# Introduction to Information Technology

(10009)

**Rationale Statement**:
Introduction to Information Technology prepares students with the knowledge and background of the different computer areas and careers. In this course, students will be introduced to topics dealing with hardware, software, networking, interactive media, telecommunication, personal technologies, and new and emerging devices and technologies. Introduction to Information Technology will prepare students to understand the different careers in computer technology, prepare students for future course selections, and provide them with the background and knowledge needed to purchase, troubleshoot, and use technology.

**Course Description:**
Grade Level: 9-10

**Course Topics:**

Topics can include but are not limited to:

- Computer Hardware
- Computer Software
- Networks and the Internet
- Web Applications and Multimedia
- Systems Analysis and Design
- Computers and Society

**Core Standards & Examples**
With the multitude of information and topics taken from the other areas of Information Technology, Introduction to Information Technology has four core standards but then will also use a variety of standards from the other classes within the Information Technology cluster. Courses will cover approximately 3-5 topics from each of the four Information Technology clusters and will incorporate the standards from those areas.

This course should also meet at least the basic level of the 9-12 South Dakota Technology Standards

**Core Technical Standards & Examples**

| **Indicator #1: Understand the need for digital technologies within their life.** | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Remembering** | **IT1.1 Define how digital electronics devices and computers are related.**<br>Examples:<br>• List all their personal electronic devices they use everyday<br>• Research your ideal personal computer system at one or more computer stores |
| **Understanding** | **IT1.2 Provide an explanation of the fundamentals of telecommunications, computer networking, the Internet, and wireless networking.**<br>**E**xamples:<br>• Explain how communications take place electronically<br>• Explain the different protocols used in telecommunications, the Internet and wireless networking |
| **Understanding** | **IT1.3 Describe functional areas in which computers assist people.**<br>Examples:<br>• Explain how computers can assist people<br>• Research artificial intelligence<br>• Research the impact of social networking through the Internet<br>• Explain how technology impacts our entertainment |
| **Understanding** | **IT1.4 Discuss the uses of information systems for individuals and industry**<br>Examples:<br>• List the common types of information systems<br>• Explain careers that are associated with the different types of information systems<br>• Research a career in information technology that interests you |
| **Analyzing** | **IT1.5 Define information security and how technologies impact society.**<br>Example:<br>• Describe how to protect information systems from unauthorized access, use, manipulation, or destruction<br>• Research famous hackers and the damage they caused<br>• Investigate invasion of privacy and identity theft issues |

| Indicator #2: Understand computer hardware required to meet specific needs. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Applying** | **IT2.1 Understand how computer information is represented.**<br>Examples:<br>• Explain how computers represent data<br>• Research the history of binary and machine language<br>• Convert decimal to binary and binary to decimal |
| **Remembering** | **IT2.2 Identify hardware components and their relationship to computer usage.**<br>Examples:<br>• Explain Moore's Law<br>• Research hardware requirements for five top pieces of software<br>• Identify input, output, storage, and processing devices<br>• List the computing and hardware needs for your future information technology career |
| **Understanding** | **IT2.3 Understand the different types of memory and storage**<br>Examples:<br>• Explain the difference between volatile and non-volatile memory<br>• Explain the difference between magnetic, optical and solid state storage |
| **Remembering** | **IT2.4 Identify input and output devices to meet the needs of users**<br>Examples:<br>• Identify input devices and how they connect to the computer<br>• Identify output devices and how they connect to the computer<br>• Explain how input and output devices can help individuals with disabilities<br>• Research new ideas for input and output devices. |
| **Understanding** | **IT2.5 Understand the decision-making process involved in purchasing computer systems**<br>Examples:<br>• Identify what need the computer must solve.<br>• Research minimum requirements for software and usage of the computer<br>• Research cost of computers at different computer stores to meet the needs of low, middle, and high end users. |

| Indicator #3: Understand software solutions for personal and professional use. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Understanding** | **IT3.1 Explain how software is created, distributed, installed, and maintained.**<br>Examples:<br>• Explain the difference between system and application software and list examples of each.<br>• List the steps to the software development process<br>• Research different types of programming languages and identify their differences and what they are used for<br>• Discuss software copyright and licensing issues<br>• Explain the impact of Freeware, Open-Source Software, and Alternative Licensing has on software development |
| **Remembering** | **IT3.2 Describe the functions of system software and operating systems**<br>Examples:<br>• Explain the purpose for system software<br>• List major operating systems and their features<br>• Research the revolution of operating systems and their impact on the market |
| **Understanding** | **IT3.3 Describe different types and purposes of productivity software**<br>Examples:<br>• List popular productivity software and their manufacturer<br>• Identify what software is needed for different careers<br>• Research artificial intelligence software<br>• Explain the Turing Test |

| Indicator #4: Understand technology used for the Internet and World Wide Web. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Creating** | **IT4.1 Describe how the internet developed**<br>Examples:<br>• Research the history of the internet<br>• List major internet milestones |
| **Remembering** | **IT4.2 Explain how hardware, protocols, and software work together to create the internet**<br>Examples:<br>• Identify hardware used within the internet infrastructure<br>• Identify key internet protocols and how they transport information<br>• Identify the different layers of the OSI model |
| **Understanding** | **IT4.3 Explain the underlying structures and technologies used to support the internet.**<br>Examples:<br>• Explain how a user connects to the internet<br>• Identify different internet connections and how they differ<br>• Explain web basics and how information is created and transmitted |
| **Remembering** | **IT4.4 Explain what Internet2 is and the types of applications it will provide in the future.**<br>Examples:<br>• Identify the key players in the Internet2 project<br>• Explain how Internet2 will enhance interactive collaboration<br>• Research the impact of Internet2 on personal and business applications |

| Indicator #5: Understand computer network and telecommunications technologies. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Remembering** | **IT5.1 Understand the fundamentals of data communications**<br>Examples:<br>• Identify the types of signals and transmission capacities used in telecommunications |
| **Remembering** | **IT5.2 List the types of media, devices, and software needed for networking services.**<br>Examples:<br>• Identify types of networking media, their differences, and limitations<br>• Identify hardware required within a network for data transmission<br>• Identify network operating systems and management software<br>• Create common networking media |
| **Remembering** | **IT5.3 List and describe the popular forms of wireless telecommunications technologies**<br>Examples:<br>• Explain how cell phones transmit voice and data<br>• Explain how GPS devices work and assist people<br>• Identify types of wireless devices and how they transmit information<br>• Research the impact RFID has on personal and business applications |
| **Understanding** | **IT5.4 List the different classifications of computer networks.**<br>Examples:<br>• Identify the difference between PAN, LAN, VPN, MAN, and WANs<br>• Explain how to set up a home network<br>• Explain how to and the importance of securing your network<br>• Explain the difference between common network topologies |

| Indicator #6: Understand the need for digital media for work and leisure. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Applying** | **IT6.1 Understand the uses of digital audio and music technologies.**<br>Examples:<br>• Identify common digital audio formats<br>• Covert audio files from one format to another<br>• Create a Podcast<br>• Explain copyright issues regarding digital audio |
| **Understanding** | **IT6.2 Describe the uses of 2D and 3D digital graphics**<br>Examples:<br>• Explain different types of graphic formats and their use<br>• Research careers involved with digital graphics<br>• Research how 3D modeling is used in business applications |
| **Remembering** | **IT6.3 Discuss how interactive media is used to educate and entertain.**<br>Examples:<br>• Explain how interactive media is used in education<br>• Explain the impact of simulators on training individuals<br>• Research interactive media advances in home entertainment. |

| Indicator #7: Understand database management systems. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Remembering** | **IT7.1 Understand the basic data management concepts**<br>Examples:<br>• Explain the hierarchy of data<br>• Identify primary keys and explain their importance in databases<br>• Create a database with multiple fields and records |
| **Applying** | **IT7.2 Describe database models and characteristics.**<br>Examples:<br>• Create an entity relationship diagram<br>• Define database amount, volatility, and immediacy and how those characteristic explain a database |
| **Understanding** | **IT7.3 Discuss the different types of database management systems**<br>Examples:<br>• Create an entity relationship diagram<br>• Define database amount, volatility, and immediacy and how those characteristic explain a database<br>• Explain how organizations use database systems to organize information |
| **Understanding** | **IT7.4 Describe the role of a database administrator**<br>Examples:<br>• Explain the responsibilities of a database administrator<br>• Research database administrator careers and the skills need for them<br>• Create a report that compares two traditional databases with two open-source databases. |

| Indicator #8: Understand the use of E-Commerce for business and personal applications. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Remembering** | **IT8.1 Define e-commerce and its role as a transaction processing system**<br>Examples:<br>• Diagram the electronic data interchange<br>• List the steps to the transaction processing cycle and the key players in each step |
| **Understanding** | **IT8.2 Explain how e-commerce supports the stages of buying, marketing, and selling.**<br>Examples:<br>• Explain the difference types of e-commerce<br>• Explain the role of the buyer and their interaction with e-commerce<br>• Explain the role of the seller and their interaction with e-commerce<br>• Research how marketing for e-commerce is different than other forms of selling<br>• Research the impact of m-commerce on business and individuals |

| Indicator #9: Understand the tools and techniques for systems development. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Knowledge** | **IT9.1 Define the stages of decision-making and problem solving.**<br>Examples:<br>• List the stages and key players on decision making<br>• Discuss the use of management information systems to help solve structured problems.<br>• Describe how decision support systems are used to nonprogrammed and unstructured problems<br>• Explain how group decision support system can help collaboration on team projects |
| **Comprehension** | **IT9.2 Describe the system development life cycle**<br>Examples:<br>• List the steps to the systems development life cycle<br>• Discuss systems development tools<br>• Explain flowcharting and common flowcharting symbols<br>• Flowchart an application<br>• Create a Gantt Chart |
| **Application** | **IT9.3 Describe how an existing system can be evaluated**<br>Examples:<br>• Perform a feasibility analysis<br>• Explain CASE Tools<br>• Define stakeholders, users, and organizational needs<br>• Explain prototyping and its importance |

| Indicator #10: Understand computer crime and information security. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Knowledge** | **IT10.1 Describe methods of keeping a PC safe and secure**<br>Examples:<br>• Identity types of machine-level security procedures<br>• Research the impact of biometrics on computer security<br>• Research ways to encrypt data |
| **Comprehension** | **IT10.2 Discuss the threats and defenses for networks**<br>Examples:<br>• Define multiuser systems and how to protect them<br>• Explain common threats to wireless networks<br>• Explain how and why it is important to secure wireless networks<br>• Research methods on stealing wireless connections |
| **Comprehension** | **IT 10.3 Describe the threats posed by hackers, software, scams and the methods of defending against them.**<br>Examples:<br>• Research famous hackers and the damage they caused<br>• Identify popular methods of attacks<br>• Explain the types of viruses and how they are spread<br>• Identify key frauds, scams, and hoaxes and how to research validity of information |

| Indicator #11: Understand technology ethics in a global society. | |
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| **Bloom's Taxonomy Level** | **Standard and Examples** |
| **Knowledge** | **IT11.1 Describe how technology is impacting community**<br>Examples:<br>• Research how technology connects people<br>• List ways in which etiquette plays a role in technology and communication<br>• Research flash mobs and how technology assist this activity |
| **Knowledge** | **IT11.2 List physical and mental health dangers associated with computer use**<br>Examples:<br>• Research physical health concerns cause by technology usage<br>• Research mental health and addiction caused by technology usage<br>• Explain what can be done to avoid health problems |
| **Comprehension** | **IT11.3 Describe the negative and positive impact on freedom of speech**<br>Examples:<br>• Research laws and censorship issues regarding technology and freedom of speech<br>• Explain content-filtering and how it is used |
| **Comprehension** | **IT11.4 Explain the ways in which technology is used to invade personal privacy**<br>Examples:<br>• Research technologies that are considered invasion of personal privacy<br>• Research your technology and the digital footprint left by them<br>• Research how the patriot act has advanced invasion of personal privacy devices |
| **Comprehension** | **IT11.5 List ethical issues related to digital technology**<br>Examples:<br>• Explain how ethics play a role in personal, professional, and governmental use of technology<br>• Discuss the socioeconomic digital divide<br>• Discuss accommodations needed to assist individuals with disabilities to access technology |
| **Knowledge** | **IT11.6 Explain globalization and its impact**<br>Examples:<br>• Explain outsourcing and offshoring<br>• Research what careers and work are being outsourced<br>• Explain how globalization impacts the United States |