

# COMPUTER SCIENCE, BACHELOR OF SCIENCE (629P, 629)

## Program Coordinator

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## Computer Science Program Educational Objectives

The program achieves its mission by focusing on specific educational objectives. Within three to five years after graduation, WKU CS graduates are expected to be:

- Objective 1:** Engage in continuous learning to adapt to innovation and evolving technologies;
- Objective 2:** Design and implement solid solutions for rapidly changing computing & information systems;
- Objective 3:** Be effective team participants;
- Objective 4:** Effectively communicate ideas in verbal and written form at the appropriate level for the audiences;
- Objective 5:** Be ethical and socially responsible computer science professional

The CS student outcomes are listed on the program website at <https://www.wku.edu/seas/>.

## Concentrations

- Systems/Scientific App (CSSA)
- General (CGEN)

## Admission Requirements

The major in computer science requires a minimum of 53 semester hours. To be admitted to the computer science major, students must complete CS 290 (<https://catalog.wku.edu/search/?P=CS%20290>) or CS 221 (<https://catalog.wku.edu/search/?P=CS%20221>) with grades of "C" or better. In addition, all CS courses counting toward the CS program major must be completed with a grade of "C" or better. Computer Science electives may include from 0-3 hour of 200-level courses. Students must adhere to all University Policies as indicated in the WKU catalog section, "Academic Information."

## Program Requirements (53 hours)

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at [www.wku.edu/registrar/degree\\_certification.php](http://www.wku.edu/registrar/degree_certification.php). ([https://www.wku.edu/registrar/degree\\_certification.php](https://www.wku.edu/registrar/degree_certification.php))

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: <https://www.wku.edu/colonnade/colonnaderequirements.php>. (<https://www.wku.edu/colonnade/colonnaderequirements.php>)

## Systems/Scientific Applications Concentration

Code	Title	Hours
<b>Core Courses</b>		
CS 180	Computer Science I	4
CS 290	Computer Science II	4

CS 325	Computer Organization and Architecture	3
CS 331	Data Structures	3
CS 339	Discrete Structures	3
CS 351	Database Management Systems I	3
CS 360	Software Engineering I	3
CS 382	Programming Languages	3
CS 396	Intermediate Software Project	3
CS 421	Data Structures and Algorithm Analysis	3
CS 425	Operating Systems I	3
CS 496	CS Senior Project and Professional Practice	3
STAT 301	Introductory Probability and Applied Statistics	3

## Electives

Select 12 hours from the following courses:		12
CS 270	Introduction to Web Programming	
CS 315	Introduction to Unix	
CS 371	Advanced Computational Problem Solving	
CS 372	Mobile App Development	
CS 381	Introduction to Computer Networks	
CS 443	Database Management Systems II	
CS 445	Operating Systems II	
CS 446	Interactive Computer Graphics	
CS 450	Computer Networks	
CS 456	Artificial Intelligence	

**Total Hours** **53**

**Code** **Title** **Hours**

## Additional Requirements for the Systems/Scientific Applications Concentration

MATH 136 Calculus I 4

**Math Electives** **6-7**

Choose two for the following list:

MATH 137	Calculus II
MATH 305	Introduction to Mathematical Modeling
MATH 307	Introduction to Linear Algebra
MATH 331	Differential Equations
MATH 405	Numerical Analysis I
MATH 406	Numerical Analysis II
MATH 470	Introduction to Operations Research
MATH 473	Introduction to Graph Theory
STAT 401	Regression Analysis
STAT 402	Experimental Design

Two natural science courses (at least 6 hours; at least one course must include a lab) designed for Science/Engineering majors 6-7

**Total Hours** **16-18**

## General Option

Code	Title	Hours
<b>Core Courses</b>		
CS 180	Computer Science I	4
CS 290	Computer Science II	4
CS 331	Data Structures	3
CS 325	Computer Organization and Architecture	3
CS 339	Discrete Structures	3
CS 351	Database Management Systems I	3
CS 360	Software Engineering I	3
CS 382	Programming Languages	3
CS 396	Intermediate Software Project	3
CS 421	Data Structures and Algorithm Analysis	3
CS 425	Operating Systems I	3
CS 496	CS Senior Project and Professional Practice	3
STAT 301	Introductory Probability and Applied Statistics	3

### Electives

Select 12 hours CS electives including: 3 hours at the 200-level or above (excluding CS 226 and CS 257), 6 hours at the 300-level or above and another 3 hours at the 400-level or above <sup>1</sup>	12
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**Total Hours 53**

Code	Title	Hours
<b>Additional Requirements for the General Option:</b>		
MATH 136	Calculus I	4
<b>Total Hours</b>		<b>4</b>

<sup>1</sup> At most 1.5 hours of credit for CS 239 may count towards the major. At most 3 hours of credit for CS 239 and CS 245 (only for languages for which credit is not received through another course) may count towards the major.

## Finish in Four Plans Computer Science, General

<b>First Year</b>			
Fall	Hours	Spring	Hours
CS 180		4 CS 290	4
ENG 100		3 MATH 136	4
Colonnade - Arts & Humanities		3 COMM 145	3
General Elective		2 General Elective	3
Colonnade - Natural & Physical Science w/ lab		4	
		<b>16</b>	<b>14</b>
<b>Second Year</b>			
Fall	Hours	Spring	Hours
CS 331		3 CS 351	3
Colonnade - Literary Studies		3 HIST 101 or HIST 102	3
CS 2XX Elective		3 CS 339	3
General elective		3 General Elective	3

CS 325	3	STAT 301	3
		<b>15</b>	<b>15</b>
<b>Third Year</b>			
Fall	Hours	Spring	Hours
Colonnade - Natural & Physical Science w/ no lab		3 CS 382	3
CS 360		3 CS 3XX Elective	3
CS 3XX Elective		3 Colonnade - Social & Behavioral	3
ENG 300		3 General elective	3
Colonnade - System		3 World Language Requirement or General Elective	3
		<b>15</b>	<b>15</b>
<b>Fourth Year</b>			
Fall	Hours	Spring	Hours
CS 396		3 CS 496	3
CS 425		3 CS 4XX Elective	3
CS 421		3 Colonnade - Local to Global	3
General Elective		3 General Elective	3
Colonnade - Social & Cultural		3 General Elective	3
		<b>15</b>	<b>15</b>

**Total Hours 120**

## Computer Science, Systems/Scientific Applications Concentration

<b>First Year</b>			
Fall	Hours	Spring	Hours
CS 180		4 CS 290	4
ENG 100		3 MATH 136	4
HIST 101 or HIST 102		3 COMM 145	3
General Elective		3 Colonnade - Arts & Humanities	3
World Language Requirement or General Elective		3	
		<b>16</b>	<b>14</b>
<b>Second Year</b>			
Fall	Hours	Spring	Hours
CS 331		3 CS 339	3
CS 325		3 CS 351	3
Colonnade - Literary Studies		3 Math Elective	3
Colonnade - Natural & Physical Sciences w/ lab		4 Colonnade - Natural & Physical Sciences w/ no lab	3
General elective		3 General elective	3
		<b>16</b>	<b>15</b>
<b>Third Year</b>			
Fall	Hours	Spring	Hours
STAT 301		3 CS 382	3
CS 360		3 CS Elective (CS 372 or CS 381 or CS 446)	3
CS Elective (CS 443, CS 450, or CS 456)		3 Colonnade - Social & Behavioral	3
ENG 300		3 Math Elective	3
Colonnade - System		3 General Elective	3
		<b>15</b>	<b>15</b>
<b>Fourth Year</b>			
Fall	Hours	Spring	Hours
CS 425		3 CS 496	3

CS 421	3 CS Elective (CS 445 or CS 446)	3
General Elective	3 Colonnade - Local to Global	3
CS Elective (CS 443 or CS 456)	3 Colonnade - Social & Cultural	3
CS 396	3 Math/Science Elective	3
	<b>15</b>	<b>15</b>

**Total Hours 121**