# **Articulation Agreement by Major**

Effective during the 2022-2023 Academic Year

To: California State University, Bakersfield 2022-2023 General Catalog, Semester

From: Fresno City College 2022-2023 General Catalog, Semester

### **Computer Science**

#### **GENERAL INFORMATION**

This articulation agreement displays lower-division course requirements specific to the major. Students should always contact an academic advisor about degree requirements for their baccalaureate major.

#### Helpful Resources

- CSUB Catalog
- <u>Transfer Admission Requirements</u>
- Academic Advising Student Centers

#### **ABOUT THE MAJOR**

Computer Science is a constantly evolving discipline. To quote the Association for Computing Machinery, "Computer Science is not simply concerned with the design of computing devices-nor is it just the art of numerical calculation. Computer Science is concerned with information in much the same sense that Physics is concerned with energy, it is devoted to the representation, storage, manipulation, and presentation of information in an environment permitting automatic information systems."

The Computer Science major at CSUB has three pathways that lead to a B.S. in Computer Science:

- Traditional Computer Science program follows the guidelines recommended by the Association for Computing Machinery (ACM) and the Accreditation Board for Engineering and Technology (ABET).
- Computer Information Systems concentration is intended for training application programmers or for those who wish to apply computer science in another discipline.
- Information Security concentration is intended for students who wish to pursue a career in information assurance and security, either with government agencies
  or with industry. Students in the three pathways will take different advanced courses of their choice. A Computer Science minor is also offered.

The Computer and Electrical Engineering and Computer Science Department moved into a new building in the Fall of 2008. The department administers its own local area network which includes multiple Unix/Linux servers, two software programming labs, a walk-in lab/tutoring center, one advanced workstation lab, an isolated network lab, an Al/visualization lab, a DSP/communications lab, one digital electronics hardware lab, a power systems/electronics lab, and a robotics/control systems lab. There is also a departmental library/major study room available to students.

An important goal of the department is to enable students to work much more closely with faculty than they would be able to at larger universities. A detailed description of student learning goals and objectives can be found at https://www.cs.csub.edu/abet/.

For additional information, visit the Department of Computer & Electrical Engineering and Computer Science.

#### **IMPORTANT NOTE**

A modification to the standard GE program has been approved that allows the possibility of satisfying some GE requirements through the major. Please see the Computer Science General Education Courses and Notes in the **CSUB catalog** for further information.

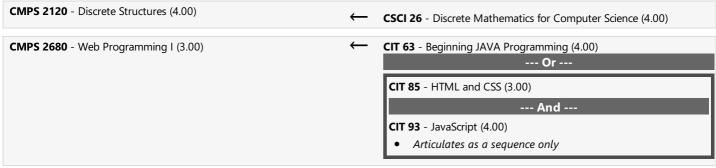
#### **MAJOR IN COMPUTER SCIENCE**

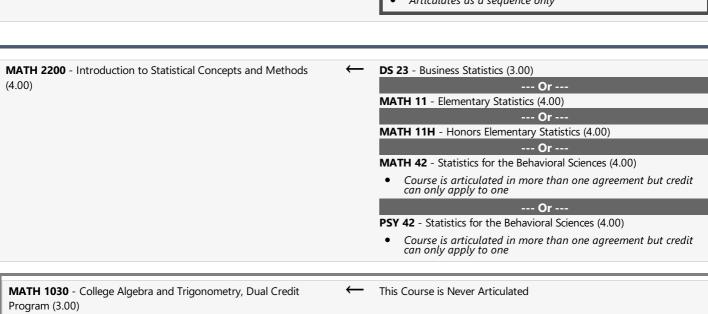
All courses in this section are required			
CMPS 2010 - Programming I: Programming Fundamentals (4.00)	<b>←</b>	CSCI 40 - Programming Concepts and Methodology I (4.00)	
CMPS 2020 - Programming II: Data Structures and Algorithms (4.00)	$\leftarrow$	CSCI 41 - Programming Concepts and Methodology II (4.00)	
CMPS 2120 - Discrete Structures (4.00)	$\leftarrow$	CSCI 26 - Discrete Mathematics for Computer Science (4.00)	
<b>CMPS 2240</b> - Computer Architecture I: Assembly Language Programming (4.00)	<b>←</b>	CSCI 45 - Computer Architecture and Organization (4.00)	

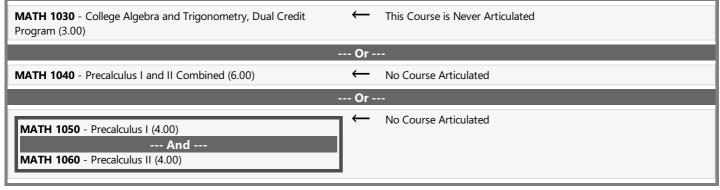
MATH 2310 - Single Variable Calculus I for Engineers (4.00)	← No Course Articulated	
Or		
MATH 2510 - Single Variable Calculus I (4.00)	← MATH 5A - Mathematical Analysis I (5.00)	

MATH 2320 - Single Variable Calculus II for Engineers (4.00)	← No Course Articulated
MATH 2520 - Single Variable Calculus II (4.00)	Or  ← MATH 5B - Mathematical Analysis II (4.00)
MATTI 2220 Single Variable Calculus II (4.00)	WATER SE WATER ATTAINED TO (4.00)
PHYS 2210 - Calculus-Based Physics I (4.00)	← PHYS 4A - Physics for Scientists and Engineers (4.00)
PHYS 2220 - Calculus-Based Physics II (4.00)	← PHYS 4B - Physics for Scientists and Engineers (4.00)
Select 1 Cour	se(s) from the following
BIOL 1009 - Perspectives in Biology (3.00)	← BIOL 3 - Introduction to Life Science (4.00)
	Or
BIOL 1039 - Principles of Ecology (3.00)	← No Course Articulated
	Or
BIOL 2010 - Introductory Biology - Cells (4.00)	← BIOL 11A - Biology for Science Majors I (5.00)
	Or
CHEM 1000 - Foundations of Chemistry (3.00)	CHEM 1A - General Chemistry (5.00)
, (,	<ul> <li>Course is articulated in more than one agreement but credit can only apply to one</li> </ul>
	Or
GEOL 2010 - Physical Geology (4.00)	← GEOL 1 - Physical Geology (4.00)
	<ul> <li>Course is articulated in more than one agreement but credit can only apply to one</li> </ul>
	Or
MATH 2200 - Introduction to Statistical Concepts and Methods	← DS 23 - Business Statistics (3.00)
(4.00)	Or
	MATH 11 - Elementary Statistics (4.00) Or
	MATH 11H - Honors Elementary Statistics (4.00)
	Or
	MATH 42 - Statistics for the Behavioral Sciences (4.00)
	Course is articulated in more than one agreement but credit can only apply to one
	Or PSY 42 - Statistics for the Behavioral Sciences (4.00)
	Course is articulated in more than one agreement but credit can only apply to one
	Or
MATH 2533 - Multivariable and Vector Calculus (4.00)	← MATH 6 - Mathematical Analysis III (4.00)
THATTI 2000 - INIUILIVALIADIE AITU VECLUI CALCUIUS (4.00)	Or
MATH 2540 O. Harry Differential 5 of 1400	
MATH 2540 - Ordinary Differential Equations (4.00)	MATH 7 - Introduction to Differential Equations (4.00)
	Or
MATH 2610 - Linear Algebra I (4.00)	← MATH 26 - Elementary Linear Algebra (3.00) Or
PHYS 2230 - Calculus-Based Physics III (4.00)	← PHYS 4C - Physics for Scientists and Engineers (4.00)
Calculus Busca i flysics III (4.00)	Or
SCI 1409 - Introduction to Scientific Thinking (3.00)	← No Course Articulated
CONCENTRATION IN CO	MPUTER INFORMATION SYSTEMS

All courses in this section are required		
CMPS 2010 - Programming I: Programming Fundamentals (4.00)	$\leftarrow$	CSCI 40 - Programming Concepts and Methodology I (4.00)
CMPS 2020 - Programming II: Data Structures and Algorithms (4.00)	<b>←</b>	CSCI 41 Programming Concents and Mathadalogy II (4.00)
CMPS 2020 - Programming II. Data Structures and Algorithms (4.00)	`	CSCI 41 - Programming Concepts and Methodology II (4.00)







CONCENTRATION IN INFORMATION SECURITY			
All courses in this section are required			
CMPS 2010 - Programming I: Programming Fundamentals (4.00)	$\leftarrow$	CSCI 40 - Programming Concepts and Methodology I (4.00)	
CMPS 2020 - Programming II: Data Structures and Algorithms (4.00)	$\leftarrow$	CSCI 41 - Programming Concepts and Methodology II (4.00)	
CMPS 2120 - Discrete Structures (4.00)	←	CSCI 26 - Discrete Mathematics for Computer Science (4.00)	
<b>CMPS 2240</b> - Computer Architecture I: Assembly Language Programming (4.00)	<b>←</b>	CSCI 45 - Computer Architecture and Organization (4.00)	

MATH 2310 - Single Variable Calculus I for Engineers (4.00)	← No Course Articulated	
	Or	
MATH 2510 - Single Variable Calculus I (4.00)	← MATH 5A - Mathematical Analysis I (5.00)	
MATH 2320 - Single Variable Calculus II for Engineers (4.00)	← No Course Articulated	
Or		
MATH 2520 - Single Variable Calculus II (4.00)	← MATH 5B - Mathematical Analysis II (4.00)	

## **END OF AGREEMENT**