Program Review Report

Associate of Science in Information Technology

& Certificates in Information Technology

Educational Program at

Sitting Bull College

2020-2021

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Executive Summary

Program Description Summary

The Information Technology program at Sitting Bull College is designed for students interested in working with computer hardware, software, networks, and technology devices. Our focus is to prepare students for a long-term rewarding career in the technology industry by acquiring the leadership and technical skills essential to meeting the needs of our rapid ever-changing society within a diverse setting. The IT program aims to meet the needs of those students interested in completing IT Certificates, completing the IT Associate degree, and transferring to a Bachelor's degree granting college or university to continue their studies. Information Technology graduates will have the acquired skills, knowledge, and foundation to complete various entry-level computer technician positions with an Associate of Science degree from Sitting Bull College or with Certificate(s) in Information Technology to pursue various sectors within the technology industry.

Career opportunities include employment in a wide variety of business and government areas, especially education, health care, financial services, public utilities, sales, and manufacturing. The technical skills attained also provide students with the skills to pursue their own business, as well as assist in troubleshooting and fixing personal computers, home networks, and a wide variety of other computerized devices that need support. In addition to obtaining the technical skills to work with computers, networks, and devices, students develop leadership skills, teamwork, and communications skills to work with employers, co-workers, and end-users. Employment in the field of IT is expected to grow faster than average for all occupations throughout the next decade due to population growth and increased economic activity centered on North Dakota's healthcare services, financial services, and oil and gas industry (Technology Council of North Dakota, 2017). Our program consistently aims to remain up-to-date with technology trends, giving our students the best opportunity to succeed in the field of technology.

Program Self-Evaluation Summary

The Information Technology program has one full-time faculty member, Gabriella Arellano, who is certified by the North Dakota Career and Technical Education Department to teach Information Technology at the post-secondary education level. Ms. Arellano teaches eight or more Information Technology classes annually. There are also four adjunct faculty members who teach additional classes in the following: office technology, database use, website design and programming.

Beginning in March of 2020, our Information Technology courses have all been re-designed to offer complete online coursework. Students are required to pick up or purchase various technology tools and hardware, however, no face-to-face in person classes will occur until further notice. Prior to the corona virus pandemic, all courses were taught with

face-to-face instruction in the Science and Technology Center computer lab 105, with course content delivered in a variety of modes to meet the students' needs; face to face lecture, online, and hands-on and simulation laboratory. The SBC library also supports students by providing a variety of media resource for student usage. The library continues to expand its holdings, with a large increase in digital resources; especially access to remote databases of articles and papers from print publications.

Every two years (in advance of the biennial publication of the SBC Bulletin) the faculty members and advisory committee have examined the IT course offerings, in relation to similar programs at other tribal and state colleges. Changes have been made to keep the program up to date and competitive; some courses have been eliminated, others modified, and new courses added. For examples, in the upcoming revision for the SBC Bulletin 2021-2022, one course will be replaced with an innovative course that better meets the needs of today's technical world. The number of credits required are 69 to complete the IT Associate degree plan. An associate degree is four semesters according to higher education standards, and students may complete course work in less or more than four semesters.

Program Planning Summary

Program planning is a part of the ongoing assessment process. Annual systematic analysis of program outcomes allows for program adjustments in any needed area. This analysis of program activities and outcomes plays a major role in program planning, with additional input coming from the advisory committee to meet the needs of the students and the changing needs of the industry. Program planning is essential to increase the effectiveness of instructors and to set priorities for the department.

The current department need is to secure additional funding for purchasing laptop computer devices equipped to sustain and download enough space to hold networking lab simulations. Additional funding would also assist in purchasing cameras, microphones and computer hardware and software to be used in developing departmental resources demonstrating core concepts, and for capturing lectures for online streaming and downloadable training materials.

Gabriella Arellano, as IT program instructor and advisor, is the author of this program review report.

Program Description

Role of the Information Technology Education Program within SBC

From the Sitting Bull College 2020-2021 Bulletin: "We live in a computerized and networked society. Supporting these computers and networks offers a wide job market with a variety of locations and environments. Technology is driving businesses and governments today, especially health care, financial services, public utilities, sales, and mining and manufacturing. Individuals own personal computers, tablets, smartphones and home networks, and a wide variety of other computerized devices. Computer specialists will require technical skills to work with computers, networks, and devices; and communications skills to work with employers, co-workers, and end-users. The IT students at SBC will develop a firm foundation in Information Technology to prepare for employment and/or for seeking a baccalaureate degree. This program will prepare students to enter into the world of work with the most commonly accepted IT certifications; CompTIA's A+ for IT technicians, Cisco CCNA, and Cisco CCT. The courses offered at SBC are standardized with the North Dakota University System's common course numbering system, preparing students to transfer to a four-year institution of higher learning for more advanced degrees" (Sitting Bull College Bulletin, 2020, P. 157).

The purpose of the Information Technology program at Sitting Bull College is to provide students with the education and skills needed to succeed in the field of technology. Our students will acquire knowledge conducive to beginning a life-long career in our ever changing technological society, while developing the skills to adjust to the fast-paced innovative field and continuing to thrive in this evolving world. Students will use the attained critical thinking abilities to provide solutions to problems, implement ideas, and sustain our interconnected society.

The I.T program prepares students to enter the world of work with the most commonly accepted IT certifications; CompTIA's A+ for IT technicians, Cisco CCNA, and Cisco CCT. The courses offered at SBC are standardized with the North Dakota University System's common course numbering system, preparing students to transfer to a four-year institution of higher learning for more advanced degrees. The program is also designed for students who are seeking certification alone. Three certificates are offered. With the course combination consisting of hardware, software, networking, information systems, and electives complimentary to our core coursework, students will accomplish the life-long skills that will give them the advantage to thrive in our growing society and continue on to established careers, higher education, and accomplishing their goals.

INFORMATION TECHNOLOGY COURSE CORE REQUIREMENTS:

CIS 128   Microcomputer Hardware I……………………………...…………..3 cr.

CIS 129   Microcomputer Hardware II…………………………...………….3 cr.

CIS 141   Introduction to Cyber Security………………….………….……3 cr.

CIS 164   Networking Fundamentals I……………………...………………4 cr.

CIS 165   Networking Fundamentals II……………………….……….…..4 cr.

CIS 212   Operating Systems Client………………………….…………….3 cr.

CIS 215   Implementing a Server Environment………………………..…....3 cr.

CIS 297   Information Technology Internship…………………………...……….3 cr.

CSCI 122   Visual Basic…………………………...………………….………....3 cr.

CSCI 133   Database Concepts I (SQL)…………………………………………3 cr.

INFORMATION TECHNOLOGY ELECTIVES (Select a total of 3 credit hours)

CIS 181   Creating Web Pages……………………………………………...…3 cr.

ENS 211   Introduction to GIS/GPS………………………………………...…..3 cr.

CIS/CSCI 299 Computer Information Systems/Computer Science Elective………….3 cr.

Total Core It Requirements……………...………………………………35 credits

Program Outcomes For: Preparation intended for Industry Certificates in Information Technology

1. The student will demonstrate the applications of computer information systems and fundamental computer concepts.
2. The student will install internal and external options and devices.
3. The student will configure and enhance the hardware and software of a computer to optimize computer performance.
4. The student will utilize tools, hardware components, and hardware/software interfacing to troubleshoot personal computer problems.
5. The student will plan and implement a technical solution for networking in a small business environment.
6. The student takes a practice CompTIA A+ certification exam and achieves passing scores on each section.

Program Outcomes For: Associate of Science Degree in Information Technology

1. The student will demonstrate the applications of computer information systems and fundamental computer concepts.
2.
    I. The student will configure and enhance the hardware and software of a computer to optimize computer performance.
    II. The student will install internal and external options and devices.
    III. The student will utilize tools, hardware components, and hardware/software interfacing to troubleshoot computer problems.
3.

I. The student will plan and implement a technical solution for networking in small business environment.

II. The student will create IP addressing plans for a small network and implement a network equipment upgrade.

4. The student will investigate issues and/or solve problems using current topics in computing as well as application of industry trends.

5. The student will understand the following as related to Visual Basic:

I. How to construct user interfaces for simple programs, and design functional systems.

II. Analyze and construct effective and efficient algorithms and appropriate control structure effectively use software development tools including editors, compilers, and libraries.

6. The student can apply knowledge and skills to wide range of information technology careers.

PREPARATION FOR INDUSTRY CERTIFICATES – INFORMATION TECHNOLOGY

A+ CERTIFICATION (COMPTIA)-INDUSTRY CERTIFICATE

CompTIA A+ is the industry standard for launching IT careers into today's digital world. Candidates must complete both CompTIA A+ 220-1001 (Core 1) and 220-1002 (Core 2) to earn certification. Exams cannot be combined across the series. CompTIA A+ 220-1001 covers mobile devices, networking technology, hardware, virtualization and cloud computing and network troubleshooting. CompTIA A+ 220-1002 covers installing and configuring operating systems, expanded security, software troubleshooting and operational procedures.

CIS 128	Microcomputer Hardware I	3 cr.
CIS 129	Microcomputer Hardware II	3 cr.
CIS 164	Networking Fundamentals I	4 cr.
CIS 212	Operating System Client	3 cr.
CIS 215	Implementing a Server Environment	3 cr.
CSCI 101	Introduction to Computers	3 cr.

TOTAL A+ CERTIFICATE REQUIREMENTS.....................................19 CREDITS

*Note that taking these courses will equip you with the knowledge to take this certification test. To earn the A+ Certification in Information Technology, students must take the current CompTIA A+ certification exam and achieve passing scores on each section. This requires a separate exam fee at the time of testing with a third party (This does not take place at Sitting Bull College). A student who has already earned the current CompTIA A+ Certificate will receive class credit for the courses taken by paying the tuition cost for these classes.

CISCO CERTIFIED NETWORK ASSOCIATE (200-301 CCNA)-INDUSTRY CERTIFICATE

Achieving CCNA certification is the first step in preparing for a career in IT technologies. To earn CCNA certification, you pass one exam that covers a broad range of fundamentals for IT careers, based on the latest networking technologies, software development skills, and job roles. This exam tests your knowledge and skills related to: Network fundamentals, Network access, IP connectivity, IP services, Security fundamentals, Automation and programmability.

CIS 128   Microcomputer Hardware I.. 3 cr.

CIS 129   Microcomputer Hardware II .... 3 cr.

CIS 164   Networking Fundamentals I .... 4 cr.

CIS 165   Networking Fundamentals II .... 4 cr.

CIS 212   Operating System Client.. 3 cr.

CIS 215   Implementing a Server Environment .... 3 cr.

TOTAL Maintenance/OS/Networking CERTIFICATE REQUIREMENTS............20 CREDITS

*Note that taking these courses will equip you with the knowledge to take this certification test. To earn the Cisco Certified Network Associate (CCNA) Certification, students must take the 200-301 CCNA Exam and achieve a passing score. This requires a separate exam fee at the time of testing with Cisco Academy (This does not take place at Sitting Bull College). A student who has already earned the CCNA exam will receive class credit for the courses taken by paying the tuition cost for these classes.

CCT CERTIFICATION ROUTING & SWITCHING (100-490 RSTECH)-INDUSTRY CERTIFICATE

Cisco Certified Technician Routing and switching certification focuses on the skills required for onsite support and maintenance of Cisco routers, switches, and operating environments. Technicians in this area must be able to identify Cisco router and switch models, accessories, cabling, and interfaces; understand the Cisco IOS software operating modes and identify commonly found software; and be able to use the Cisco Command Line Interface (CLI) to connect and service products.

Achieving Cisco Certified Technician Routing and Switching certification is considered the best foundation for supporting other Cisco devices and systems. The certification exam tests your knowledge in the following: General networking knowledge, Cisco equipment and related hardware, Cisco IOS Software Operation, and Service-related knowledge.

CIS 128	Microcomputer Hardware I	3 cr.
CIS 129	Microcomputer Hardware II	3 cr.
CIS 164	Networking Fundamentals I	4 cr.
CIS 165	Networking Fundamentals II	4 cr.
CIS 212	Operating System Client	3 cr.
CIS 215	Implementing a Server Environment	3 cr.

TOTAL Maintenance/OS/Networking CERTIFICATE REQUIREMENTS............20 CREDITS

*Note that taking these courses will equip you with the knowledge to take this certification test. To earn the CCT Certification Routing and Switching, students must take the 100-490 RSTECH Exam and achieve a passing score. This requires a separate exam fee at the time of testing with Cisco Academy (This does not take place at Sitting Bull College). A student who has already earned the RSTECH exam will receive class credit for the courses taken by paying the tuition cost for these classes.

Student's must follow SBC's admissions requirements and may be required to complete a College Writing Preparation and College Math Preparation course(s) before enrolling in courses aimed at preparing students for industry certification. Students take a placement test in writing and in math to determine which courses they may need to enroll in, prior to taking the math courses in the required general education sequence. Students may choose not to take the additional math courses, and this can be waived with their advisors.

ASSOCIATE OF SCIENCE – INFORMATION TECHNOLOGY

GENERAL EDUCATION REQUIREMENTS

ENGL 110   Composition I... 3 cr.

ENGL 120   Composition II .... 3 cr.

COMM 110   Fundamentals of Public Speaking... 3 cr.

MATH 102   Intermediate Algebra or higher .... 4 cr.

PSYC 100   First Year Learning Experience .... 3 cr.

SOC 120   Transitions-Graduation & Beyond... 2 cr.

NAS 101 or   Ochethi Sakowin Language I.. 3 cr.

NAS 103   Introduction to Ochethi Sakowin Language, Culture & History

CSCI 101   Introduction to Computers .... 3 cr.

HUMANITIES or SOCIAL & BEHAVIORAL SCIENCE .... 3 cr.

> Select any one (1) course from: Arts, English, History, Humanities, Music, Native American Studies, Philosophy, Anthropology, Criminal Justice, Economics, Geography, Human Services, Political Science, Psychology, and Sociology

HEALTH/PHYSICAL EDUCATION... 2 cr.

> Any two (2) one-hour courses or any one (1) two-hour course

LABORATORY SCIENCE.. 4 cr.

> Any one (1) four-hour laboratory science course

Total General Education Requirements ....33 credits

CORE REQUIREMENTS

CIS 128   Microcomputer Hardware I.. 3 cr.

CIS 129   Microcomputer Hardware II .... 3 cr.

CIS 141   Introduction to Cybersecurity .... 3 cr.

CIS 164   Networking Fundamentals I .... 4 cr.

CIS 165   Networking Fundamentals II .... 4 cr.

CIS 212   Operating Systems Client .... 3 cr.

CIS 215   Implementing a Server Environment .... 3 cr.

CIS 297   Information Technology Internship .... 3 cr.

CSCI 122   Visual Basic .... 3 cr.

CSCI 133   Database Concepts I (SQL) .... 3 cr.

INFORMATION TECHNOLOGY ELECTIVES - (SELECT A TOTAL OF 3 CREDIT HOURS)

CIS 181   Creating Web Pages .... 3 cr.

ENS 211   Introduction to GIS/GPS .... 3 cr.

CIS/CSCI 299 Computer Information Systems/Computer Science Elective .... 3 cr.

Total Core IT Requirements ....**35 credits**

TOTAL DEGREE REQUIREMENTS...**68 CREDITS**

Program Personnel

The IT Instructor and Program Advisor Gabriella Arellano has a life-long interest in technology, leadership, and innovation. Gabriella is currently pursuing her Doctorate degree in Educational Leadership from Concordia University, St. Paul Minnesota. She graduated from the University of Mary, in Bismarck North Dakota, with a Master's in Education; Curriculum, Assessment, and Instruction. Prior to completing her master's degree, Gabriella graduated from Mihaylo College of Business at California State University, Fullerton with a Bachelors in Business Administration and a concentration in Marketing. She began her current position as Sitting Bull College in the summer of 2019. She has completed seminars, and clinical practices offered by North Dakota Career and Technical Education, and she became certified in June 2019 as a Post-Secondary IT Instructor. Ms. Arellano has spent two summers taking Information technology classes offered by NDCTE. These classes enabled her to offer the IT curriculum at SBC consisting of the following: Cisco networking courses; IT Essentials courses; GIS/GPS; Microsoft Operating Systems and Server; Java Programming; Website Design; and Visual Basic Programming class. Ms. Arellano will renew her teaching credential in 2021.

In addition, the adjunct instructors for the IT program and the classes they teach respectively include the following: Therese Schmidt, SBC Office Technology instructor teaches Introduction to Computer Applications; Lisa McLaughlin, SBC Data Coordinator teaches SQL Database; Mafany Mongoh, Ag/Science instructor, teaches GIS/GPS; and Joshua Mattes, SBC Pre-engineering instructor teaches C++ Programming. Dr. Mattes
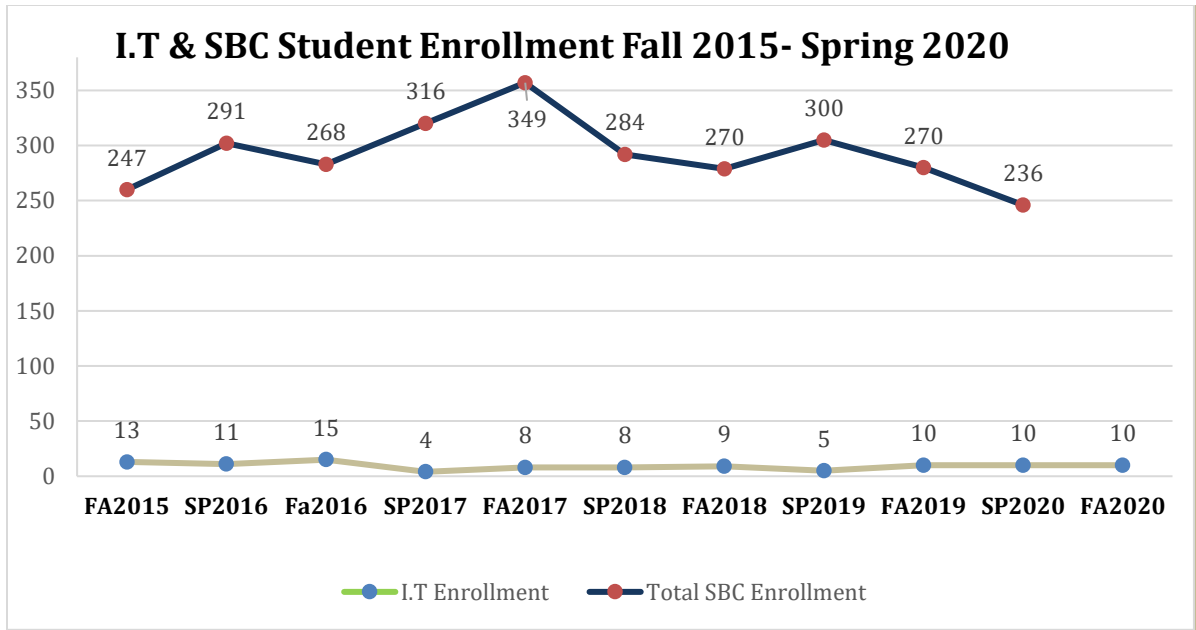
joined SBC in 2012, and the remaining adjuncts have many years of teaching experience at SBC. The adjuncts experience is the following: Therese Schmidt, Master of Management, 23 years at SBC; Lisa McLaughlin, Bachelor of Science Business Administration, 22 years at SBC; Mafany Mongoh, Ph.D. Natural Resource Management, 12 years at SBC; and Joshua Mattes, Ph.D., Physics, and 6 years at SBC.

Program Productivity

The Associate of Science Information Technology program has a history of variable enrollment. Student enrollment has generally been nearly equal by gender and almost fifty percent of the IT graduates have been female; this gender equality is not consistent with industry trends as female enrollment and employment in Information Technology has lagged elsewhere in North Dakota and in the US (Andrade, 2014). Information technology enrollment is displayed below (SBC Shared Data, 2020):

Table 1: IT and SBC Enrollment 2015-2020

Semester Year	FA 15	SP 16	FA 16	SP 17	FA 17	SP 18	FA 18	SP 19	FA 19	SP 20	FA 20	Total enroll. FA2015 - SP2020
IT Students Enrolled	13	11	15	4	8	8	9	5	10	10	10	**Average= 9.36** **Median=10** **Mode=10**
Total SBC Enrollment	270	247	291	268	316	349	284	270	300	272	236	**Average=28 2.1** **Median=272** **Mode=270**
IT % of Total SBC Enrollment	4.8%	4.5%	5.2%	1.5%	2.5%	2.3%	3.2%	1.9%	3.3%	3.7%	4.2 %	**Average= 3.3%** **Median=3.3 0%**
A.S.I.T. Graduates	2		3		1		1		2		**TBI**	

I.T & SBC Student Enrollment Fall 2015- Spring 2020

	FA2015	SP2016	Fa2016	SP2017	FA2017	SP2018	FA2018	SP2019	FA2019	SP2020	FA2020
Total SBC Enrollment	247	291	268	316	349/357	284	270	300	270	236	
I.T Enrollment	13	11	15	4	8	8	9	5	10	10	10

Legend: I.T Enrollment — Total SBC Enrollment

[1] *Findings: enrollment excel spreadsheets years 2015-2020*

Sitting Bull College student enrollment during the 2015-2020 fall and spring semesters has remained consistent with several variations in the five-year span. IT student enrollment did not seem to be affected by the COVID 19 pandemic, which rapidly required a shift to online education halfway through the spring 2020 semester. Future enrollment in the program may be dependent upon whether the NACTEP grant continues to be funded, whether a student can go on to a bachelor's degree in Information Technology, and whether the program continues to provide and enhance partnerships with local businesses for employment opportunities. The department goal continues to be an increase in enrollment, particularly, increasing the IT student enrollment as a percentage of total SBC enrollment to 8.2%. Therefore, as Sitting Bull College student enrollment continues to rise, the IT enrollment will incrementally mirror the change in enrollment size. The IT program enrollment percentage of total Sitting Bull College student enrollment is currently 4.2% for the fall 2020 semester, which is a 0.5% increase from spring 2020. In spring 2019, the percentage dropped to a 1.9% IT enrollment as a percentage of the total SBC enrollment number. From spring 2019 to fall 2020 this percentage increased by 2.3%.

During the five years 2015-2020, there have been a total of 9 graduates for the ASIT program. Table 2 below will outline graduate per semester, in comparison to IT enrollment:

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[1] (SBC Shared Data, 2020)

Table 2: IT Enrollment & IT Graduates

Semester Year	Spring 15	SPRING 16	SPRING 17	SPRING 18	SPRING 19	SPRING 20
IT Students Enrolled	9	11	4	8	5	10
IT Graduates	0	2	3	1	1	2
% of graduates of enrolled IT students	0%	18.2%	75%	12.5%	20%	20%

[2]Findings in enrollment excel spreadsheets years 2015-2020

Student persistence and retention have long been a nationwide issue among colleges including Sitting Bull College. Student persistence is defined as being enrolled during the fall semester and returning for the spring semester at the same institution, while student retention is defined as continuing from one year to the next; that is, measured from fall semester of one year to fall semester of the next year (Tight, 2020). While the goal remains that of achieving a degree within a reasonable length of time, many factors influence a student's persistence and retention; whether the student completes a degree program, drops out, or "stops out" may be influenced by both SBC and IT program personnel, but is ultimately determined by each student. The following tables/graphs show the retention and persistence rates for SBC overall and for the ASIT program (SBC Shared Data, 2020):

Table 3 Sitting Bull College Persistence 2015-2020

SBC Full-Time Student Persistence				
First Semester	Second Semester	Total First Semester	Returning	% Percent Returning
Fall 2014	Spring 2015	204	140	68.6%
Fall 2015	Spring 2016	197	125	63.5%
Fall 2016	Spring 2017	218	130	59.6%
Fall 2017	Spring 2018	248	175	70.6%
Fall 2018	Spring 2019	226	154	68.1%
Fall 2019	Spring 2020	232	158	68.1%

[3]Findings can all be found in the shared folder and the SBC public websites.

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[2] (SBC Shared Data, 2020)

[3] (SBC Shared Data, 2020) & S. (n.d.). SBC Persistence and Retention. Retrieved 2020, from https://sittingbull.edu/wp-content/uploads/2020/10/Persistence-and-Retention-Fall-2020.pdf

Table 4 Sitting Bull College Retention 2015-2020

SBC Full-Time Student Retention				
First Semester	Second Semester	Total First Semester	Returning	% Percent Returning
Fall 2014	Spring 2015	204	113	55.4%
Fall 2015	Spring 2016	197	101	51.3%
Fall 2016	Spring 2017	218	114	52.3%
Fall 2017	Spring 2018	248	121	48.8%
Fall 2018	Spring 2019	232	134	57.8%
Fall 2019	Spring 2020	229	132	57.6%

[4]Findings can all be found in the shared folder and the SBC public websites

Table 5 Sitting Bull College IT Persistence 2015-2020

SBC IT Student Persistence				
First Semester	Second Semester	Total First Semester	Returning	% Percent Returning
Fall 2014	Spring 2015	10	7	70%
Fall 2015	Spring 2016	12	6	50%
Fall 2016	Spring 2017	15	4	27%
Fall 2017	Spring 2018	10	5	50%
Fall 2018	Spring 2019	8	3	38%
Fall 2019	Spring 2020	11	7	64%

[5]Findings can all be found in the shared folder and the SBC public websites. This does not take tally how many of these students graduated, returned, or dropped out. It only focuses on the data and number of students enrolled each semester.

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[4] (SBC Shared Data, 2020) & S. (n.d.). SBC Persistence and Retention. Retrieved 2020, from https://sittingbull.edu/wp-content/uploads/2020/10/Persistence-and-Retention-Fall-2020.pdf

[5] (SBC Shared Data, 2020) & S. (n.d.). SBC Persistence and Retention. Retrieved 2020, from https://sittingbull.edu/wp-content/uploads/2020/10/Persistence-and-Retention-Fall-2020.pdf

Table 6 Sitting Bull College IT Retention 2015-2020

SBC IT Student Retention

First Semester	Second Semester	Total First Semester	Returning	% Percent Returning
Fall 2014	Spring 2015	10	6	60%
Fall 2015	Spring 2016	11	6	55%
Fall 2016	Spring 2017	15	5	33%
Fall 2017	Spring 2018	10	4	40%
Fall 2018	Spring 2019	10	4	40%
Fall 2019	Spring 2020	11	9	82%
[6]**Findings can all be found in the shared folder and the SBC public websites.**				

Program Graduates

Presently, no formal process is in place to track employment of Information Technology program graduates. However, informal data is available pertaining to the spring 2020 graduates' current employment. As of January 2021, a formal process will begin taking place to track and IT graduates and will aim to connect both students and alumni to elicit career and networking opportunities. Of the two students who graduated, one student accepted a position as the Information Technology Specialist at Solen High School in Solen, ND. The second graduate started their own local business consisting of the creation of websites for local businesses to be able to operate online. Both individuals began these positions after completing their Internship through the information technology program at Sitting Bull College. There are three additional individuals who have not yet graduated and are currently working in the field of technology. One is working as the IT Specialist at a middle school on standing rock reservation, another is working for Sanding Rock Tribal Telecom department, and the third is also helping local businesses manage its website, as well as working for the language Nest through the Standing Rock Tribe. Starting salaries in these positions have averaged $40,000, but no comprehensive survey has been conducted. Of the graduates, one student passed the TestOut Certified Operating Systems Client Pro certification and the other passed the Networking Fundamentals Cisco Certification, Cisco Cybersecurity Essentials, and Cisco Introduction to Cybersecurity.

The Sitting Bull College IT Specialist, Gabriella Arellano started in the summer of 2019 and these-statistics reflect the period between Fall 2019- Spring 2020. Prior to 2019, there was no formal tracking of graduate employment, however, there was informal data

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[6] (SBC Shared Data, 2020) & S. (n.d.). SBC Persistence and Retention. Retrieved 2020, from https://sittingbull.edu/wp-content/uploads/2020/10/Persistence-and-Retention-Fall-2020.pdf

indicting where students were employed after graduation. These local entities include: Standing Rock Sioux Tribe IT Department, the Standing Rock Tax Department, Standing Rock Tribal Telecom; Prairie Knights casino, and Standing Rock Reservation local schools, including Sitting Bull College.

The Information Technology Department will continue to build lasting relationships with these local businesses by building partnerships and increasing internship opportunities for our students to work with local, statewide, and national businesses. Our goal is to continue the 100% employment rate for any IT student that has graduated from our program and continue to ensure that those individuals are given the resources to continue their education and pursue a degree in high education. Both Information Technology students who graduated in the spring of 2019, are pursing degrees in higher education. One is continuing her education at Sitting Bull College and the other is transferring to a university in Arizona.

Program Revenue

The SBC It program revenue has varied given that the faculty member in-charge of the program during the 2015-2020 school year changed three times and the salary for each individual varied, as well as the training needs. The books, equipment, and supplies have all varied and the amounts to fund them differ based on the needs at the time of investment. Available data itemizing tuition and Indian Student Count (ISC) revenue for the IT education program, academic years 2015 through 2020, is itemized below:

Table 7 Sitting Bull College IT Program Revenue 2014-2020

Information Technology Program Revenue						
Academic Year	Fall ISC	Spring ISC	Tuition	IT Total	SBC Total	IT % of SBC Total
2015-2016	$37,789	$40,308	$39,875	$117,972	$2,339,559	5.04%
2016-2017	$48,600	$17,100	$42,800	$108,500	$3,396,388	3.19%
2017-2018	$27,000	$32,100	$48,590	$107,690	$4,379,620	2.46%
2018-2019	$27,583.33	$15,887.50	$21,525	$64,950.83	$2,511,597.45	2.59%
2019-2020	$39,500	$39,500	$24,000	$319,000	$3,456,570.44	9.23%
Total 2015-2020	$180,472	$144,896	$176,790	$718,113	$16,083,735	4.46%
Average Revenue 2015-2020	$60,157.44	$48,298.50	$58,930.00	$239,370.94	$5,361,244.96	4.46%

[7]Findings can all be found in the shared Document

Program Budget

The expenditures of the budget include the salary and fringe benefits of one instructor. The program is financially supported through: Title III Part a grant; the Native American Career and Technical Education Program (NACTEP) grant; and the SBC General Fund Faculty Overload. The budget factors in professional development and the instructor has traveled to receive the required training which is factored into the budget. The supplied needed for the program are always evolving based on innovative technology needs and this is factored into the budget various as well. Currently, funding through the SBC General Fund. The following tables show the amounts expended from NACTEP/Title III Part A and from the SBC General Fund (SBC Shared Data, 2020):

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[7] (SBC Shared Data, 2020) & S. (n.d.). SBC Information Technology Program Revenue. Retrieved 2020, from https://sittingbull.edu/wp-content/uploads/2020/10/Persistence-and-Retention-Fall-2020.pdf

	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
NA Career & Tech Ed Grant (NACTEP) / Title III Part A Grant					
Salary	$ 44,600.00	$ 36,600.00	$ 38,200.00	$ 44,800.00	$ 46,400.00
Fringe Benefits	$ 11,150.00	$ 9,150.00	$ 9,550.00	$ 11,200.00	$ 11,600.00
Supplies	$400.00	$0.00	$0.00	$ 5,578.00	$ 60.37
Travel	$ 445.00	$0.00	$0.00	$ 1,148.00	$ 0.00
Total	$ 56,595.00	$ 45,750.00	$ 47,750.00	$ 62,726.00	$ 58,060.37

Information Technology Five Year Budget					
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Adjunct General Fund					
Salary	$5,400	$5,400	$5,400	$5,400	$5,400
Fringe Benefits	$683.10	$683.10	$683.10	$683.10	$683.10
Travel Adjunct	$0.00	$0.00	$0.00	$0.00	$0.00
Total	$6,083.10	$6,083.10	$6,083.10	$6,083.10	$6,083.10

[8]Findings can all be found in the shared folder and the SBC public websites.

Advisory Committee

An advisory committee comprising of members associated with the IT community and SBC personnel supports the Information Technology program. The committee assists with suggestions designed to improve specific content areas; industry standards, the updating of curriculum, purchase of new instructional materials or equipment to modernize the classroom and adopting safety policies for faculty and students. The committee currently is comprised of the following members:

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[8] (SBC Shared Data, 2020) & S. (n.d.). SBC Persistence and Retention. Retrieved 2020, from https://sittingbull.edu/wp-content/uploads/2020/10/ Five-year budget Fall-2020.excel

Advisory fall 2020

Dave Mueller	Information Technology/Finance Director, SBC
Glen Philbrick	Business Administration Instructor, SBC
Therese Schmidt	Office Technology instructor, SBC
Rachel Kuntz	Business Administration Instructor, SBC
Brian Thunder Hawk	Standing Rock CDC Executive Director
Fred McLaughlin	General Manager Standing Rock Telecom
Jonathon Anderson	Business Director, SBC
Jonathon Catch The Bear	Student, SBC & NASA Intern
Kandace Hastings	Accounts Payable Technician
Lisa McLaughlin	Registrar & Data Coordinator, SBC

Summary of Advisory Meetings

Information Technology advisory meetings are held at the end of each fall and spring semester. The fall meeting typically meets the first week after finals in December and the spring meeting usually meets in April after finals week. The individuals on the IT advisory committee are also on the Business Administration committee, therefore, both meetings are held together.

Moreover, there is a spring meeting held in addition to the two formal advisory meetings. This meeting is a group conference consisting of various vocation programs at Sitting Bull College who present a short description of their program and activities that they conducted over a certain period. The presentations also consist of upcoming plans and goals for each individual program. This allows for other Advisory committee members to provide recommendations, suggestions, and feedback, which is typically positive.

Sitting Bull College examines the Information Technology course offerings, in relation to similar programs at other tribal and state colleges. The review is administered every two years, prior to the publication of the Sitting Bull College Bulletin. The Bulletin displays the IT course offerings and changes are made to keep the program up to date and competitive; some courses have been eliminated, others modified, and new courses added. The committee also may suggest future classes and areas to consider for expansion. For example, in the fall 2019 semester, the information technology program removed the listing

of industry certifications that were no longer valid or endorsed through Cisco Networking Academy and replaced them with Cisco's updated industry certifications and the course work aligned to prepare students to complete these certificates. The new industry certifications consist of the following: Cisco Certified Network Associate (200-301 CCNA), CCT Certification Routing & Switching (100-490 RSTECH). Our course sequencing and recommendations for students endeavoring to complete these certifications are altered to meet the individual needs. If students would like to get certified in RSTECH, we have the course sequence that will prepare them to pass the certification test. Moreover, many of the courses overlap with the courses sequencing of other IT certifications.

Likewise, we provide various curriculum for the additional industry certifications, which also overlap several courses. Roughly half of the suggestions have been implemented in either new or existing classes, but others would require additional courses and instructors. The number of credits required for the ASIT has been reduced overall, increasing the likelihood that students will complete the degree in four to six semesters depending on the amount of coursework completed, without using up their eligibility for Pell Grant funding. Each IT courses is typically offered once a school year; however, some coursework can be offered twice a year based on enrollment and student needs.

In addition, the possibility of a bachelor's degree program in IT has been discussed with the master's level faculty salary and benefits included in the 2015-2016 budget; however, there have not been any applicants. When a faculty is hired to teach and administer the bachelor's degree program, additional evaluations will be completed to establish the program design and courses needed. The current faculty and the advisory committee have looked at a various IT programs at other tribal and state colleges. The present consensus is that a Bachelor of Applied Science in Information Technology might best meet the needs of SBC students and their employers. Similar programs exist at Minot State University and Dickinson State University, which require that incoming students have completed the Associate of Science Degree, or Associate of Applied Science Degree, in Information Technology.

Program Self-Evaluation

Faculty

The Information Technology program is comprised of one faculty member, Gabriella Arellano, the Information Technology Specialist, IT Advisor, and CEU Coordinator. Ms. Arellano teaches various courses at Sitting Bull College including: Hardware I, Hardware II, Introduction to Networking I, Routing and Switching Networking II, Visual Basic, Introduction to Cybersecurity, Operating Systems Client, and the IT internship. Within the past year, Ms. Arellano has taken several CTE teaching method courses in IT for two summer sessions and in the fall semesters. She has completed several training courses through Test Out and Cisco Networking Academy, in addition to completing educational leadership courses through the doctoral program at Concordia

University, St. Paul. In August 2019, she received a Career & Technical Post-Secondary Credential for instructing Information Technology classes. Ms. Arellano plans to renew this credential in June 2021.

In addition, there are also several adjunct instructors and four faculty and staff members that teach supplementary information technology courses. To begin with, Therese Schmidt teaches Introduction to Computer Applications, Lisa McLaughlin teaches SQL Database and Web Design, Joshua Mattes has taught C++ Programming, and Mafany Mongoh teaches GIS/GPS. These instructors are outstanding in their fields and currently are sufficient in number to handle the required IT core classes. Several of the instructors are also on the assessment committee, curriculum committee, and advisory committee and offer insight to the needs of the program. The instructors experience and degrees have qualified them to teach the additional information technology coursework with the approval of the college administration.

Student Relations

The Information Technology program is designed to meet the needs of our students. Our focus is to build collaborative relationships between peers, faculty, employers, and the local community. The class sizes in the past five years have ranged from two to ten students and our computer labs have a capacity of more than 30 students combined. However, given the Corona virus pandemic, our computer labs are limited to half capacity. Given the nature of the courses provided, our mentoring and collaboration has a solid foundation and continues to grow. Beginning in March of 2020, our courses are now offered online and hybrid, due to the corona virus pandemic. IT Classes are offered in the mornings, afternoons, and evenings and limited to one hour per session. We understand the importance of safety and flexibility, therefore, we allow our students to participate and engage in coursework on their own time. We also provide exceptional support via Zoom, Microsoft teams, the big blue button, phone, email, chat, and face-to-face (social distancing). This includes tutoring and help with navigating and utilizing the online platforms. The It Specialist assists any student and instructor with implementing and benefiting from online resources.

With the shift to online and hybrid education, all assessments, both formative and summative, are administered online. To begin with, student presentations are online and consist of recorded media, slideshows, and virtual group collaboration, to limit large in-person group meetings. Educational resources are all offered online, including textbooks, videos, article links, software, and manuals. Students can utilize these resources in addition to their hard copy textbooks purchased from the school bookstore. All of our course assessments are offered through the following: SBC online, Cengage, TestOut, and Cisco Networking Academy. The only exception is the Hardware I and Hardware II classes. These required students to pick up computers and record the assembly and disassembly of the devices as a midterm and final assessment.

With the immediate shift to online education, many students have limited access to the internet and computer devices. Sitting Bull College provides laptops to students who do not have access to computer devices at home. With the rapid shift to online education, the number of laptops being checked out increased by 150% compared to the 2019 fall and 2019 spring semesters. Therefore, Ms. Arellano manages and tracks the laptops that are checked out using Prey tracking Software. Students who check out a laptop have the Prey software installed allowing the laptop to be tracked and notifying students when the laptop is due every two weeks. Given safety concerns, students are allowed to complete and sign a Laptop checkout contract online to re-checkout the laptop. Students that do not need to re-checkout the laptop return it to Ms. Arellano's office the day that it is due. Students also receive email reminders on the due date and the day prior to returning the laptop. The IT contract also states that if laptops that are not returned on time they must be returned within a week or Donna Seaboy, the Financial Aid Director at Sitting Bull College is contacted, and further measures are taken. These include posting a $1,000 fee onto the student account until the laptop is safely returned and in working condition, as well as the locking of the device via Prey software.

All of the laptops checked out include a Microsoft subscription to use Word, Excel, PowerPoint, and Access. Moreover, all current students, staff, and faculty are included in the college's software subscription for Microsoft Office 365/2016 ProPlus, which includes Word, PowerPoint, Excel, Outlook, Access, OneNote, and more. Students are able to install versions of Office on five personal devices, including home desktop and laptop computers, tablets, and phones. In addition, IT students in particular, also have unlimited subscription to Cisco Networking Academy and are registered by the Ms. Arellano.

Curriculum Content, Design, and Delivery

The students' achievement of the learning outcomes of the Information Technology education program are collected and reviewed throughout the academic year. These findings assist in recommending any changes to the curriculum content, design and delivery. Additional input is garnered from assessment committee members when these findings are presented annually to the committee.

Other collaborative opportunities are provided as Ms. Arellano consults with other faculty members to ensure that quality of instructional delivery is exceptional. Ms. Arellano has updated the ASIT curriculum and assessment content and design, given the recommendations of the following: The curriculum committee, assessment committee, IT Advisory committee, and the Geek Oyate committee. The learning outcomes in this guidance represent core competencies that an IT student should be expected to demonstrate. Several IT programs across the state of North Dakota were cross referenced

in determining the essential program outcomes implemented and foundations built upon. They are useful in mapping program and course outcomes to industry certifications and for course and program assessments.

For each of these twelve learning outcomes there are specific sub-outcomes, so that in total there are fifty outcomes. Each learning outcome has an associated 3-tiered assessment rubric which provides further clarity and a meaningful evaluation of the outcome. Take note of their three levels of performance; Emerging, Developed, and Highly Developed (CCECC, 2020, pp. 1-12). In order to standardize with other SBC programs, instructor Arellano has expanded her own rubrics by adding two levels; Underdeveloped and Non-emergent, and the necessary criteria for the learning outcome.

Moreover, the North Dakota Department of Career and Technical Education introduced Content Standards for a number of programs, among them Information Technology Education (ND CTE IT, 2015, pp. 8-46). These standards were updated in 2015 and there have not been any additional North Dakota CTE standards added from this date. These standards contain learning outcomes in 5 broad areas: information technology; network systems; information support and services; programming and software development; web and digital communications; and career ready practices. The NDCTE's content standards are most notable for the Career Ready Practices, which were developed to be applicable to many programs of study (ND CTE IT, 2015, pp. 47-49):

- o Act as a responsible and contributing citizen and employee
- o Apply appropriate academic and technical skills
- o Attend to personal health and financial well-being
- o Communicate clearly, effectively, and with reason
- o Consider the environmental, social, and economic impacts of decisions
- o Demonstrate creativity and innovation
- o Employ valid and reliable research strategies
- o Utilize critical thinking to make sense of problems and persevere in solving them
- o Model integrity, ethical leadership, and effective management
- o Plan education and career path aligned to personal goals
- o Use technology to enhance productivity
- o Work productively in teams while using cultural/global competence

Given the endorsement of various state Information Technology standards, all of the learning outcomes should be met throughout the two-year IT program. With that being stated, all IT outcomes are being formally assessed by Gabriella Arellano and the adjunct instructors over the program course. Certain outcomes overlap in various courses, while others are assessed in certain program courses. The current program assessment outcomes were updated and implemented in the spring of 2020 and are available in the SBC Bulletin 2020-2022 (SBC, p. 152 & 157)

Additionally, incorporating Native American culture into information technology classes is assessed informally. Students are currently asked to introduce themselves in Lakota/Dakota prior to presenting

projects and slideshow presentations. Students are also asked to create outlook signatures with their Lakota names to include in emails. In addition, as the CEU Coordinator, Ms. Arellano encourages students to attend workshops consisting of Native American culture, which is informally assessed but is still relevant in that it exposes students to Native American culture. Many of the workshops foster collaboration amongst students as well as put emphasis on combining culture with technology. Several IT students have benefited from the integration of the Lakota Language online dictionary that together they have built for the Sioux Tribe on Standing Rock Reservation.

Below are the current Information Technology program outcomes:

Program Outcomes For: Preparation of Industry Certificates in Information Technology

1. The student will demonstrate the applications of computer information systems and fundamental computer concepts.
2. The student will install internal and external options and devices.
3. The student will configure and enhance the hardware and software of a computer to optimize computer performance.
4. The student will utilize tools, hardware components, and hardware/software interfacing to troubleshoot personal computer problems.
5. The student will plan and implement a technical solution for networking in a small business environment.
6. The student takes a practice CompTIA A+ certification exam and achieves passing scores on each section.

Program Outcomes For: Associate of Science Degree in Information Technology

7. The student will demonstrate the applications of computer information systems and fundamental computer concepts.
8.
    I. The student will configure and enhance the hardware and software of a computer to optimize computer performance.
    II. The student will install internal and external options and devices.
    III. The student will utilize tools, hardware components, and hardware/software interfacing to troubleshoot computer problems.
9.
    I. The student will plan and implement a technical solution for networking in small business environment.
    II. The student will create IP addressing plans for a small network and implement a network equipment upgrade.
10. The student will investigate issues and/or solve problems using current topics in computing as well as application of industry trends.
11. The student will understand the following as related to Visual Basic:
    III. How to construct user interfaces for simple programs, and design functional systems.

IV.   Analyze and construct effective and efficient algorithms and appropriate control structure effectively use software development tools including editors, compilers, and libraries.

12. The student can apply knowledge and skills to wide range of information technology careers.

Institutional Support

The main campus located at Fort Yates is the best example of Sitting Bull College's institutional support for the IT education program. The adjacent building houses the Student Center, Writing Lab, SBC Library, and support staff so these student resources are readily available. There are also faculty training opportunities to ensure that the IT Faculty member and adjuncts are up-to-date on current Information Technology trends. IT the library provides a number of online resources with the library personnel helping as needed. Given the corona virus pandemic, many of these institutional resources have moved online. Students can access Wi-Fi on campus conveniently from their vehicles, as well as mobile hotspots. The computer lab is limited in student capacity; therefore, students are allowed to checkout laptops, to complete course work from the comfort of their home, reducing exposure to the corona virus. Students also have access to the online library database where they can access all of the online library resources using their student log in information.

Academic assistance in the form of tutoring is available to students individually and group settings online via zoom. Tutoring is currently available to all students. Faculty has extended their office hours to online availability to accommodate student needs, as well as safety procedures due to the current pandemic. Timely feedback is given on assignments, some class time is spent reviewing corrected work, and allowing students to redo assignments are some examples of strategies that have been implemented to assist the students. This has become more flexible, given that some students cannot make online times because they may have someone else in the home occupying the computer, such as a child.

The Covid pandemic has resulted in more lenience and flexibility with online course work to best meet students' current needs (Shpolianskaya & Seredkina, 2020, pp. 29-35). The institution continues to explore other online opportunities to meet the student tutoring needs for courses within the degree core requirements and classes within the general education requirements.

The Information Technology Geek Oyate club is also a great support system for Information Technology students, as well as students interested in the technology field. The SBC Geek Oyate is a technology club focused on building leadership skills, exploring innovative ideas, and providing students with the opportunity to learn about various technology fields (SBC Shared Data, 2020). Students network with peers, employers, and community members to acquire additional skills in the field. The SBC Geek Oyate also serves as a social purpose. Club members meet weekly online via zoom and build life-long networks through team building. Student Leadership and innovation is developed through technology workshops, fieldtrips, fundraisers, and

club activities provided throughout the school year. Club members also meet peers that share their same interests and have the opportunity to establish their personal expansion in becoming a better leader. Club members learn the value of participation and collaboration, ultimately leading to a positive college experience with community involvement (SBC Shared Data, 2020).

Beginning in the fall of 2020, the Geek Oyate students began to assemble Pi-Top laptops and create robots, code, and music from these laptops. The Sitting Bull College IT Program was granted 25 Pi-Top Inventor laptops through Cisco Networking Academy, aimed at helping solve the current digital divide. Geek Oyate students began assembling these laptops in the fall of 2020 and each semester, Information Technology students will obtain the opportunity to learn how to assemble and create inventions using Pie-top laptops (SBC Shared Data, 2020)!

The Geek Oyate was established in the fall of 2019. Geek Oyate students developed the club name and enrollment began. The Geek Oyate club enrolled five active members in the fall of 2019. Currently, in the fall of 2020 semester, enrolled Geek Oyate members consist of 16. However, there are only 12 members who attend every week, the additional four members attend once a semester to maintain enrollment. Student enrollment in the club has increased by 220% since fall of 2019. We are continually recruiting new members, which in turn, has led to an increase in information technology majors and double majors. Below is a table highlighting enrollment per semester:

Table 10 Geek Oyate Enrollment 2019-2020

Geek Oyate Enrollment 2019-Present			
	Students Actively Enrolled	**Total Geek Students Enrolled**	**Percentage Increase From previous semester**
Fall 2019	5	5	100%
Spring 2020	9	7	80%
Fall 2020	12	16	25%
Enrollment increase from Fall 2019 to Fall 2020			220%

[9]Findings can all be found in the shared folder.

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[9] (SBC Shared Data, 2020) & S. (n.d.). SBC "Geek Oyate 2019-Present" folder. Retrieved 2020, from Sitting Bull College shared folder.

In addition to the Geek Oyate club, IT students can and have participated in Student Government, American Indian Business Leaders, SBC's Culture Club or the annual American Indian Higher Education Consortium competition.

Importance to the College and other Programs

The Information Technology education program helps to fill important computer support roles within the community. IT graduates are employed doing IT jobs on Standing Rock Reservation: at Sitting Bull College, in schools, in Indian Health Service clinics and hospitals, in two casinos, in tribal government, at Standing Rock Telecom and West River Telecom, and at private businesses. Others are working on the reservation in non-IT areas such as office management. Other students have taken jobs off the reservation, in IHS hospitals, USDA offices, and school districts. Internships provide the student opportunities to gain supervised, practical experience working in an Information Technology profession. Most of the internships are minimum wage positions to no cost to the employer. The IT internship is a core class and is supervised by the IT instructor and advisor, Gabriella Arellano.

Our recent spring 2020 graduates are all currently employed at various positions all located on Standing Rock Indian. One student is working as the Information Technology Specialist at Solen High school, while the other is working part-time consulting with computer hardware and assembling computers for local business. There are also two additional students who plan to graduate in 2021 that are already employed. One student is IT specialist at a middle school in South Dakota and the other was hired to create the website for the Oyate bank. They are continuing to work on their IT degrees.

Obstacles and Opportunities

The Information Technology has many opportunities looking ahead into the future. Our program just received the Native Arts Enrichment and Expansion Technology Grant through the American Indian College Fund allowing our program to increase in the following resources: camera, microphones, and various application subscriptions for the college to utilize. The Sitting Bull College Project Administrator, Gabriella Arellano, will allocate resources according to current and immediate needs, especially with the current corona virus pandemic. This project will begin on October 29, 2019 and go through January 29, 2021.

Additionally, with the increase in Geek Oyate club enrollment numbers and internships, the IT program is nurturing relationships amongst peers, staff, and employers, growing the number of partnerships overall. Our weekly speakers and workshop presenters are also a key in continuing to build relationships, allowing our students to network and leading to endless opportunities.

With the shift to online learning, individual course enrollment is increasing and allowing for working individuals to complete courses on their own time as compared to prior years where courses were held during work hours. The increase in faculty training (including the competition of the ACUE faculty online training that took place in the summer of 2019), has allowed

individuals to polish their online education skills to better provide online resources and meet the current needs of our students.

The corona virus impact has resulted in programs receiving additional funds to address the lack of resources for online education and safety with regards to the pandemic. As online education begins to advance and new resources are needed, the need for funding will also increase overtime, to stay current with technology equipment and current IT trends.

Most of our Lenovo laptops are checkout out to students which have a life span of 3-5 years, funding will be essential to replace the laptops that we are currently checking out to students once the device is no longer salvageable (Lenovo , 2020). Previously, students would use the desktop computers in the computer lab, but there is no telling when this will begin to occur in the future, given the current global pandemic.

Another department need is to secure additional funding for purchasing the full version of Cisco's networking lab equipment bundle, which is currently about $ 5000. This would assist the instructor with the two current networking classes and is required if the SBC IT education program wants to offer more advanced networking classes in the future. Laboratory workbenches and storage cabinets, at least, must be added to the classroom; this might necessitate the removal of several computers that are currently used by non-IT students. Some funding might be available from NACTEP and Title III for such items. These computers are currently not in use, but this may change after the pandemic.

Another focus is the retention of students in the information technology program. American Indian and Alaska Native students experience the lowest rates of college retention and graduation at four-year institutions in the United States (Keith, J. F., Stastny, S., Agnew, W., & Brunt, A., 2017) SBC has formulated a retention management plan, which include activities such as the Student Summit and other student support activities.

The IT program has developed a number of suggested course sequences through the Information Technology Program, designed to take either four or five semesters, depending on the student schedule and how individual students plan to complete their coursework at their own pace. The IT courses are also coursework intensive and students can choose which other general courses to complete while they complete the required IT classes.

Suggested Sequence For Student Progression Through The Associate Of Science In Information Technology Program

A suggested sequence through the Information Technology Program, incorporating all prerequisites, is shown below. This sequence allows the student to complete the program in **four semesters**.

Fall Term 1

PSYC	100	First Year Learning Experience	3 credit hours
ENG	110	Composition I	3 credit hours
___	___	Health/ Physical Education	2 credit hours
MATH	102	Intermediate Algebra or higher	4 credit hours
CIS	212	Operating Systems Client	3 credit hours
CSCI	101	Introduction to Computer Applications	3 credit hours
		Total Credits	**18 credit hours**

Spring Term 2

COMM	110	Speech	3 credit hours
ENG	120	Composition II	3 credit hours
___	___	Humanities Or Social & Behavioral Science	3 credit hours
CIS	128	Microcomputer Hardware I	3 credit hours
CIS	215	Implementing a Server Environment	3 credit hours
CSCI	133	Database Concepts I	3 credit hours
		Total Credits	**18 credit hours**

Fall Term 3

CIS	129	Microcomputer Hardware II	3 credit hours
CIS	164	Networking Fundamentals I	4 credit hours
CSCI	122	Visual Basic	3 credit hours
___	___	Information Technology Elective	3 credit hours
NAS	101	Lakota/Dakota Language I	4 credit hours
		Total Credits	**17 credit hours**

Spring Term 4

CIS	165	Networking Fundamentals II	4 credit hours
CIS	297	Information Technology Internship	3 credit hours
CSCI	160	Computer Science I (Java)	4 credit hours
___	___	Laboratory Science	4 credit hours
SOC	100	Transitions-Graduation & Beyond	2 credit hours
		Total Credits	**17 credit hours**

Total Degree Requirements...69 credits

Suggested Sequence For Student Progression Through The Associate Of Science In Information Technology Program

A suggested sequence through the Information Technology Program, incorporating all prerequisites, is shown below. This sequence allows the student to complete the program in **five semesters**.

Fall Term 1

PSYC	100	First Year Learning Experience	3 credit hours
ENG	110	Composition I	3 credit hours
MATH	102	Intermediate Algebra or higher	4 credit hours
CSCI	101	Introduction to Computer Applications	3 credit hours
		Total Credits	**13 credit hours**

Spring Term 2

ENG	120	Composition II	3 credit hours
___	___	Humanities Or Social & Behavioral Science	3 credit hours
___	___	Health/ Physical Education	2 credit hours
CIS	128	Microcomputer Hardware I	3 credit hours
CSCI	133	Database Concepts I	3 credit hours
		Total Credits	**14 credit hours**

Fall Term 3

COMM	110	Speech	3 credit hours
CIS	129	Microcomputer Hardware II	3 credit hours
CIS	164	Networking Fundamentals I	4 credit hours
CIS	212	Operating Systems Client	3 credit hours
CSCI	122	Visual Basic	3 credit hours
		Total Credits	**16 credit hours**

Spring Term 4

NAS	101	Lakota/Dakota Language I	4 credit hours
CIS	165	Networking Fundamentals II	4 credit hours
CIS	215	Implementing a Server Environment	3 credit hours
CSCI	160	Computer Science I (Java)	4 credit hours
		Total Credits	**15 credit hours**

Fall Term 5

SOC	100	Transitions-Graduation & Beyond	2 credit hours
___	___	Laboratory Science	4 credit hours
___	___	Information Technology Elective	3 credit hours
CIS	297	Information Technology Internship	3 credit hours
		Total Credits	**12 credit hours**

Total Degree Requirements.. 69 credits

Suggested Sequence For Student Progression Through The Associate Of Science In Information Technology Program

A suggested sequence through the Information Technology Program, incorporating all prerequisites, is shown below. This sequence allows the student to complete the program in **five semesters, beginning in Spring**.

Spring Term 1

PSYC	100	First Year Learning Experience	3 credit hours
ENG	110	Composition I	3 credit hours
CIS	128	Microcomputer Hardware I	3 credit hours
CSCI	101	Introduction to Computer Applications	3 credit hours
		Total Credits	**12 credit hours**

Fall Term 2

ENG	120	Composition II	3 credit hours
CIS	129	Microcomputer Hardware II	3 credit hours
CIS	164	Networking Fundamentals I	4 credit hours
CIS	212	Operating Systems Client	3 credit hours
CSCI	122	Visual Basic	3 credit hours
		Total Credits	**16 credit hours**

Spring Term 3

MATH	102	Intermediate Algebra or higher	4 credit hours
CSCI	133	Database Concepts I	3 credit hours
CIS	165	Networking Fundamentals II	4 credit hours
CIS	215	Implementing a Server Environment	3 credit hours
		Total Credits	**14 credit hours**

Fall Term 4

NAS	101	Lakota/Dakota Language I	4 credit hours
____	___	Laboratory Science	4 credit hours
____	___	Information Technology Elective	3 credit hours
___	___	Information Technology Elective	3 credit hours
		Total Credits	**15 credit hours**

Spring Term 5

COMM	110	Speech	3 credit hours
SOC	100	Transitions-Graduation & Beyond	2 credit hours
____	___	Health/ Physical Education	2 credit hours
____	___	Humanities Or Social & Behavioral Science	3 credit hours
CSCI	160	Computer Science I (Java)	4 credit hours
CIS	297	Information Technology Internship	3 credit hours
		Total Credits	**17 credit hours**

Total Degree Requirements.. 69 credits

Program Planning

Every two years (in advance of the publication of the SBC Bulletin) the faculty members and advisory committee examine the IT course offerings, in relation to similar programs at other tribal and North Dakota state vocational colleges. Changes have been made to keep the program up to date and competitive; some courses have been eliminated, others modified, and new courses added. The number of credits required has been reduced overall, increasing the likelihood that students will complete the program without using up their eligibility for Pell Grant funding.

It is apparent that there are numerous IT employment opportunities available in the region served by Sitting Bull College, and across the state of North Dakota there are likely to be even more openings in the near future. The challenge is making certain that interested students will consider SBC for their higher education choice. For the past fifteen years, SBC has been able to offer financial assistance for student needs through the NACTEP program in addition to the usual Pell grant and other scholarships.

Trends

As of November 2020, according to the Job Service of North Dakota, there are currently 311 Technology/ Computer related positions available across the state of North Dakota requiring an Associate Degree or less (Job Service North Dakota, 2020). A majority of these positions consists of 63 open Information Technology positions currently available in Bismarck, North Dakota under the computer occupation group category requiring an associate degree or less (Job Service North Dakota, 2020). All of the 63 positions are one hour and twenty minutes away from the Sitting Bull College Fort Yates campus. In addition, there are 123 positions in information technology or related, that are available statewide, requiring a bachelor's degree (Job Service North Dakota, 2020). Lastly, there are 31 positions related to Information Technology and Computers that require a bachelor's degree in Bismarck, North Dakota. There are currently two Information technology job available locally at Standing Rock Telecom according to Standing Rock Careers (Standing Rock Sioux Tribe, 2020).

The average annual wage for all information technology occupations in the state of North Dakota is $50,313 (Technology Council of North Dakota, 2017). According to the council, the state of North Dakota is estimated to need 6,500 technology positions through 2026 (Technology Council of North Dakota, 2017). Growth in the industry will create the need for 1,340 employees to fill new positions (Technology Council of North Dakota, 2017). The state's technology industry currently employs 7,880 statewide and new projected positions will equal 82% of the state's current technology workforce (Technology Council of North Dakota, 2017). Computer science teachers have the highest percentage of projected growth (30%) (Technology Council of North Dakota, 2017).

Given that Sitting Bull College serves both North Dakota and South Dakota, job trends in South Dakota will also be included in this review. According to the Department of Labor and

Regulation, there are currently 84 Information technology associated positions as of December 2020 (South Dakota Department of Labor and Regulation, 2020). According to the U.S Bureau of Labor statistics, there are currently 8,430 Technology and Mathematical positions currently occupied in the State of South Dakota (Bureau of Labor Statistics, 2020). The median hourly wage for these IT positions is $30.03 per hour and the annual mean wage is $66,040.

Table 11 North Dakota& South Dakota IT Positions Projected Growth

ND & SD Information Technology Positions Projected Growth 2026	
IT Position	**Projected Growth**
Computer Science Teacher, ND	30%
Information Security Analyst , ND	3.5%
Software Developers , ND	2.9%
Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic, SD	27.78%
Information Security Analyst, SD	27.35%
Software Developers, Applications, SD	29.07%

[10] *Projected growth was estimated by the IT North Dakota Council.[11]*

       The three projected top three occupations in North Dakota with the most openings are: computer user support specialists with 1,397 openings; software developer, applications with 1,324 projected openings; and network and computer systems administrators with 573 openings (2017). On the other hand, the top three technology projected positions in South Dakota are Software Developers with 1,514 workers, Computer Numerically Controlled Machine Tool Programmers Metal and Plastic with 69 workers, and Information Security Analyst with 270 workers by 2026.

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10 (Technology Council of North Dakota, 2017)

11 https://dlr.sd.gov/lmic/lb/2018/september2018laborbulletin.pdf

In Sioux County, ND at present, there are two IT positions available, but they are not currently being advertised online. Below is a table outlining the current availability in Sioux county:

Entity	Total Positions by Title	IT Job Openings
Grand River Casino	1 IT Director, 1 IT Technician	None
Prairie Knights Casino	1 IT Director, 2 IT Technician	None
Sitting Bull College	1 IT Director, 1 IT Technician	None
IHS Hospital and Clinics	1 IT Director, 1 IT Technician	None
Standing Rock Schools, Ft. Yates	1 IT Director, 3 IT Technician	none
Standing Rock Sioux Tribe	1 IT Director, 4 IT Technician	None
Standing Rock Telecom	1 IT Director, 2 IT Technician	Two

[12] *Findings were taken from three websites (each company website was also visited)*

Given the current local job availability, Ms. Arellano is striving to build networks in the surrounding larger cities with greater information technology position openings, as well as focusing on remote job ability nationwide. Given the current Covid19 trends, there are many new online IT positions available in the United States. (Indeed, 2020). As of November 2020, there are currently 10,593 remote jobs available across the United States (Indeed, 2020). The CompTIA is required for 132 of these remote IT positions, the CompTIA Network is required for 353 of these remote positions and the CCNA certificate is required for 309 of the remote positions. Below is a table outlining the current remote job openings, in alignments with the certificates that our IT program currently prepares our information technology students to take online.

Remote Positions Available November 2020 Requiring Industry Certification		
Certifications	**Remote Positions Available**	**Type**
CompTIA A+	132	Remote Position
CompTIA Network	155	Remote Position
CCNA	309	Remote Position

[12] (Standing Rock Sioux Tribe, 2020) (Indeed, 2020)

| CCT | 309 | Remote Position |

13 Findings were taken from indeed.com, link below. The Positions are all remote. Our curriculum prepares all of our IT students to complete and pass the above certifications.

13 (Indeed, 2020)

Program Review Participants

Information Technology Education Program, 2020

Gabriella Arellano: IT Specialist (Instructor, and Program Advisor)   November 1, 2020

                                                            Date of Submission

                                                            November 19, 2020

Gabriella Arellano: IT Specialist Updated Draft   December 21, 2020

Gabriella Arellano: IT Specialist Updated Draft   January 15, 2021

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