

Bachelor of Arts in Computer Science

The Bachelor of Arts in Computer Science comprises a rigorous, broad curriculum, including topics in algorithms and data structures, machine architecture, software development. A wide variety of additional topics are covered, such as philosophy, literary theory, and digital arts. Students will have a foundational program of study in computer science and gain interdisciplinary breadth via selected courses in the humanities. This program is designed to prepare individuals for professional contributions in traditional computer science areas and new fields involving increased application of computer science, such as digital humanities, media and communication, and interactive design. This degree program can also prepare students for graduate study.

This program has specific admission requirements.

Degree Program Objectives

In addition to the institutional and degree level learning objectives, graduates of this program are expected to achieve these learning outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the computer science discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

Programmatic Admission Requirements

For admission to the BA of Computer Science, applicants must have completed preparation in mathematics equivalent to pre-calculus or higher. A review of high school or college transcripts showing completion of this requirement will be conducted during the admission process.

Please visit our AMU (<https://www.amu.apus.edu/admissions/undergraduate-requirements.html>) or APU ([https://www.apu.apus.edu/admissions/undergraduate-](https://www.apu.apus.edu/admissions/undergraduate-requirements.html)

[requirements.html](https://www.apu.apus.edu/admissions/undergraduate-requirements.html)) undergraduate admission page for more information on institutional admission requirements.

Need help?

If you have questions regarding a program’s admission requirements, please contact an admissions representative at 877-755-2787 or info@apus.edu.

Degree at a Glance

Code	Title	Semester Hours
	General Education Requirements	30
	Major Required	66
	Select one of the following concentrations:	18
	Artificial Intelligence (p. 3)	
	Communications (p. 3)	
	Final Program Requirements	6
	Total Semester Hours	120

Degree Program Requirements

General Education Requirements (30 semester hours)

Code	Title	Semester Hours
Arts and Humanities (6 semester hours)¹		
STEM270	Thinking and Acting Ethically	3
Select 1 courses from the following:		
ARAB100	Arabic I	
ARAB101	Arabic II	
ARTH200	Art Appreciation	
ARTH241	Film and Literature	
DSIN141	Image Enhancement using Adobe Photoshop	
FREN100	French I	
FREN101	French II	
GERM100	German I	
GERM101	German II	
JAPN100	Introduction to Japanese	
LITR215	Literature of American Encounters, Revolution, and Rebellion	
LITR218	From Abolition to #MeToo: Literature of the American Civil Rights Movement	
LITR222	Pivotal Figures in Early British Literature	

LITR225	British Literature from Wordsworth through the Wasteland	
LITR231	Leadership in World Literature: Antiquity to the Early Modern Period	
LITR233	Literature of the Newly Globalized World: The Individual's Struggle to Adapt	
MUSI200	Music Appreciation	
MUSI250	World Music and Cultures	
PHIL101	Introduction to Philosophy	
PHIL110	Critical Thinking	
PHIL200	Introduction to Ethics	
PHIL202	Philosophy of Science	
PORT100	Introduction to Brazilian Portuguese	
RELS201	Introduction to World Religions	
RUSS100	Russian I	
SPAN100	Spanish I	
SPAN101	Spanish II	
Civics, Political and Social Sciences (6 semester hours)		
STEM280	Exploring Society and Cultures via Science Fiction	3
Select 1 courses from the following:		3
ANTH100	Introduction to Anthropology	
ANTH202	Introduction to Cultural Anthropology	
CHFD220	Human Sexuality	
COMM211	Social Media and Society	
COMM240	Intercultural Communication	
ECON101	Microeconomics	
ECON102	Macroeconomics	
EDUC200	Humane Education: A Global Interdisciplinary Perspective	
GEOG101	Introduction to Geography	
HOSP110	Practical Food Safety and Awareness	
IRLS210	International Relations I	
LITR212	Forgotten America--Under Represented Cultures in American Literature	
LITR235	Four Points of the Compass: Culture and Society Around the World	
POLS101	Introduction to Political Science	
POLS210	American Government I	
PSYC101	Introduction to Psychology	
SOCI111	Introduction to Sociology	
SOCI212	Social Problems	
SOCI220	American Popular Culture	
Communication: Writing, Oral, and Multimedia (9 semester hours)		
COMM120	Information and Digital Literacy	3

ENGL110	Making Writing Relevant	3
Select 1 course from the following:		3
COMM200	Public Speaking	
ENGL101	Proficiency in Writing	
ENGL115	Argumentation and Rhetoric	
ENGL210	Introduction to Literature	
ENGL220	Technical Writing	
ENGL221	Scientific Writing	
ENGL226	Effective Business Communication	
HRMT101	Human Relations Communication	
IRLS200	Information Literacy and Global Citizenship	
ITCC231	Introduction to Information Technology Writing	
MGMT100	Human Relations	
History (3 semester hours)		
STEM185	The History and Context of STEM	3
Mathematics and Applied Reasoning (3 semester hours)		
MATH225	Calculus	3
Natural Sciences (3 semester hours)		
STEM100	Introduction to STEM Disciplines	3
Total Semester Hours		30

¹ All literature courses require successful completion of ENGL101 - Proficiency in Writing or ENGL110 - Making Writing Relevant.

Major Required (66 semester hours)

Code	Title	Semester Hours
MATH210	Discrete Mathematics	3
ENGL235	Take on the World: An Introduction to Linguistics	3
MATH220	Linear Algebra	3
COMM255	Digital Tools and Media in Communication	3
CSCI140	Introduction to Programming	3
PHIL101	Introduction to Philosophy	3
IRLS200	Information Literacy and Global Citizenship	3
CSCI240	Algorithms and Data Structures I	3
CSCI230	Machine Architecture and Organization	3
CSCI220	Operating Systems I	3
MATH302	Statistics	3
CSCI315	User Interface and Experience Design	3
CSCI340	Program Design and Development	3
CSCI345	Algorithms and Data Structures II	3
PHIL300	Logic	3
CSCI360	Introduction to Database Systems	3
CSCI325	Design for the Web	3
CSCI335	Web Applications Programming	3

CSCI415	Information Visualization	3
CSCI425	Information Systems Development	3
CSCI440	Principles of Programming Languages	3
STEM380	Coevolution of Society, Culture, and Technology	3
Total Semester Hours		66

Students must choose a concentration for this degree program and may select from a Concentrations in Artificial Intelligence or Concentration in Communications.

Concentration in Artificial Intelligence (18 semester hours)

The Artificial Intelligence concentration teaches students how to design computing systems with a focus on humanity. The concentration focuses on exploring the societal consequences of rapidly emerging artificial intelligence systems, integrating a humanities viewpoint with technological analyses. The concentration offers a unique context and a shared vocabulary for interpreting the impact of technical developments in artificial intelligence on society. The uniqueness comes from integrating a humanities viewpoint with a technological analysis, using literary interpretation methods to analyze the social effects of AI systems.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Analyze data and perform predictions using machine learning methods.
- Understand data collection, including data wrangling, cleaning, and sampling to get a suitable data set.
- Understand data management in order to access data quickly and reliably.
- Understand exploratory data analysis, generating hypotheses and building intuition.
- Understand communication, summarizing results through visualization, stories, and interpretable summaries.
- Gain practical knowledge of predictions and statistical learning.
- Create web-based complex projects as a member of a team.

Concentration Requirements (18 semester hours)

Code	Title	Semester Hours
CSCI381	Machine Learning	3
PSYC304	Perception	3
CSCI484	Introduction to Artificial Intelligence	3
CSCI486	Deep and Reinforcement Learning	3

CSCI336	Topics in Computer Vision	3
STEM471	Analytics, Algorithms, AI, and Humanity	3
Total Semester Hours		18

Concentration in Communications (18 semester hours)

The Communications concentration provides insight into the role of communication in a wide range of settings. The concentration focuses on unique domains. Students take courses not only about misinformation and disinformation, but also on web, graphic arts, information systems, security, and ethics. Students learn professional work practices, while emphasizing both theories and principles that focus on quality, effectiveness, and security of information. Students also learn how new media impacts our interaction and communication. Students also consider available mechanisms to address current challenges.

Objectives

Upon successful completion of this concentration, the student will be able to:

- Effectively use design tools to create attractive visual compositions
- Understand the key design and human perception principles
- Understand the importance of cognition in visualization design
- Apply structured design processes for data exploration, analysis, and storytelling
- Focus on tools and available techniques for designing effective visuals
- Use criticism and critical evaluation, giving suggestions, and proposing improvements
- Work constructively on complex projects as part of a team
- Use creative thinking in challenging scenarios of high-dimensional data
- Explore different communication spaces (print, phone, desktop, VR, and AR)

Concentration Requirements (18 semester hours)

Code	Title	Semester Hours
COMM356	Digital Communication and Media Design Principles	3
COMM280	Ethics in Communication	3
COMM375	Web and Mobile Communication	3
CSCI471	Software Engineering	3
CSCI452	Cybersecurity/Cyber Defense	3

STEM470	Cybersecurity, Surveillance, Privacy and Ethics	3
Total Semester Hours		18

Final Program Requirements (6 semester hours)

Code	Title	Semester Hours
CSCI498	Senior Project Design	3
CSCI499	Senior Project Implementation	3
Total Semester Hours		6