



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.

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/student-resources/academic-counseling/transfer/files/transfer-guides/ucmo-general-ed.pdf>

There are five different Computer Science options at UCM:

- Computer Science Computer Networking Option, B.S.
- Computer Science Computer Science Option, B.S.
- Computer Science Data 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.

It is the STUDENT'S RESPONSIBILITY to check for updates to all transfer information. This transfer guide is provided as a service and is updated as needed. Degree requirements at the four-year colleges are subject to change by those institutions. To ensure you have the most accurate up to date information about the program, it is imperative you meet with an advisor at the transfer institution.

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. The following courses have equivalent courses that can be taken at JCCC:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1100 Computer Programming I	3	CS 200 Concepts of Programming Algorithms Using C++* OR CS 201 Concepts of Programming Algorithms using C#* OR CS 205 Concepts of Programming Algorithms using Java*	4 4 4
CS 2400 Discrete Structures	3	CS 210 Discrete Structures I*	3
CS 1110 Computer Programming II	3	^CS 236 Object-Oriented Programming Using C#*	4
CS 2300 Data Structures	3	CS 255 Basic Data Structures Using Java*	4
CS 3500 C and UNIX Environment	3	CIS 204 UNIX Scripting and Utilities*	3
CS 4600 Database Theory and Applications	3	CIS 260 Database Management*	4

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](#) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for COMPUTER NETWORKING OPTION – 39-41 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:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1000 Computers and Modern Society	3	No equivalent	--
ACST 1300 Basic Statistics	3	MATH 181 Statistics*	3
COMM 1000 Public Speaking	3	COMS 121 Public Speaking OR COMS 125 Personal Communication	3 3

ADDITIONAL REQUIRED GENERAL EDUCATION COURSES for this option:

UCM Course	Hrs	JCCC Equivalents	Hrs
MATH 1111 College Algebra OR MATH 1150 Pre-Calculus Mathematics OR	3 5	MATH 171 College Algebra* OR MATH 173 Precalculus* OR	3 5
MATH 1131 Applied Calculus OR MATH 1151 Calculus I	3 5	MATH 231 Business and Applied Calculus I* OR MATH 241 Calculus I*	3 5

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)

UCM Course	Hrs	JCCC Equivalents	Hrs
Electives from the following: 12-21 semester hours required			
CS 4130 Server-Side Web Programming	3	CIS 275 Web-Enabled Database Programming*	4
NET 1060 Introduction to Networks	3	IT 141 Introduction to Networks	3
NET 1061 Switching, Routing, & Wireless Essentials	3	IT 150 Switching, Routing, and Wireless Essentials*	3
Electives from the following: 6-15 semester hours required			
CS 1030 Introduction to Computer Programming	3	CIS 142 Beginning Programming using Python OR CS 134 Programming Fundamentals	4 4
CS 4110 Mobile Applications Programming with Android	3	CIS 208 Mobile Application Development* OR GAME 255 Mobile Game Programming*	4 4
CS 4120 Advanced Applications Programming in Java	3	CIS 240 Advanced Topics in Java*	4
CS 3110 Applications Programming in C# and .NET	3	^CS 236 Object-Oriented Programming Using C#*	4
CS 4000 Special Problems in Computer Science	3	GAME 242 Agile Game Development*	3
CYBR 4840 Ethical Hacking	3	IT 239 Ethical Hacking*	3
CS 4020 Internship	3	IT 271 Information Technology Internship I* OR IT 272 Information Technology Internship II*	3 3

FREE ELECTIVES: 10-12 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.

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](#) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for COMPUTER SCIENCE OPTION – 34-41 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:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1000 Computers and Modern Society	3	No equivalent	--
COMM 1000 Public Speaking	3	COMS 121 Public Speaking OR COMS 125 Personal Communication	3 3

ADDITIONAL REQUIRED GENERAL EDUCATION COURSES for this option:

UCM Course	Hrs	JCCC Equivalents	Hrs
MATH 1151 Calculus I	5	MATH 241 Calculus I*	5

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

COMPUTER SCIENCE OPTION (Total of 27-31 semester hours from the categories below as specified)

UCM Course	Hrs	JCCC Equivalents	Hrs
Electives from the following: 7-9 semester hours required			
MATH 1152 Calculus II	5	MATH 242 Calculus II*	5
MATH 2153 Calculus III	3	MATH 243 Calculus III*	5
Electives from the following: 8-10 semester hours required			
BIOL 1111 Plant Biology	4	BIOL 125 General Botany	5
BIOL 1112 Animal Biology	4	BIOL 127 General Zoology OR BIOL 150 Biology of Organisms*	5 5
CHEM 1131 General Chemistry I	5	CHEM 124 General Chemistry I* AND CHEM 125 General Chemistry I*	4 1
CHEM 1132 General Chemistry II	5	CHEM 131 General Chemistry II* AND CHEM 132 General Chemistry II*	4 1
GEOS 1004 Introduction to Geology	4	GEOS 130 General Geology	5
PHYS 1101 College Physics I OR PHYS 2121 University Physics I	4 5	PHYS 130 College Physics I* OR PHYS 220 Engineering Physics I*	5 5
PHYS 1102 College Physics II OR PHYS 2122 University Physics II	4 5	PHYS 131 College Physics II* OR PHYS 221 Engineering Physics II*	5 5
Electives from the following: 9 semester hours required			
CS 4110 Mobile Applications Programming with Android	3	CIS 208 Mobile Application Development* OR GAME 255 Mobile Game Programming*	4 4
CS 3110 Applications Programming in C# and .NET	3	^CS 236 Object-Oriented Programming Using C#*	4
CS 4120 Advanced Applications Programming in Java	3	CIS 240 Advanced Topics in Java*	4
CS 4130 Server-Side Web Programming	3	CIS 275 Web-Enabled Database Programming*	4
CS 4000 Special Problems in Computer Science	3	GAME 242 Agile Game Development*	3
CYBR 4840 Ethical Hacking	3	IT 239 Ethical Hacking*	3
CS 4020 Internship	3	IT 271 Information Technology Internship I* OR IT 272 Information Technology Internship II*	3 3

FREE ELECTIVES: 7-16 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 CS 236 is equivalent to CS 1110 or CS 3110.

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

DATA 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, Data Science Option](#) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for DATA SCIENCE OPTION – 39-41 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:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1000 Computers and Modern Society	3	No equivalent	--
COMM 1000 Public Speaking	3	COMS 121 Public Speaking OR COMS 125 Personal Communication	3 3

ADDITIONAL REQUIRED GENERAL EDUCATION COURSES for this option:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1030 Introduction to Computer Programming	3	CIS 142 Beginning Programming using Python OR CS 134 Programming Fundamentals	4 4
MATH 1131 Applied Calculus OR MATH 1151 Calculus I	3 5	MATH 231 Business and Applied Calculus I* OR MATH 241 Calculus I*	3 5

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

DATA SCIENCE OPTION – 27 semester hours:

UCM Course	Hrs	JCCC Equivalents	Hrs
Electives from the following: 12 semester hours required			
CS 4110 Mobile Applications Programming with Android	3	CIS 208 Mobile Application Development* OR GAME 255 Mobile Game Programming*	4 4
CS 3110 Applications Programming in C# and .NET	3	^CS 236 Object-Oriented Programming Using C#*	4
CS 4120 Advanced Applications Programming in Java	3	CIS 240 Advanced Topics in Java*	4
CS 4130 Server-Side Web Programming	3	CIS 275 Web-Enabled Database Programming*	4
CS 4000 Special Problems in Computer Science	3	GAME 242 Agile Game Development*	3
CYBR 4840 Ethical Hacking	3	IT 239 Ethical Hacking*	3
CS 4020 Internship	3	IT 271 Information Technology Internship I* OR IT 272 Information Technology Internship II*	3 3

FREE ELECTIVES: 10-12 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.

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](#) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for GAME DEVELOPMENT OPTION – 39-41 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:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1000 Computers and Modern Society	3	No equivalent	--
ACST 1300 Basic Statistics	3	MATH 181 Statistics*	3
COMM 1000 Public Speaking	3	COMS 121 Public Speaking OR	3
		COMS 125 Personal Communication	3

ADDITIONAL REQUIRED GENERAL EDUCATION COURSES for this option. Choose one:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1030 Introduction to Computer Programming OR	3	CIS 142 Beginning Programming using Python	4
		OR CS 134 Programming Fundamentals OR	4
MATH 1111 College Algebra OR	3	MATH 171 College Algebra* OR	3
MATH 1150 Pre-Calculus Mathematics OR	5	MATH 173 Precalculus* OR	5
MATH 1131 Applied Calculus OR	3	MATH 231 Business and Applied Calculus I* OR	3
MATH 1151 Calculus I	5	MATH 241 Calculus I*	5

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

GAME DEVELOPMENT OPTION – (Total of 27 semester hours from the two categories below as specified)

UCM Course	Hrs	JCCC Equivalents	Hrs
Electives from the following: 12 semester hours required			
CS 1030 Introduction to Computer Programming	3	CIS 142 Beginning Programming using Python	4
		OR CS 134 Programming Fundamentals (<i>Choose another elective if CIS 142 OR CS 134 was taken above to satisfy Gen. Ed. Req</i>)	4
CS 4110 Mobile Applications Programming with Android	3	CIS 208 Mobile Application Development* OR GAME 255 Mobile Game Programming*	4 4
CS 3110 Applications Programming in C# and .NET	3	^CS 236 Object-Oriented Programming Using C#*	4
CS 4120 Advanced Applications Programming in Java	3	CIS 240 Advanced Topics in Java*	4
CS 4130 Server-Side Web Programming	3	CIS 275 Web-Enabled Database Programming*	4
CS 4000 Special Problems in Computer Science	3	GAME 242 Agile Game Development*	3
CYBR 4840 Ethical Hacking	3	IT 239 Ethical Hacking*	3
CS 4020 Internship	3	IT 271 Information Technology Internship I* OR	3
		IT 272 Information Technology Internship II*	3

FREE ELECTIVES: 10-12 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.

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](#) in the UCM Catalog.

GENERAL EDUCATION REQUIREMENTS for SOFTWARE DEVELOPMENT OPTION – 39-41 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:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1000 Computers and Modern Society	3	No equivalent	--
ACST 1300 Basic Statistics	3	MATH 181 Statistics*	3
COMM 1000 Public Speaking	3	COMS 121 Public Speaking OR COMS 125 Personal Communication	3 3

ADDITIONAL REQUIRED GENERAL EDUCATION COURSES for this option. Choose one:

UCM Course	Hrs	JCCC Equivalents	Hrs
CS 1030 Intro to Computer Programming OR	3	CIS 142 Beginning Programming using Python OR CS 134 Programming Fundamentals	4 4
MATH 1111 College Algebra OR	3	MATH 171 College Algebra* OR	3
MATH 1150 Pre-Calculus Mathematics OR	5	MATH 173 Precalculus* OR	5
MATH 1131 Applied Calculus OR	3	MATH 231 Business and Applied Calculus I* OR	3
MATH 1151 Calculus I	5	MATH 241 Calculus I*	5

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)

UCM Course	Hrs	JCCC Equivalents	Hrs
Electives from the following: 12-24 semester hours required			
CS 3110 Applications Programming in C# and .NET	3	^CS 236 Object-Oriented Programming Using C#*	4
CS 4120 Advanced Applications Programming in Java	3	CIS 240 Advanced Topics in Java*	4
Electives from the following: 3-15 semester hours required			
CS 4110 Mobile Applications Programming with Android	3	CIS 208 Mobile Application Development* OR GAME 255 Mobile Game Programming*	4 4
CS 1030 Introduction to Computer Programming	3	CIS 142 Beginning Programming using Python OR CS 134 Programming Fundamentals (<i>Choose another elective if CIS 142 OR CS 134 was taken above to satisfy Gen. Ed. Req</i>)	4 4
CS 4130 Server-Side Web Programming	3	CIS 275 Web-Enabled Database Programming*	4
CS 4000 Special Problems in Computer Science	3	GAME 242 Agile Game Development*	3
CYBR 4840 Ethical Hacking	3	IT 239 Ethical Hacking*	3
CS 4020 Internship	3	IT 271 Information Technology Internship I* OR IT 272 Information Technology Internship II*	3 3

FREE ELECTIVES: 10-12 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.