

# B.S. COMPUTER SCIENCE

## OVERVIEW

The Bachelor of Science in Computer Science program places an emphasis on the theoretical and mathematical foundations of computing. The program is designed to develop students' problem-solving and programming skills. Students are exposed to computer operating systems, programming, computer networking, computer architecture, database design, and additional program topics.

Our Computer Science graduates work within almost every field that you can imagine, from medical to design, from nonprofit government to large corporations. Computer science graduates will likely enter rewarding careers with competitive salaries.

## Program Student Learning Outcomes

The student will be able to:

- Communicate effectively on technical subjects appropriate to the discipline.
- Identify a reasoned resolution to an ethical challenge in computing context.
- Apply knowledge to address the IT security needs of an organization
- Design appropriate computing solutions to business problems
- Apply mathematical foundations, algorithmic principles, and computer science theory in building computational systems

## Bachelor of Science - Computer Science Program Requirements

Refer to the General Education Core Requirements ([catalog.tamuct.edu/undergraduate-information/general-education-core-requirements/](http://catalog.tamuct.edu/undergraduate-information/general-education-core-requirements/)) page for more information on the CORE REQ coursework. The Field of Study (FOS) courses are listed in the footnotes (if applicable). At least 120 credit hours are required for the degree.

Code	Title	Credit Hours
<b>First Year</b>		
Fall		
	CORE REQ Communications (010)	3
MATH 2413	Calculus I (CORE REQ (020)	4
	CORE REQ American History (060)	3
	CORE REQ Social and Behavioral Science (080)	3
	Any Level Elective <sup>2</sup>	3
Spring		
	CORE REQ Communication (010)	3
	CORE REQ American History (060)	3
	CORE REQ Creative Arts (050)	3
MATH 2414	Calculus II (DEG REQ)	4
	Any Level Elective <sup>2</sup>	3
<b>Second Year</b>		
Fall		
PHYS 2425	University Physics I (CORE REQ (030)	4
COSC 1336	Programming Fundamentals I (CORE REQ (090)	3
MATH 1342	Elementary Statistical Methods (DEG REQ)	3

	or MATH 3300	Principles of Statistics	
	CORE REQ Government/Political Science (070)		3
Spring			
PHYS 2426		University Physics II (CORE REQ (030)	4
COSC 1337		Programming Fundamentals II (CORE REQ (090)	3
	CORE REQ Government/Political Science (070)		3
	CORE REQ Language, Philosophy, and Culture (040)		3
	Any Level Elective <sup>2</sup>		2
<b>Third Year</b>			
Fall			
MATH 2305		Discrete Mathematics	3
	or MATH 3310	Discrete Mathematics	
CIS 3360		Ethics in Computing	3
CIS 3330		C++ Programming	3
	or CIS 3332	Java Programming	
	or CIS 3340	Advanced C++ Programming	
	or CIS 3342	Advanced Java Programming	
	or CIS 3343	C# Programming for Windows and the Web	
MATH 3360		Numerical Analysis I	3
	or MATH 3332	Linear Algebra	
COSC 4341		Information Technology Security and Risk Management	3
Spring			
COSC 3380		Operating Systems	3
COSC 4301		Database Theory and Practices	3
CIS 3347		Data Communications and Infrastructure	3
	Upper-Level Faculty Approved Elective		3
	Upper-Level Faculty Approved Elective		3
<b>Fourth Year</b>			
Fall			
COSC 3343		Computer Architecture	3
COSC 4379		Software Engineering for E-Business	3
COSC 3351		Data Structures	3
	Upper-Level Faculty Approved Elective		3
	Upper-Level Faculty Approved Elective		3
Spring			
COSC 4340		Analysis of Algorithms	3
COSC 4378		Computer Networks	3
	Upper-Level Faculty Approved Elective		3
	Upper-Level Faculty Approved Elective		3
	Upper-Level Faculty Approved Elective		3
Total Credit Hours			120

<sup>1</sup> Lower Level Electives, Any Level Electives, Component Area Options, or Degree Requirements (DEG REQ) may consist of the FOS courses: MATH 2413, MATH 2414, MATH 2305, COSC 1436, COSC 1437, COSC 2436, PHYS 2425, PHYS 2426 (or 3 credit hour lecture and 1 hour lab courses for PHYS), one of the following: COSC 2325, COSC 2425.

<sup>2</sup> A student may need to take foundation courses such as algebra, trigonometry, or pre-calculus before taking the required calculus courses. A student may apply up to 6 hours of these foundation courses as electives in the Lower-level Course Requirements.