

DEPARTMENT OF INFORMATION TECHNOLOGY

Andy Conrad, Information Technology Chairperson

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

It has been estimated that by the year 2004 there will be a shortage of over 1 million IT professionals in the United States. Despite the downturn of the past two or three years, IT professionals with the right skills are still in demand. The industry continues to need bright people!

Apart from the really technical roles, working in the IT industry is all about people. Employers are particularly interested in people with problem solving skills, who are strong communicators and have the ability to work in teams.

The opportunities for career advancement, self development and financial reward are excellent. Many positions on the Pine Ridge Reservation will need to be filled by qualified IT personnel. Our goal is to fill these positions with our Native American graduates. The Information Technology Bachelor degree program will give you the necessary background and experiences to become a successful IT Systems Engineer.

ASSOCIATE OF ARS IN INFORMATION TECHNOLOGY

The AA in Information Technology degree is designed to prepare students to track into OLC's four-year IT program, transfer to an IT degree at another four-year institution, or to further employment opportunities. This degree will give you the necessary background to become a successful IT - Systems Technician.

INFORMATION TECHNOLOGY DEPARTMENT
Bachelor of Science (B.S.) in Information Technology – Engineer

			Where		
			Taken	Date	Grade
Core Requirements: (34 Credits Total)					
StSk	103	Reading & Study Skills	3	_____	
Engl	103	English I	3	_____	
Sci	113	Technical Writing	3	_____	
SpCm	103	Speech Communications	3	_____	
Math	154	College Algebra (or above)	4	_____	
IT	103	Theory of Computational Devices	3	_____	
Natural Science Electives			3	_____	
Soc/Psy/Hist Social Science Electives			3	_____	
Psy	103	General Psychology	3	_____	
Humanities Electives			6	_____	
Lakota Studies Requirements: (15 Credits Total)					
Lak	103	Lakota Language I	3	_____	
Lak	233	Lakota Language II	3	_____	
LSoc	103	Lakota Culture (or Lhist 203 LakotaHistory I)	3	_____	
Lakota Studies Elective			6	_____	
IT Requirements (64 Credits total)					
ET	101	Introduction to Distance Education	1	_____	
IT	113	Command Line Interface	3	_____	
*IT	134	A+ Certification	4	_____	
*IT	153	Survey of Operating Systems	3	_____	
*IT	203	Programming	3	_____	
*IT	224	PC Design and Assembly	4	_____	
*IT	243	Introduction to Networks	3	_____	
*IT	253	Supporting Workstations	3	_____	
*IT	263	Discrete Structures	3	_____	
*IT	273	Technical Business Administration	3	_____	
*IT	333	Network Administration	3	_____	
*IT	343	Application Software TnT	3	_____	
*IT	363	Implementing and Administrating Web Servers	3	_____	
*IT	404	Network Protocols	4	_____	
*IT	423	Supporting Network Operating Systems	3	_____	
*IT	453	Network Security	3	_____	
*IT	474	Network Analysis	4	_____	
IT	290a	Internship in Information Technology	1	_____	
IT	290b	Internship in Information Technology	1	_____	
IT	290c	Internship in Information Technology	1	_____	
IT	290d	Internship in Information Technology	1	_____	
IT	490a	Internship in Information Technology	1	_____	
IT	490b	Internship in Information Technology	1	_____	
IT	490c	Internship in Information Technology	1	_____	
IT	490d	Internship in Information Technology	1	_____	

IT Electives (21 Credits)

*Soc 233	Genocide and Colonization	3
*Math 194	Calculus I	3
*IT 303	Intro to UNIX	3
*IT 313	UNIX Shell Programming	3
*IT 353	Internet Technologies	3
*IT 373	Web Design Fundamentals	3
*IT 383	Current Topics in Information Technology	3
*IT 414	Advanced NT	4
*IT 433	Supporting Windows NT Workstation	3
*IT 443	Advanced UNIX	3
*IT 502	MSCE Certification Core Test #1	2
*IT 512	MSCE Certification Core Test #2	2
*IT 522	MSCE Certification Core Test #3	2
*IT 532	MSCE Certification Elective Test #1	2
*IT 542	MSCE Certification Elective Test #2	2

Credits 134 Hours

Information Technology Plan of Study

This is a plan of study to graduate with a BS in Information Technology in four years.

Hours needed:

Core	34
Lakota Studies	15
IT	85
Total hours for degree	134

Freshman year

1st Semester

Core

Math 154 College Algebra (or above)	4 hours
ENG 103 Freshman English	3 hours
IT 103 Theory of Computational Devices	3 hours

IT Courses

ET 101 Introduction to Distance Education	1 hour
IT 113 Command Line Interface	3 hours
IT 290a Internship in Information Technology	1 hour

Total

15 hours

2nd Semester

Core

CoSU 103 College Success	3 hours
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Lakota Studies

2 – 3 hour classes in Lakota Studies	6 hours
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IT Courses

*IT 153 Survey of Operating Systems	3 hours
*IT 134 A+ Certification	4 hours
IT 290b Internship in Information Technology	1 hour

Total

17 hours

Sophomore year

1st Semester

Core

PSY 103 General Psychology	3 hours
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Lakota Studies

1 – 3 hour class in Lakota Studies	3 hours
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IT Courses

*IT 203 Programming	3 hours
*IT 224 PC Design and Assembly	4 hours
*IT 243 Introduction to Networks	3 hours
IT 290c Internship in Information Technology	1 hour

Total

17 hours

2nd Semester

Core

SCI 113 Technical Writing	3 hours
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Lakota Studies

1 – 3 hour class in Lakota Studies	3 hours
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IT Courses

*IT 253 Supporting Workstations	3 hours
*IT 263 Discrete Structures	3 hours
*IT 273 Technical Business Administration	3 hours
IT 290d Internship in Information Technology	1 hour

Total

16 hours

Junior year

1st Semester

Core

Soc/Psy/Hist Elective 3 hours

Lakota Studies

1 – 3 hour class in Lakota Studies 3 hours

IT Courses

*IT 333 Programming 3 hours

1 – 3 hour IT elective 3 hours

IT 490a Internship in Information Technology 1 hour

Total

14 hours

2nd Semester

Core

SPCM 3 hours

Humanities Elective 3 hours

IT Courses

*IT 343 Application Software TnT 3 hours

2 – 3 hour IT elective 6 hours

IT 340a Internship in Information Technology 1 hour

Total

16 hours

Senior year

1st Semester

Core

Humanities Elective 3 hours

IT Courses

*IT 423 Supporting Network Operating Systems 3 hours

*IT 474 Network Analysis 4 hours

2 – 3 hour IT elective 6 hours

IT 490c Internship in Information Technology 1 hour

Total

17 hours

2nd Semester

Core

Natural Science Elective 3 hours

IT Courses

*IT 453 Network Security 3 hours

2 – 3 hour IT elective 6 hours

IT 490d Internship in Information Technology 1 hour

Total

13 hours

INFORMATION TECHNOLOGY DEPARTMENT
Associate of Arts (A.A.) in Information Technology –Technician

			Where		
			Taken	Date	Grade
Core Requirements: (25 Credits Total)					
StSk	103	Reading & Study Skills	3	_____	_____
Engl	103	English I	3	_____	_____
Sci	113	Technical Writing	3	_____	_____
SpCm	103	Speech Communications	3	_____	_____
Math	154	College Algebra (or above)	4	_____	_____
Natural Science Elective			3	_____	_____
Humanities Electives			3	_____	_____
Psy	103	Psychology	3	_____	_____
Lakota Studies Requirements: (15 Credits Total)					
Lak	103	Lak. Language I	3	_____	_____
Lak	233	Lak. Language II	3	_____	_____
LSoc	103	Lakota Culture (or Lhist 203 Lakota History I)	3	_____	_____
Lakota Studies Elective			6	_____	_____
IT Requirements (37 Credits total)					
ET	101	Introduction to Distance Education	1	_____	_____
IT	103	Theory of Computational Devices	3	_____	_____
IT	113	Command Line Interface	3	_____	_____
IT	134	A+ Certification	4	_____	_____
IT	153	Survey of Operating Systems	3	_____	_____
IT	203	Programming	3	_____	_____
IT	224	PC Design and Assembly	4	_____	_____
IT	243	Introduction to Networks	3	_____	_____
IT	253	Supporting Workstations	3	_____	_____
IT	263	Discrete Structures	3	_____	_____
IT	273	Technical Business Administration	3	_____	_____
IT	290a	Internship in Information Technology	1	_____	_____
IT	290b	Internship in Information Technology	1	_____	_____
IT	290c	Internship in Information Technology	1	_____	_____
IT	290d	Internship in Information Technology	1	_____	_____

77 Hours Total

Information Technology Plan of Study

This is a plan of study to graduate with a AA in Information Technology in two years.

Hours needed:

Core	34
Lakota Studies	15
IT	85
Total hours for degree	134

Freshman year

1st Semester

Core

Math 154 College Algebra (or above)	4 hours
ENG 103 Freshman English	3 hours
IT 103 Theory of Computational Devices	3 hours
Humanities Elective	3 hours

Lakota Studies

1 – 3 hour class in Lakota Studies	3 hours
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IT Courses

ET 101 Introduction to Distance Education	1 hour
IT 113 Command Line Interface	3 hours
IT 290a Internship in Information Technology	1 hour

Total

21 hours

2nd Semester

Core

CoSU 103 College Success	3 hours
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Natural Science Elective

3 hours

Lakota Studies

2 – 3 hour classes in Lakota Studies	6 hours
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IT Courses

*IT 153 Survey of Operating Systems	3 hours
*IT 134 A+ Certification	4 hours
IT 290b Internship in Information Technology	1 hour

Total

20 hours

Sophomore year

1st Semester

Core

PSY 103 General Psychology	3 hours
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Lakota Studies

1 – 3 hour class in Lakota Studies	3 hours
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IT Courses

*IT 203 Programming	3 hours
*IT 224 PC Design and Assembly	4 hours
*IT 243 Introduction to Networks	3 hours
IT 290c Internship in Information Technology	1 hour

Total

17 hours

2nd Semester

Core

SCI 113 Technical Writing	3 hours
SPCM	3 hours

Lakota Studies

1 – 3 hour class in Lakota Studies	3 hours
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IT Courses

*IT 253 Supporting Workstations	3 hours
*IT 263 Discrete Structures	3 hours
*IT 273 Technical Business Administration	3 hours
IT 290d Internship in Information Technology	1 hour

Total 16 hours

INFORMATION TECHNOLOGY DEPARTMENT
E-Certificate in Distance Learning

Requirements:			Where	Date	Grade
			Taken		
ET	403	Fundamentals of Distance Education	3	_____	
ET	413	Information Technologies in Distance Education	3	_____	
ET	423	Course Development and Instructional Design in Distance Education	3	_____	
ET	433	Web-Based Learning and Teaching in the Virtual Classroom	3	_____	

COURSE DESCRIPTIONS

ET 101 Introduction to Distance Education

In this mini-course you will learn about online courses. You will learn what computer and computer skills are required to be successful at online classes. You will learn how to use OLC's course management system. You will also learn email etiquette, Internet "netiquette", how to use online reference materials, copyright issues and online troubleshooting techniques. You will also learn about the study skills needed for online learning. This mini-course is a prerequisite of all online classes. 1 credit

SCI 113 Technical Writing

You will learn the essentials of writing clear, concise proposals, reports, technical manuals, letters, memos, bid specifications, and other technical documents. (This course DOES NOT satisfy the Engl 113 requirement for non – Science, Math and Technology programs.) Prerequisites: Engl 103. 3 credits

IT 103 Theory of Computational Devices

You will have a close look inside today's personal computers. You will see what makes computers "tick" from transistor basics up to accessing the Internet. Detail will be given on all the essential components within a PC and how they interact. This class also addresses the latest aspects of computer technology (e.g., DVD) and how they affect computer use and operation. Presentations of actual hardware (VLSI integrated circuits, modems, etc.) are included so that you can visually appreciate the complexity of the circuitry involved. Copyright issues and ethics involved with computer operations will be discussed. 3 credits

IT 113 Command Line Interface

In this class, you will focus on command-line -interface concepts. Topics will include directory hierarchy, I/O redirection, pipes, variables and related commands. Operating systems will include Disk Operating System and UNIX. 3 credits

IT 134 A+ Certification

This course will prepare you to pass the A+ certification exams as required to become a computer service technician. You are prepared for the A+ exam in areas like assembly and disassembly of PCs, diagnosing and troubleshooting, basic networking, Windows and DOS. Prerequisites: IT 113, permission of instructor. (3,2) 4 Credits

IT 153 Survey of Operating Systems

You will explore the differences between popular operating systems offered in today's marketplace. OS's include, but not limited to Windows and UNIX. Prerequisites: IT 103, permission of instructor. (2,2) 3 Credits

IT 203 Programming

You will be exposed to the fundamental concepts of problem solving and developing program logic using tools and techniques of programming. Topics include algorithm development, diagramming and program documentation and incorporating a programming language for hands-on application of programming concepts. C++ will be from UNIX. Prerequisites: IT 113, Math 154, permission of instructor. (2,2) 3 Credits

IT 224 PC Design and Assembly

Participants will be able to identify essential components of a typical PC system and how they interact with each other. By the end of the semester, participants will be able to construct a working PC system complete with operating system. Prerequisites: IT 134, permission of instructor. (2,4) 4 Credits

IT 243 Introduction to Networks

Physical and logical network topologies; transmission media and network access will be examined. Hardware and software network configurations, operations and requirements will be discussed. Topics include communication codes, transmission media, encoding methods, the OSI model, network standards and protocols. Copyright issues and ethics involved with computer operations will be discussed. Prerequisites: IT 103, permission of instructor. 3 Credits

IT 253 Supporting Workstations

Focuses on the skills necessary to install and manage a GUI workstation environment. The basic areas you will cover include installation and configuration, architectural overview, user interface, memory management, file I/O, network administration, communications and printing, disk utilities, troubleshooting, and multimedia. Linux and Windows XX systems will be used. Prerequisites: IT 134, permission of instructor. (2,2) 3 Credits

IT 263 Discrete Structures

This course covers fundamental topics in data structures and discrete mathematics. The topics are presented in an integrated manner that provides the discrete math foundations for data structures and computing applications of discrete mathematics concepts. Topics covered include stacks, queues, linked lists, trees, algorithms for searching and sorting, finite state automata, and concepts of computability and decidability. Topics from discrete math include sets and various types of relations (functions, graphs, trees, lattices), recursion and inductive proofs, Boolean logic, relational algebra, predicate calculus, series and limits, and asymptotic behavior of searching and sorting algorithms. Programming exercises are assigned throughout the course. Prerequisites: Math 154, IT 203, permission of instructor. 4 Credits

IT 273 Technical Business Administration

Grant writing, product procurement and budgets will be discussed as it applies to the Information Technology professional. You will also be shown the part personal finances play in post-graduation life. Copyright issues and ethics involved with computer operations will be discussed. Prerequisites: SCI 113, permission of instructor. 3 Credits

IT 290a, IT 290b, IT 290c, IT 290d, IT 490a, IT 490b, IT 490c, IT 490d Internship in Information Technology

This course will be offered each semester. It is designed to introduce you to the rigors of being an Information Technology professional. You are expected to work 40 hours during the semester for each hour of credit. Up to 2 credits can be earned per semester. Prerequisites: permission of instructor. 1 - 2 credits

IT 303 Intro to UNIX

You will be given an introduction to UNIX operating system with specific reference to UNIX commands, the Unix file structure, editors, and shell programming. Includes an introduction to system administration and security. Prerequisites: IT 113, IT 223, permission of instructor. (2,2) 3 Credits

IT 313 Unix Shell Programming

UNIX is a versatile multi-user, multitasking operating system. UNIX has a structural software tool design philosophy that is essential for producing reliable, maintainable, and portable programs. You will cover the essential aspects of UNIX Shell programming such as the Bourne shell and shell scripts. In this class you will learn to manage UNIX files and directories using the UNIX shell commands, work with shell variables, metacharacters and regular expressions, use shell commands to redirect input, output and error messages, and archive files in the background and write different types of shell scripts. Prerequisites: IT 113, permission of instructor. (2,2) 3 Credits

IT 333 Network Administration

This course will acquaint you to a network environment and to provide basic entry-level skills in network administration. Hands-on exercises will allow you to become familiar with popular network operating system's management utilities including printing services, storage devices and setup of networking protocols. Prerequisites: IT 253, permission of instructor. (2,2) 3 Credits

IT 343 Application Software TnT

This course will help you to develop problem-solving tactics to help end users overcome difficulties with their application program. Training aspects and how you can take a proactive approach for training end users on application programs will be investigated. Prerequisites: SCI 113, IT 253, permission of instructor. 3 Credits

IT 353 Internet Technologies

This course is aimed at giving you a comprehensive overview of Internet technologies. You will learn about the history of the Internet, how to use a wide array of Internet technologies, Internet trends and current issues relating to the Internet. Students will also learn the key skills required to create attractive, well-designed, secure WEB sites that meet the goals of a business organization. Prerequisites: IT 253, permission of instructor. (2,2) 3 Credits

IT 363 Implementing and Administrating Web Servers

In this course you will learn the fundamentals of designing, installing, configuring, maintaining and upgrading your web site. Protocols that will be covered include SNMP, SMTP, Certificate, Index, FTP, HTTP, SSL, CGI, SHTML, SML, and Streaming Media. Management of users and groups as they pertain to Web Servers will also be covered. Prerequisites: IT 243, permission of instructor. (2,2) 3 Credits.

IT 373 Web Design Fundamentals

This course will explore aspects of the design and creation of websites including the initial planning, design, implementation and publishing. With an emphasis on design, we will use web design tools such as HTML, Dreamweaver, Fireworks, and Photoshop Elements for the web will be covered. Copyright issues will also be covered. Students will design and publish a personal webpage as part of the course. There will be a course website with relevant URLs for that day's topic. Prerequisites: IT 103, Permission of the instructor. 3 credits

IT 383 Current Topics in Information Technology

Offers current topics from the area of Information Technology systems. Prerequisites: permission of instructor. 3 Credits

IT 404 Network Protocols

Focuses on TCP/IP using Microsoft Windows NT and UNIX. Topics include UNIX and Microsoft TCP/IP addressing, subnet addressing, implementing IP routing, dynamic host configuration protocol, IP, IPX/SPX, ATM address resolution, Net BIOS name resolution, Windows Internet name service, host name resolution, connectivity, and troubleshooting. Prerequisites: IT 243, permission of instructor. (3,2) 4 Credits

IT 414 Advanced NT

You will learn the installation and configuration of Windows NT Server and Workstation with an emphasis on the management and administration of user hardware and software resources. Hands on application of network administration principles on an operational NT Network is provided. Prerequisites: IT 153, IT 253, permission of instructor. (2,4) 4 Credits

IT 423 Supporting Network Operating Systems

Advanced network commands and utilities will be demonstrated to you to further supplement the skills required by a network administrator. Directory structures, security, printing and network administration will be covered. Troubleshooting methods and procedures will be discussed for workstations, servers and related hardware, and printing systems. Hardware and software to aid with problem identification and resolution will be discussed and demonstrated where possible. Network optimization and disaster recovery will be covered as well as copyright issues and ethics involved with computer operations. Prerequisites: IT 153, IT 253, permission of instructor. (2,2) 3 Credits

IT 433 Supporting Windows NT Workstation

Provides you with a foundation on the Windows NT workstation and fundamentals. Topics include the Windows NT environment, workstation, printing, remote access, troubleshooting, configuration, installation, managing accounts and user rights, securing directory and file resources, securing the system, networking environment and communication, networking browsing and booting Windows NT, and supporting applications. Prerequisites: permission of instructor. (2,2) 3 Credits

IT 443 Advanced Unix

This course is for users interested in becoming UNIX administrators. In this course we will identify the hardware requirements for a UNIX system, the features of job control, the guidelines for managing disk space usage, the benefits of networking, the features of Transmission Control Protocol/Internet Protocol (TCP/IP), the requirements for remote access, the features of Network Information Services (NIS) and the features of Lightweight Directory Access Protocol (LDAP). Prerequisites: permission of instructor. (2,2) 3 Credits

IT 453 Network Security

Provides you with the essential concepts and methods for the network security. Topics covered include physical/logical security and different methods of implementation, data encryption/decryption. There will be discussions of commercial and open source products for firewall, proxy, cache and NAT. Prerequisites: permission of instructor. (2,2) 3 Credits

IT 474 Network Analysis

Provides you with the theory and methodologies for designing and analyzing network systems. Topics that you will cover include techniques used by computer professionals to determine, document, and analyze the network requirements; assessing the hardware/software needs of an organization. Emphasis will be on problem solving and cost-analysis in a networking environment. Prerequisites: permission of instructor. (2,3) 4 Credits

IT 502 Microsoft Certified Systems Engineer Certification Core Test #1

This class will help you study for the Microsoft Certified Systems Engineer Core Test #1. Prerequisites: Senior status, permission of instructor. (1,2) 2 Credits

IT 512 Microsoft Certified Systems Engineer Certification Core Test #2

This class will help you study for the Microsoft Certified Systems Engineer Certification Core Test #2. Prerequisites: Senior status, permission of instructor. (1,2) 2 Credits

IT 522 Microsoft Certified Systems Engineer Certification Core Test #3

This class will help you study for the Microsoft Certified Systems Engineer Certification Core Test #3. Prerequisites: Senior status, permission of instructor. (1,2) 2 Credits

IT 532 Microsoft Certified Systems Engineer Certification Elective Test #1

This class will help you study for the Microsoft Certified Systems Engineer Certification Core Test #1.

Prerequisites: Senior status, permission of instructor. (1,2) 2 Credits

IT 542 Microsoft Certified Systems Engineer Certification Elective Test #2

This class will help you study for the Microsoft Certified Systems Engineer Certification Core Test #2.

Prerequisites: Senior status, permission of instructor.

(1,2) 2 Credits

ET 403 Fundamentals of Distance Education

This course will provide the student with a foundation of knowledge, skills and attitudes that are required by a competent practitioner of distance education. Students will explore the critical concepts and issues identified in distance education literature and critically examine the history and theories of the field.

3 credits

ET 413 Information Technologies in Distance Education

This course explores the role that technology plays in the design, development and delivery of distance education courses. Various uses of technology are explored in the areas of course development; asynchronous and synchronous distance course delivery methods, and management/administration. The relationship of information technology and distance education is explored as special emphasis is placed on computer-based technologies. Students will gain an understanding of how technologies can be blended together to form a learner friendly distance education course. By the end of this course, the student will be familiar with the basic technology as it pertains to distance education with Microsoft Word, Excel and Power point, and Macromedia Flash and Dreamweaver.

3 credits

ET 423 Course Development and Instructional Design in Distance Education

This course examines the process of instructional design and development in a distance education context. Students critically evaluate the relationship between instructional design and technology. Various models of instructional and course development are considered. Students apply the instructional development process by developing a small instructional unit. Special emphasis is given to web-based instructional design and delivery. Course topics include learning beliefs, design tools, analysis, designing instruction, and evaluation.

3 Credits

ET 433 Web-Based Learning and Teaching in the Virtual Classroom

The Virtual Classroom is a new concept that has recently evolved because of the emergence of the World Wide Web as a means of delivering education. This course covers the brief history, definitions, and implementations of the concept of the Virtual Classroom. The rapidly evolving literature of web-based learning is explored, with special emphasis placed on web-based pedagogy/andragogy, student learning styles, and special considerations for course design. The impact of web-based technologies will be discussed. Students will begin developing web-based learning environments and will use web-based communication tools.

3 credits