also the UCM catalog for any specific or additional General Education requirements for their UCM program of study.

NOTE: Courses taken to fulfill General Education requirements may not be taken on the pass/fail basis.

Admission Requirements

Students should be cognizant of UCM's Upper-Level Course Requirement and Residence Requirement, especially if enrolling in more than 60 hours at JCCC. Please refer to the UCM General Education Program guide for details.

NOTE: The UCM General Education guide can be found at: https://www.jccc.edu/studentresources/academic-counseling/transfer/files/transfer-guides/ucmo-general-ed.pdf (https://nam12.safelinks.protection.outlook.com/?url=http%3A%2F%2Fnextcatalog.jccc.edu%2Ftransfer-guides%2Fcentral-missouri%2Fcentral-missouri-general-education%2F&data=05%7C02%7Cskhalif2%40jccc.edu%7C3bbbe8fc84564328cf7008de1320415e%7C15244239dcf245e7aefd127b69fc5438%7C1%7C0%7C638969226426500133%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=2fEwF%2FItGtEBAX4dsIJ2vihW0Lf5GJaDs7z4GtDDwc8%3D&reserved=0)

There are four different Computer Science options at UCM:

- Computer Science Computer Networking Option, B.S.
- Computer Science Computer Science Option, B.S.
- Computer Science Game Development Option, B.S.
- Computer Science Software Development Option, B.S.

Please refer to the following pages for course requirements for each option.

Program Requirements

COMPUTER SCIENCE MAJOR REQUIREMENTS FOR ALL OPTIONS – CORE (42 HOURS)

The 42 hours of Core courses required for the Computer Science BS are the same for all five options. A grade of "C" or better is required in all major coursework. The following courses have equivalent courses that can be taken at JCCC:

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
Select one of the following:					
CS 200	Concepts of Programming Algorithms Using C++*	4	CS 1100 Computer Programming I		
CS 201	Concepts of Programming Algorithms using C#*	4	CS 1100 Computer Programming I		
CS 205	Concepts of Programming Algorithms using Java*	4	CS 1100 Computer Programming I		
CS 210	Discrete Structures I*	3	CS 2400	Discrete Structures	3
CS 236	Object-Oriented Programming Using C#*	4	CS 1110 Computer Programming II		
CS 255	Basic Data Structures Using Java*	4	CS 2300 Data Structures		
CIS 204	UNIX Scripting and Utilities*	3	CS 3500 C and UNIX Environment		
CIS 260	Database Management*	4	CS 4600 Database Theory and Applications		

COMPUTER NETWORKING OPTION

NOTE: The tables below show only courses with equivalent courses that may be taken at JCCC. For complete degree requirements for this option, please see Computer Science BS, Computer Networking Option (https://catalog.ucmo.edu/preview_program.php?catoid=23&poid=7356&returnto=972) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for COMPUTER NETWORKING OPTION – 39 semester hours: All students must complete a minimum of 42 credit hours in general education. The following general education classes are required for this option:

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
CS 1000 Computers and Modern Society+ No equivalent					
MATH 201	Statistics*	3	ACST 1300 & ACST 3311	Basic Statistics and Intro to Prob Stat	3
Select one of the following:					
COMS 121	Public Speaking	3	COMM 1000	Public Speaking	3
COMS 125	Personal Communication	3	COMM 1000 Public Speaking		

42 HOURS OF CORE FOR THE COMPUTER SCIENCE MAJOR (see page 1)

COMPUTER NETWORKING OPTION ELECTIVES

(Total of 27 semester hours from the two elective categories below as specified) A grade of “C” or better is required.

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
Electives from the following: 12-21 semester hours required					
CIS 275	Web-Enabled Database Programming*	4	CS 4130 Server-Side Web Programming		
IT 141	Introduction to Networks	3	NET 1060	Introduction to Networks	3
IT 150	Switching, Routing, and Wireless Essentials*	3	NET 1061	Switching/Routing/ Wireless Ess	3

IT 223	Azure Administration*	3	CS 4610 Introduction to Cloud Computing		
Electives from the following: 6-15 semester hours required					
CS 134	Programming Fundamentals	4	CS 1030 Python Programming I		
IT 202	IT Scripting*	3	CS 1030 Python Programming I		
CIS 240	Advanced Topics in Java*	4	CS 4120	Adv App Programming in Java	3
CS 236	Object-Oriented Programming Using C#*	4	CS 3110 Applications Programming in C		
GAME 121	Game Programming I*	4	CS 4830 Game Development 3D		
GAME 221	Game Programming II*	4	CS 4830 Game Development 3D		
IT 175	Cybersecurity Fundamentals*	3	CYBR 1800 Introduction to Cybersecurity		
IT 230	Linux Fundamentals	3	CYBR 1500 Command Line Environments		
IT 239	Ethical Hacking*	3	CYBR 4840 Ethical Hacking		
Select one of the following:					
IT 271	Information Technology Internship I*	3	CS 4020 Internship		
IT 272	Information Technology Internship II*	3	CS 4020 Internship		

FREE ELECTIVES:

12 Semester Hours Free choice elective hours may vary depending on transfer coursework and course selection at UCM. Students must take at least 30 upper-level (3000-4000) hours to graduate. Courses taken at JCCC that articulate to upper-level UCM courses do not count towards upper-level hours.

* JCCC course has a pre-requisite or co-requisite.
^ JCCC CS 236 is equivalent to CS 1110 or CS 3110.
\+ Course requires a grade of “C” or better.

COMPUTER SCIENCE OPTION

NOTE: The tables below show only courses with equivalent courses that may be taken at JCCC. For complete degree requirements for this option, please see Computer Science BS, Computer Science Option (https://catalog.ucmo.edu/preview_program.php?catoid=23&poid=7355&returnto=972) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for COMPUTER SCIENCE OPTION – 29 semester hours: All students must complete a minimum of 42 credit hours in general education. The following general education classes are required for this option:

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
CS 1000 Computers and Modern Society+		No equivalent			
Select one of the following:					
COMS 121	Public Speaking	3	COMM 1000	Public Speaking	3
COMS 125	Personal Communication	3	COMM 1000 Public Speaking		

42 HOURS OF CORE FOR THE COMPUTER SCIENCE MAJOR (see page 1)

COMPUTER SCIENCE OPTION

(Total of 32-35 semester hours from the categories below as specified) A grade of “C” or better is required.

2025-26 Catalog

Computer Science
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Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
MATH 241	Calculus I*	5	MATH 1151	Calculus I	5
Electives from the following: 7-9 semester hours required					
MATH 242	Calculus II*	5	MATH 1152	Calculus II	5
MATH 243	Calculus III*	5	MATH 2153 Calculus III		
MATH 246	Elementary Linear Algebra*	3	MATH 3710 Linear Algebra		
MATH 254	Differential Equations*	4	MATH 3151	Differential Equations	3
Electives from the following: 8-9 semester hours required – Science electives must be from two different prefixes					
CHEM 124 & CHEM 125	General Chemistry I Lecture* and General Chemistry I Lab*	4	CHEM 1131	General Chemistry I	5
EVRN 130	Environmental Science	3	BIOL 1004 Introduction to the Sciences: Ecology		
EVRN 130	Environmental Science No equivalent	3	BIOL 1005 Introduction to Environmental Science AND BIOL 1006 Environmental Science/Ecology Lab		
GEOS 130	General Geology	5	GEOS 1004	Introduction to Geology	4
GEOS 1114 Weather and Climate No equivalent					
PHYS 130	College Physics I*	5	PHYS 1101	College Physics I	4

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
Electives from the following: 9 semester hours required					
GAME 255	Mobile Game Programming*	4	CS 4110 Mobile Applications Programming with Android		
CS 236	Object-Oriented Programming Using C#*	4	CS 3110 Applications Programming in C		
CIS 240	Advanced Topics in Java*	4	CS 4120	Adv App Programming in Java	3
CIS 275	Web-Enabled Database Programming*	4	CS 4130 Server-Side Web Programming		
GAME 121	Game Programming I*	4	CS 4830 Game Development 3D		
GAME 221	Game Programming II*	4	CS 4830 Game Development 3D		
GAME 242	Agile Game Development*	3	CS 4000 Special Problems in Computer Science		
IT 223	Azure Administration*	3	CS 4610 Introduction to Cloud Computing		
IT 239	Ethical Hacking*	3	CYBR 4840 Ethical Hacking		
Select one of the following:					
IT 271	Information Technology Internship I*	3	CS 4020 Internship		
IT 272	Information Technology Internship II*	3	CS 4020 Internship		

FREE ELECTIVES: 9-16 Semester Hours. Free choice elective hours may vary depending on transfer coursework and course selection at UCM. Students must take at least 30 upper-level (3000-4000) hours to graduate. Courses taken at JCCC that articulate to upper-level UCM courses do not count towards upper-level hours.

* JCCC course has a pre-requisite or co-requisite.

^ JCCC CS 236 is equivalent to CS 1110 or CS 3110.
+ Course requires a grade of “C” or better.

GAME DEVELOPMENT OPTION

NOTE: The tables below show only courses with equivalent courses that may be taken at JCCC. For complete degree requirements for this option, please see Computer Science BS, Game Development Option (https://catalog.ucmo.edu/preview_program.php?catoid=23&poid=7357&returnto=972) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for GAME DEVELOPMENT OPTION – 39 semester hours: All students must complete a minimum of 42 credit hours in general education. The following general education classes are required for this option:

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
CS 1000 Computers and Modern Society+ [No equivalent]					
MATH 201	Statistics*	3	ACST 1300 & ACST 3311	Basic Statistics and Intro to Prob Stat	3
Select one of the following:					
COMS 121	Public Speaking	3	COMM 1000	Public Speaking	3
COMS 125	Personal Communication	3	COMM 1000 Public Speaking		

42 HOURS OF CORE FOR THE COMPUTER SCIENCE MAJOR (see page 1)

GAME DEVELOPMENT OPTION – 27 Semester Hours – A grade of “C” or better is required.

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
Required Courses: 15 Semester Hours					
CS 236	Object-Oriented Programming Using C#*	4	CS 3110 Applications Programming in C# and .NET		
GAME 121	Game Programming I*	4	CS 4830 Game Development 3D		
GAME 221	Game Programming II*	4	CS 4830 Game Development 3D		
Electives from the following: 12 semester hours required					
Select one of the following:					
CS 134	Programming Fundamentals	4	CS 1030 Python Programming I		
IT 202	IT Scripting*	3	CS 1030 Python Programming I		
GAME 255	Mobile Game Programming*	4	CS 4110 Mobile Applications Programming with Android		
CIS 240	Advanced Topics in Java*	4	CS 4120	Adv App Programming in Java	3
CIS 275	Web-Enabled Database Programming*	4	CS 4130 Server-Side Web Programming		
GAME 242	Agile Game Development*	3	CS 4000 Special Problems in Computer Science		
IT 175	Cybersecurity Fundamentals*	3	CYBR 1800 Introduction to Cybersecurity		
IT 223	Azure Administration*	3	CS 4610 Introduction to Cloud Computing		
IT 230	Linux Fundamentals	3	CYBR 1500 Command Line Environments		
IT 239	Ethical Hacking*	3	CYBR 4840 Ethical Hacking		
Select one of the following:					

IT 271	Information Technology Internship I*	3	CS 4020 Internship
IT 272	Information Technology Internship II*	3	CS 4020 Internship

FREE ELECTIVES:

12 Semester Hours. Free choice elective hours may vary depending on transfer coursework and course selection at UCM. Students must take at least 30 upper-level (3000-4000) hours to graduate. Courses taken at JCCC that articulate to upper-level UCM courses do not count towards upper-level hours.

^ JCCC CS 236 is equivalent to CS 1110 or CS 3110.
* JCCC course has a pre-requisite or co-requisite.
+ Course requires a grade of “C” or better.

SOFTWARE DEVELOPMENT OPTION

NOTE: The tables below show only courses with equivalent courses that may be taken at JCCC. For complete degree requirements for this option, please see Computer Science BS, Software Development Option (https://catalog.ucmo.edu/preview_program.php?catoid=23&poid=7354&returnto=972) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for SOFTWARE DEVELOPMENT OPTION – 39 semester hours: All students must complete a minimum of 42 credit hours in general education. The following general education classes are required for this option:

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
CS 1000 Computers and Modern Society+ [No equivalent]					
MATH 201	Statistics*	3	ACST 1300 & ACST 3311	Basic Statistics and Intro to Prob Stat	3
Select one of the following:					
COMS 121	Public Speaking	3	COMM 1000	Public Speaking	3
COMS 125	Personal Communication	3	COMM 1000 Public Speaking		

42 HOURS OF CORE FOR THE COMPUTER SCIENCE MAJOR (see page 1)

SOFTWARE DEVELOPMENT OPTION ELECTIVES (Total of 27 semester hours from the two elective categories below as specified)

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
Electives from the following: 12-24 semester hours required					
CS 236	Object-Oriented Programming Using C#*	4	CS 3110 Applications Programming in C# and .NET		
CIS 240	Advanced Topics in Java*	4	CS 4120	Adv App Programming in Java	3
CIS 275	Web-Enabled Database Programming*	4	CS 4130 Server-Side Web Programming		
Electives from the following: 3-15 semester hours required					
GAME 255	Mobile Game Programming*	4	CS 4110 Mobile Applications Programming with Android		
Select one of the following:					
CS 134	Programming Fundamentals	4	CS 1030 Python Programming I		
IT 202	IT Scripting*	3	CS 1030 Python Programming I		

GAME 121	Game Programming I*	4	CS 4830 Game Development 3D
GAME 221	Game Programming II*	4	CS 4830 Game Development 3D
GAME 242	Agile Game Development*	3	CS 4000 Special Problems in Computer Science
IT 175	Cybersecurity Fundamentals*	3	CYBR 1800 Introduction to Cybersecurity
IT 223	Azure Administration*	3	CS 4610 Introduction to Cloud Computing
IT 230	Linux Fundamentals	3	CYBR 1500 Command Line Environments
IT 239	Ethical Hacking*	3	CYBR 4840 Ethical Hacking
Select one of the following:			
IT 271	Information Technology Internship I*	3	CS 4020 Internship
IT 272	Information Technology Internship II*	3	CS 4020 Internship

FREE ELECTIVES: 12 Semester Hours. Free choice elective hours may vary depending on transfer coursework and course selection at UCM. Students must take at least 30 upper-level (3000-4000) hours to graduate. Courses taken at JCCC that articulate to upper-level UCM courses do not count towards upper-level hours.

* JCCC course has a pre-requisite or co-requisite.
^ JCCC CS 236 is equivalent to CS 1110 or CS 3110.
\+ Course requires a grade of “C” or better.

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