BACHELOR OF APPLIED TECHNOLOGY IN COMPUTER AND INFORMATION TECHNOLOGIES

This program is a Selective Program. Application requirements are included in the description below.

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A bachelor's degree in Computer and Information Technologies prepares students for careers in information technology, including computer programming, networking, and cybersecurity. Technology-oriented coursework includes web application development, networking, cybersecurity, database design, and computer programming.

The program includes a strong professional component to develop skills in technical communication, ethics, and group work. Students graduating from the program will be prepared to enter the private/public sectors as well as continue their educational endeavors in a graduate program.

Career Opportunities

The Bureau of Labor Statistics states that Computer and Information Technology occupations are projected to grow by 15 percent, adding 682,800 new jobs from 2021 to 2031. The demand for workers in these occupations will be driven by companies, government agencies, and other organizations struggling to find competent technical talent to fulfill their needs and to adopt the latest technologies. Workers in these occupations will be required to ensure cybersecurity is maintained, develop new software, and update existing network infrastructures.

Potential Job Titles

- Information Systems Director
- Computer Programmer
- Software Developer
- Security Engineer
- Network Administrator
- Database Administrator
- Systems and Networking Manager
- Application Analyst
- Web Developer
- Chief Information Security Officer

Bachelor of Applied Technology Requirements

Application Requirements

1. Demonstrate proficiency in state mandated general knowledge content through approved means; i.e., Texas Success Initiatives (TSI), with program specific exemptions accepted.
2. Applicants are eligible for admission if they meet one of the following criteria:
   a. An ACT Composite of 19 (minimum of 16 in all areas) or above (SAT 910 or above).
   b. Applicants with prior college level coursework must have a minimum cumulative GPA of 2.5 or provide evidence of extenuating circumstances, to the Dean for Math, Science & Bachelor Programs, for waiving the requirement.
   c. Provisional Acceptance, for students scoring a minimum ACT Composite of 15 (SAT 740 or above) or minimum cumulative GPA of 2.25 may be granted by the Dean for Math, Science & Bachelor Programs upon completion of a personal interview with the prospective applicant.

Degree Completion Requirements

Minimum Completion Requirements

- Complete the appropriate course of study for a Bachelor of Applied Technology program as specified in the College catalog. Developmental or other non-credit coursework does not apply toward graduation requirements.
- South Texas College will accept a maximum of 90 credit hours of applicable course work transferred from another accredited college or university toward a Bachelor of Applied Technology Degree granted by South Texas College.
- Completion of 30 credit hours in 3000 - 4000 level courses of which at least 24 credit hours must be completed at South Texas College.
- Maintain a minimum average of "C" (2.0 GPA).
- Pay all debts to the College prior to graduation.

Degree Components

General Education Courses	42
Technical Support Areas-Lower Level	48
Required CIT Courses-Upper Level	30
Total Credit Hours	**120**

Lower Division-Requirements

STC Core Curriculum (42 Credit Hours)

The student is required to take 42 credit hours from the STC Core Curriculum. Students must take MATH 1414 College Algebra to fulfill the Mathematics component of the Core Curriculum.

Students beginning the Bachelor of Applied Technology Program upper-level coursework upon completion of an approved Associate of Applied Science (A.A.S.) degree must complete an additional 27 general education credit hours in order to fulfill the forty-two (42) credit hour general education Core Curriculum required at South Texas College.

Students beginning the Bachelor of Applied Technology Program upper-level coursework after completion of an Associate of Arts or Associate of Science degree will have fulfilled the Core Curriculum requirement for bachelor degree graduates.

Technical Support Areas (48 Credit Hours)

The student is required to complete 48 credit hours of technical specialty coursework from an approved Associate of Applied Science (A.A.S) degree. The 48 credit hours must include the courses (18-20 credit hours) listed below. The approved A.A.S. degrees are as follows: Information Technology, Cybersecurity Specialist, Architectural and Engineering Design Technology, and Business Administration. Coursework from other A.A.S. degrees will be evaluated on a case by case basis.

ITCC 1414 & ITCC 1444	CCNA 1: Introduction to Networks and CCNA 2: Switching, Routing, and Wireless Essentials	8
or ITNW 1416 & ITSY 2445	Network Administration and Network Defense and Countermeasures	
ITSE 1402	Computer Programming	3-4
or COSC 1320	C Programming	
or COSC 1436	Programming Fundamentals I	
ITSE 1411	Beginning Web Page Programming	3-4
or COSC 1315	Introduction to Computer Programming	
ITSY 1400	Fundamentals of Information Security	4
Total Credit Hours		**18-20**

Note: Students entering the BAT program with a completed Associate of Science (A.S.) or Associate of Arts (A.A.) degree may apply their field of study coursework toward the 48 credit hour technical specialty requirement.

Upper-Division Requirements

Prerequisites for Upper-Level Coursework

- Junior Standing
  - Completion of an Associate of Applied Science (A.A.S.) degree or completion of sixty (60) credit hours from a regionally accredited institution; or
  - Completion of an Associate of Arts (A.A.) or Associate of Science (A.S.) degree from a regionally accredited institution.
- Senior Standing
  - A minimum of ninety (90) credit hours from a regionally accredited institution.
- A minimum GPA of 2.5 in previous coursework.

Required Computer & Information Technologies

Major Courses (30 Credit Hours)

CITP 3305	System Analysis and Design	3
CITP 3306	Internet/Intranet Server Integration	3
or CITP 3311	Reverse Software Engineering	
CITP 3310	Survey of Programming Languages	3
CITP 3312	Fundamentals of Information Security	3
or CITP 3321	Advanced Database Security and Management	
CITP 3320	Database Management	3
CITP 4301	Capstone: Computer and Information Technology Internship	3
or CITP 4348	Cybersecurity Assessments	
CITP 4316	Advanced Web Design	3
or CITP 4346	Cyber Law and Digital Forensics	
CITP 4330	Advanced Network Security	3
CITP 4340	Special Topics Course - CIT	3
or CITP 4347	Principles of Cybersecurity	
CITP 4350	Advanced Computer Programming	3
Total Credit Hours		**30**

Through the Bachelor of Applied Technology in Computer and Information Technologies outcomes, the student will be able to:

- **Develop web-based applications.**
  - Design, develop, and secure dynamic and data-driven web applications utilizing server-side technologies and database management. CITP 4316
- **Develop computer networks.**
  - Install and troubleshoot Linux servers and manage Windows servers using system policies, profiles, security, and performance monitoring. CITP 3306
- **Secure network infrastructures.**
  - Identify, implement, and maintain network security, data defense, access control models, authentication, encryption, hashing, and proper security documentation. CITP 3312
  - Maintain database integrity through encryption, access control rules, migration, and backup/recovery procedures. CITP 3321
  - Differentiate and implement various security tools in the defense of a computer network and conduct penetration testing. CITP 4330
  - Select and apply reverse software engineering tools to system security, software design, malware analysis. CITP 3311
  - Analyze proper handling of digital evidence, cyber laws and regulations, and methods of detecting concealed digital information. CITP 4346
  - Monitor, audit, analyze, and revise computer and network security systems to ensure appropriate levels of protection are in place. CITP 4347
  - Develop a threat model, conduct a vulnerability analysis, and use penetration tools to exploit weaknesses in a computer system. CITP 4348
- **Design and utilize databases.**
  - Manipulate, define, and maintain the components of a relational database, such as records, table structures, schema objects, and security. CITP 3320
- **Develop applications in modern programming languages.**
  - Utilize system design tools, data storage, arithmetic expressions, modular programming, and object-oriented methodologies. CITP 3305
  - Utilize file input/output operations, control structures, and application development. CITP 3310
  - Create a working software product according to required specifications and design documentation and evaluate its intended functionality. CITP 4340
  - Create event-driven applications with graphical user interfaces, databases, and programming methodologies, such as modularity, encapsulation, information hiding, abstraction, and polymorphism. CITP 4350
- **Demonstrate integration of IT skills in a capstone internship.**

- Communicate technical information, apply skills in an internship, and participate in a team project. CITP 4301

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STC Core Curriculum		
ENGL 1301	Composition I	3
ENGL 1302	Composition II - Rhetoric	3
MATH 1414	College Algebra	4
HIST 1301	United States History I	3
HIST 1302	United States History II	3
GOVT 2305	Federal Government	3
GOVT 2306	Texas Government	3
Component Area Option - Core Curriculum		3
Life and Physical Sciences Elective - Core Curriculum		4
Life and Physical Sciences Elective - Core Curriculum		4
Creative Arts Elective - Core Curriculum		3
Social and Behavioral Sciences Elective - Core Curriculum		3
Language, Philosophy & Culture Elective - Core Curriculum		3
Technical Specialty Courses		
Foundational Courses (Required)		
ITCC 1414 & ITCC 1444	CCNA 1: Introduction to Networks and CCNA 2: Switching, Routing, and Wireless Essentials	8
or ITNW 1416 & ITSY 2445	Network Administration and Network Defense and Countermeasures	
ITSE 1402	Computer Programming	3-4
or COSC 1320	C Programming	
or COSC 1436	Programming Fundamentals I	
ITSE 1411	Beginning Web Page Programming	3-4
or COSC 1315	Introduction to Computer Programming	
ITSY 1400	Fundamentals of Information Security	4
Technical Specialty Courses [1]		
Select 30 credit hours of Technical Specialty courses		30
Required Upper-Division Professional Courses		
CITP 3305	System Analysis and Design	3
CITP 3306	Internet/Intranet Server Integration	3
or CITP 3311	Reverse Software Engineering	
CITP 3310	Survey of Programming Languages	3
CITP 3312	Fundamentals of Information Security	3
or CITP 3321	Advanced Database Security and Management	
CITP 3320	Database Management	3
CITP 4301	Capstone: Computer and Information Technology Internship	3
or CITP 4348	Cybersecurity Assessments	
CITP 4316	Advanced Web Design	3
or CITP 4346	Cyber Law and Digital Forensics	
CITP 4330	Advanced Network Security	3
CITP 4340	Special Topics Course - CIT	3
or CITP 4347	Principles of Cybersecurity	
CITP 4350	Advanced Computer Programming	3
Total Credit Hours		**120-122**

[1] Students entering the BAT program with a completed A.A. or A.S. degree may apply their Field of Study coursework towards this requirement. Any additional hours needed to complete the 48 credit hours of Technical Specialty coursework should be taken from one of the approved A.A.S. degrees in the following areas: Information Technology, Cybersecurity Specialist, Architectural and Engineering Design Technology, and Business Administration. Coursework from other A.A.S. degrees will be evaluated on a case by case basis.

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100% Online

Four Year Course Sequence

Course	Title	Credit Hours
First Year		
Fall		
ENGL 1301	Composition I	3
HIST 1301 or HIST 2327	United States History I or Mexican-American History I	3
Language, Philosophy & Culture Elective - Core Curriculum		3
Component Area Option - Core Curriculum		3
ITCC 1414 or ITNW 1416	CCNA 1: Introduction to Networks or Network Administration	4
	Credit Hours	**16**
Spring		
ENGL 1302	Composition II - Rhetoric	3
HIST 1302 or HIST 2328	United States History II or Mexican-American History II	3
MATH 1414	College Algebra	4
ITCC 1444 or ITSY 2445	CCNA 2: Switching, Routing, and Wireless Essentials or Network Defense and Countermeasures	4
	Credit Hours	**14**
Second Year		
Fall		
GOVT 2305	Federal Government	3
Life and Physical Sciences Elective - Core Curriculum		4
Creative Arts Elective - Core Curriculum		3
Technical Specialty course		3
Select one of the following:		3-4
ITSE 1402	Computer Programming	
COSC 1320	C Programming	
COSC 1436	Programming Fundamentals I	
	Credit Hours	**16-17**
Spring		
Social and Behavioral Sciences Elective - Core Curriculum		3
GOVT 2306	Texas Government	3
Life and Physical Sciences Elective - Core Curriculum		4

ITSE 1411 or COSC 1315	Beginning Web Page Programming or Introduction to Computer Programming	3-4
ITSY 1400	Fundamentals of Information Security	4
	Credit Hours	**17-18**
Third Year		
Fall		
Technical Specialty course		3
Technical Specialty course		3
Technical Specialty course		3
CITP 3306 or CITP 3311	Internet/Intranet Server Integration or Reverse Software Engineering	3
CITP 3305	System Analysis and Design	3
	Credit Hours	**15**
Spring		
CITP 3312 or CITP 3321	Fundamentals of Information Security or Advanced Database Security and Management	3
CITP 3310	Survey of Programming Languages	3
Technical Specialty course		3
Technical Specialty course		4
	Credit Hours	**13**
Fourth Year		
Fall		
CITP 4316 or CITP 4346	Advanced Web Design or Cyber Law and Digital Forensics	3
CITP 4330	Advanced Network Security	3
CITP 4350	Advanced Computer Programming	3
Technical Specialty Course		3
	Credit Hours	**12**
Spring		
CITP 3320	Database Management	3
CITP 4301 or CITP 4348	Capstone: Computer and Information Technology Internship or Cybersecurity Assessments	3
CITP 4340 or CITP 4347	Special Topics Course - CIT or Principles of Cybersecurity	3
Technical Specialty Course		4
Technical Specialty Course		4
	Credit Hours	**17**
	Total Credit Hours	**120-122**