

# CYBER SECURITY, BACHELOR OF SCIENCE

## Overview

### Bachelors of Science in Cyber Security (BS-CSEC)

Cyber security is critical in existing and new technology domains, such as: software systems and applications, cloud computing, embedded and mobile systems, and internet-of-things (IoT). The objectives of the Bachelor's Degree in Cyber Security (BS-CSEC) are to prepare undergraduate students with the necessary:

- cyber security knowledge and
- skill components of using current cyber security technologies

as required by business, government, and academic organizations.

This program prepares individuals to:

- Assess the cyber security needs of computing systems and its component systems such as networks, storage, software, hardware, firmware, cloud, IoT, embedded systems, mobile systems, cyber physical systems, and others
- Recommend safeguard solutions
- Manage the implementation, auditing, and maintenance of security devices, systems, and procedures
- Develop and use current cyber security tools and techniques for tasks such as data analysis, penetration testing, forensics, AI for cyber security, etc.,

Upon completion of the degree program, students may pursue their careers such as:

- Information Security Analyst
- Penetration Tester
- Cyber security Architect
- Cyber security Software Developer/Engineer
- Risk Assessment Analyst
- Cyber Forensics Analyst

The flexible program is designed to meet the needs of current high school students as well as working professionals, who want to get a cyber security focused bachelor's degree to meet the demands of the evolving field of cyber security. The program curriculum and courses (designated as CSEC), offered ONLINE beginning Fall 2021 in a phased manner, are designed to enable students to join the program in either Fall or Spring semester, complete the program in four years or to take courses at their own pace. The phased implementation of the program offers first year courses beginning in Fall 2021, second year courses beginning in Fall 2022, and so on. Students who are able to take the university core curriculum courses online have the possibility of completing the entire program online.

Admission to the BS-CSEC program is based on the general university admissions requirements.

## Requirements

### General Requirements

Code	Title	Credits
	Core Curriculum	42
	Department Requirements	8
	University Requirements	3
	Required Support Courses	21
	Major Courses	34
	Major Electives	12
<b>Total Credits</b>		<b>120</b>

- 30 CSEC/CISA/CSCI upper-division hours required for this degree must be completed at A&M-SA to satisfy residency requirement.
- Must complete at least 40 hours of major courses plus hours of major electives at A&M-SA.
- Must receive a grade of "C" or better in all MATH, CSEC, CSCI, and CISA courses and their associated prerequisites for satisfactory passing grade.
- A minimum average GPA of 2.25 must be maintained in all CSEC, CSCI and CISA core and elective courses to remain in the program. Applies to transfer courses also.
- Academic credits transferred as substitution courses must be completed within previous five years of admission to A&M-SA.
- CIP Code: 11.1003

#### Department probation and withdrawal:

For all departmental students in the Department of Computing and Cyber Security (CCS), to avoid department probation or withdrawal, the minimum GPA requirement in all CCS department courses (hereby called DCGPA) is 2.25. Courses with prefix CSCI, CISA, CETE, CSEC are departmental courses.

A student majoring in any of these disciplines is a departmental student: BS Computer Science (BSCS), BS Cyber Engineering Technology (BS-CETE), BS Cyber Security (BS-CSEC), BBA-Computer Information Systems (general and IA track) (BBA-CIS), and Bachelor of Applied Arts and Sciences (general and IA track) (BAAS-IT/BAAS-IT-IA).

#### Department probation

After a departmental student has completed four departmental courses, if the DCGPA drops below 2.25, the student will be placed on a department probation that term. In order to get off of department probation, a student must bring their DCGPA to 2.25 or higher by the following term. If the student does not bring their DCGPA to a 2.25 in one semester or term, the student will then be placed on a department withdrawal. A student can be on probation a maximum of two times. After that, the student will be placed on department withdrawal instead of department probation.

#### Department withdrawal

A student who has been placed on department probation and earns the DCGPA below 2.25 will be placed on department withdrawal. Because it is the first withdrawal, the student will be required to complete a departmental appeal, submit a personal letter, and an academic success plan of action to bring the DCGPA to 2.25 or higher by the following term. The plan has to be approved by the department chair or a designee. If a student is unable to bring the DCGPA to 2.25 or higher in one semester, the student will be required to select another major out of the department. A student can be on withdrawal only once. A second withdrawal will require a student to select a major out of the department.

Mandatory requirements for students on department probation and withdrawal

1. Meet with an Academic Success Coach for coaching on appropriate tutoring, study habits, etc.
2. Meet with their academic advisors and faculty mentors to seek guidance on computing course and careers.
3. Not register for more than 9 hours of departmental courses in the semester following probation/withdrawal.

Code	Title	Credits
<b>Core Curriculum</b>		
ENGL 1301	Composition I	3
ENGL 2311	Technical Writing	3
	or ENGL 1302 Composition II	
MATH 1314	College Algebra	3
Life and Physical Sciences		3
Life and Physical Sciences		3
Language, Philosophy, Culture		3
Creative Arts		3
HIST 1301	US History to 1865	3
HIST 1302	US History from 1865	3
GOVT 2305	Federal Government	3
GOVT 2306	Texas Government	3
Social and Behavioral Sciences		3
MATH 1342	Introductory Statistics	3
& MATH 1042	and Intro Statistics Recitation	
MATH 2312	Pre-Calculus	3
Subtotal:		42
<b>Department Requirements</b>		
CSEC 1436	Cyber Security Prog I + Lab	4
CSEC 1437	Cyber Security Prog II + Lab	4
Subtotal:		8
<b>University Requirement</b>		
UNIV 1301	First Year Seminar	3
Subtotal:		3
<b>Required Support Courses</b>		
CSEC 1360	Security Tools I	3
CSEC 2306	Computer Networks	3
CSEC 2325	Hardware Security	3
CSEC 2360	Security Tools II	3
CSEC 3309	Scripting Languages	3
CSEC 2336	Cyber Security Applications	3
CSEC 2341	Advanced Topics in Cyber Secur	3
Subtotal:		21
<b>Major Courses</b>		
CSEC 3321	Information Security	3
CSEC 3325	Network Security	3
CSEC 3351	Database Design	3
CSEC 3366	Database Security	3
CSEC 3385	Secure Software Engineering	3
CSEC 4323	Computer Forensics	3
CSEC 4324	Penetration Testing	3

CSEC 4326	Security & Operation Practicum	3
CSEC 4380	Applied Cryptosystems	3
CSEC 4391	IoT Security	3
CSEC 4483	Advanced Penetration Testing	4
Subtotal:		34
<b>Major Electives</b>		
Approved Upper-Division CSEC/CSCI/CISA/CETE Elective		3
Approved Upper-Division CSEC/CSCI/CISA/CETE Elective		3
Approved Upper-Division CSEC/CSCI/CISA/CETE Elective		3
Approved Upper-Division CSEC/CSCI/CISA/CETE Elective		3
Subtotal:		12
<b>Total Credits</b>		<b>120</b>

## Plan of Study

*This suggested plan of study is intended to be used as a guide in conjunction with official degree requirements outlined in the catalog. While this plan demonstrates a course of study that covers eight semesters, each student's academic path is unique and your timeline may look different. Students should regularly consult with academic advisors as they plan their course schedules as course offerings may vary.*

## Fall Semester Start

### First Year

First Semester	Credits	
ENGL 1301	Composition I	3
MATH 1314	College Algebra	3
HIST 1301	US History to 1865	3
UNIV 1301	First Year Seminar	3
CSEC 1360	Security Tools I	3
	<b>Credits</b>	<b>15</b>

### Second Semester

ENGL 1302	Composition II	3
	or ENGL 2311 or Technical Writing	
MATH 1342	Introductory Statistics	3
& MATH 1042	and Intro Statistics Recitation	
CSEC 1436	Cyber Security Prog I + Lab	4
CSEC 2360	Security Tools II	3
CSEC 2306	Computer Networks	3
	<b>Credits</b>	<b>16</b>

### Second Year

First Semester	Credits	
GOVT 2305	Federal Government	3
Life & Physical Science		3
MATH 2312	Pre-Calculus	3
CSEC 1437	Cyber Security Prog II + Lab	4
CSEC 3321	Information Security	3
	<b>Credits</b>	<b>16</b>

### Second Semester

GOVT 2306	Texas Government	3
Life & Physical Science		3
CSEC 2336	Cyber Security Applications	3
CSEC 2325	Hardware Security	3

CSEC 2341	Advanced Topics in Cyber Secur	3
<b>Credits</b>		<b>15</b>
<b>Third Year</b>		
<b>First Semester</b>		
CSEC 3309	Scripting Languages	3
CSEC 3351	Database Design	3
CSEC 3385	Secure Software Engineering	3
HIST 1302	US History from 1865	3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>15</b>
<b>Second Semester</b>		
CSEC 3325	Network Security	3
CSEC 3366	Database Security	3
CSEC 4323	Computer Forensics	3
Social and Behavioral Sciences		3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>15</b>
<b>Fourth Year</b>		
<b>First Semester</b>		
CSEC 4324	Penetration Testing	3
CSEC 4380	Applied Cryptosystems	3
CSEC 4391	IoT Security	3
Lang/Phil/Culture		3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>15</b>
<b>Second Semester</b>		
CSEC 4326	Security & Operation Practicum	3
CSEC 4483	Advanced Penetration Testing	4
Creative Arts		3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>120</b>

## Spring Semester Start

<b>First Year</b>		
<b>First Semester</b>		
ENGL 1301	Composition I	3
MATH 1314	College Algebra	3
HIST 1301	US History to 1865	3
Life & Physical Science		3
UNIV 1301	First Year Seminar	3
<b>Credits</b>		<b>15</b>
<b>Second Semester</b>		
ENGL 1302	Composition II	3
or ENGL 2311	or Technical Writing	
MATH 1342	Introductory Statistics	3
& MATH 1042	and Intro Statistics Recitation	
CSEC 1436	Cyber Security Prog I + Lab	4
CSEC 1360	Security Tools I	3
HIST 1302	US History from 1865	3
<b>Credits</b>		<b>16</b>

<b>Second Year</b>		
<b>First Semester</b>		
GOVT 2305	Federal Government	3
MATH 2312	Pre-Calculus	3
CSEC 1437	Cyber Security Prog II + Lab	4
CSEC 2360	Security Tools II	3
CSEC 2306	Computer Networks	3
<b>Credits</b>		<b>16</b>
<b>Second Semester</b>		
GOVT 2306	Texas Government	3
Life & Physical Science		3
CSEC 3321	Information Security	3
CSEC 3309	Scripting Languages	3
CSEC 3351	Database Design	3
<b>Credits</b>		<b>15</b>
<b>Third Year</b>		
<b>First Semester</b>		
CSEC 2325	Hardware Security	3
CSEC 2336	Cyber Security Applications	3
CSEC 2341	Advanced Topics in Cyber Secur	3
CSEC 3325	Network Security	3
CSEC 3366	Database Security	3
<b>Credits</b>		<b>15</b>
<b>Second Semester</b>		
CSEC 3385	Secure Software Engineering	3
CSEC 4324	Penetration Testing	3
CSEC 4391	IoT Security	3
Lang/Phil/Culture		3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>15</b>
<b>Fourth Year</b>		
<b>First Semester</b>		
CSEC 4323	Computer Forensics	3
CSEC 4326	Security & Operation Practicum	3
CSEC 4483	Advanced Penetration Testing	4
Approved Upper-Division CSEC Elective		3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>16</b>
<b>Second Semester</b>		
CSEC 4380	Applied Cryptosystems	3
Creative Arts		3
Social and Behavioral Sciences		3
Approved Upper-Division CSEC Elective		3
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>120</b>