south dakota DEPARTMENT OF EDUCATION
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CTE Standards Unpacking
Introduction to Information Technology

Course: Introduction to Information Technology
Course Description: Introduction to Information Technology prepares students with knowledge and background of technology careers, programming, and hardware. This course explores new and emerging technologies for both professional and personal use.
Career Cluster: Information Technology
Prerequisites: Recommended that a student has taken from the Foundation Courses Computer Applications.
Program of Study Application: Introduction to Information Technology is recommended as a prerequisite for two pathways: Programming and Networking & Hardware.

<table>
<tr><td colspan="3">INDICATOR #IT 1: Understand the need and impact of technology.</td></tr>
<tr><td colspan="3">SUB-INDICATOR 1.1 (Webb Level: 1): Define the relationship between electronic devices and computers</td></tr>
<tr><td colspan="3">SUB-INDICATOR 1.2 (Webb Level: 1): Describe the functional areas in which computers assist people.</td></tr>
<tr><td colspan="3">SUB-INDICATOR 1.3 (Webb Level: 1): Describe how technology is impacting community</td></tr>
<tr><td colspan="3">SUB-INDICATOR 1.4 (Webb Level: 1): List physical and mental health dangers associated with computer use</td></tr>
<tr><td>Knowledge (Factual):
The relationship between electronic devices and computers.

How do people and communities interact with technology.</td><td>Understand (Conceptual):
The influence of technology and how it impacts their daily life.

Moral and ethical use of technology.</td><td>Skills (Application):
Describe the electronic devices you use and explain how they synchronize with computer technology.

Illustrate the ways that technology assists people.

Explain the appropriate ways we use technology.</td></tr>
<tr><td colspan="3">Benchmarks
Students will be assessed on their ability to:
Explain how computers can assist people.
Research the impact of social networking through the Internet.
List ways in which etiquette plays a role in technology and communication.
Research physical health concerns caused by technology usage.
Research mental health and addiction caused by technology usage.</td></tr>
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Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard): RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain. RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text	**Sample Performance Task Aligned to the Academic Standard(s):** Students will research social networking through the Internet and explain the impact orally or in writing.

INDICATOR #IT 2: **Understand computer hardware required to meet specific needs.**		
SUB-INDICATOR 2.1 (Webb Level: 1): Understand how computer information is represented.		
SUB-INDICATOR 2.2 (Webb Level: 1): Identify hardware components and their relationship to computer usage.		
SUB-INDICATOR 2.3 (Webb Level: 2): Understand different types of memory and storage		
SUB-INDICATOR 2.4 (Webb Level: 1): Identify input and output devices to meet the needs of users		
SUB-INDICATOR 2.5 (Webb Level: 2): Understand the decision-making process involved in purchasing computer systems		
Knowledge (Factual): How computer information is represented. Identify input, output, storage, and processing. Understand the process involved in purchasing	**Understand (Conceptual):** The history of binary and machine language. Identify hardware components and their relationship to computer usage. There are different devices	**Skills (Application):** Deconstruct and reconstruct a computer. Connect a variety of input and output devices to a computer. Analyze activity usage,

computer systems.	that fit different needs.	and determine device needed, and purchasing process.

Benchmarks

Students will be assessed on their *ability* to:

- Convert decimal to binary and binary to decimal.
- Research the evolution of data.
- Research hardware requirements for five top pieces of software.
- Explain difference between different types of memory and storage.
- Research new ideas for input and output devices.

Academic Connections

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RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain. RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text. RI7.Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Students will explain orally or in writing/multi-media project the hardware requirements for five top pieces of software. In a research paper or multi-media project, students offer an explanation of the hardware needed to create a computer. Students will review several mock examples of a person or group with computer needs, assess specific details and offer a plan which includes a device that will meet the needs with an explanation of why.

INDICATOR #IT 3: **Understand software solutions for personal and professional use.**

SUB-INDICATOR 3.1 (Webb Level: 2): Explain how software is created, distributed, installed, and maintained.
SUB-INDICATOR 3.2 (Webb Level: 1): Describe the functions of system software and operating systems
SUB-INDICATOR 3.3 (Webb Level: 2): Describe different types and purposes of productivity software

Knowledge (Factual):	**Understand (Conceptual):**	**Skills (Application):**
Differentiate between system, operating and productivity software.	The functions and components of how software and operating systems are created, distributed, installed, and maintained.	Develop a simple software application.

Benchmarks

Students will be assessed on their *ability* to:

- Illustrate the steps in the software development process.
- Compare and contrast major operating systems and their features.
- Describe how artificial intelligence software can be used in your professional and personal life.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain. RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.	Students will explain orally or in a writing/multimedia project how artificial intelligence software can be used in their professional and personal lives.

INDICATOR #IT 4: **Understand technology used for the Internet.**

SUB-INDICATOR 4.1 (Webb Level: 1): Describe how the Internet developed		
SUB-INDICATOR 4.2 (Webb Level: 1): Explain how hardware, protocols, and software work together to create the Internet		
SUB-INDICATOR 4.3 (Webb Level: 2): Explain the underlying structures and technologies used to support the Internet.		
Knowledge (Factual): Understand technology used for the internet.	**Understand (Conceptual):** The history, development, structure and technologies of the internet.	**Skills (Application):** Define the internet.
Benchmarks Students will be assessed on their *ability* to: • Create a timeline of the history of the internet. • Explain internet infrastructures. • Connect to the internet. • Explain web basics and how information is created and transmitted.		
Academic Connections		
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard): RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	**Sample Performance Task Aligned to the Academic Standard(s):** Students will orally or in a writing/ multi-media project explain Web Basics which shall include a definition of the internet (WWW), it's history, it's uses and structure.	

INDICATOR #IT 5: **Understand computer network and telecommunications technologies.**		
SUB-INDICATOR 5.1 (Webb Level: 1): Understand the fundamentals of data communications		
SUB-INDICATOR 5.2 (Webb Level: 1): List the types of media, devices, and software needed for networking services.		
SUB-INDICATOR 5.3 (Webb Level: 1): List and describe the popular forms of wireless technologies		
Knowledge (Factual): Understand computer network and	**Understand (Conceptual):** Understand the fundamentals of	**Skills (Application):** Create media that can be used in networking and

Telecommunications technologies.	telecommunications and networking services.	software creation. Discern the use of wireless technologies.

Benchmarks
Students will be assessed on their *ability* to:

- Identify the types of signals and transmission capacities used in telecommunications.
- Identify network operating systems and management software.
- Explain how wireless devices transmit information.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text. RI7.Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Students will explain orally or in a writing/multi-media project how wireless devices transmit information and how media can be created for software.

INDICATOR #IT 6: **Understand the needs and uses for digital media.**		
SUB-INDICATOR 6.1 (Webb Level: 1): Understand the uses of digital media.		
SUB-INDICATOR 6.2 (Webb Level: 2): Discuss how interactive media is used to educate and entertain.		
Knowledge (Factual): Understand the needs and uses for digital	**Understand (Conceptual):** How media is used to educate and entertain.	**Skills (Application):** Explain digital media.

media.		

Benchmarks
Students will be assessed on their *ability* to:

- Covert digital files from one format to another.
- Explain copyright issues regarding digital media.
- Explain the impact of simulators on training individuals.
- Research interactive media advances in home entertainment.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain. RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.	Students will explain orally or in a writing/multi-media project copyright issues regarding digital media and interactive media advances.

INDICATOR #IT 7: **Understand computer crime and information security.**

SUB-INDICATOR 7.1 (Webb Level: 1): Describe methods of keeping electronic devices secure

SUB-INDICATOR 7.2 (Webb Level: 2): Discuss the threats and defenses for networks

SUB-INDICATOR 7.3 (Webb Level: 3): Describe the threats posed by hackers, software, scams and the methods of defending against them

Knowledge (Factual):	**Understand (Conceptual):**	**Skills (Application):**
The importance of keeping electronic	Understanding and preventing computer crime	Protecting devices, files, networks, and

devices secure	and information security breaches.	information from potential threats.

Benchmarks
Students will be assessed on their *ability* to:

- Identify types of machine-level security procedures.
- Define multiuser systems and how to protect them.
- Explain common threats to wireless network.
- Research famous hackers and the damage they caused.
- Explain the types of viruses and how they are spread.
- Identify key frauds, scams, and hoaxes and how to research validity of information.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	Students will explain orally or in a writing/multi-media project the types of viruses and how they spread. Included may be the history of the virus and past examples of computer viruses and protection software.

INDICATOR #IT 8: **Understand technology ethics in a global society.**

SUB-INDICATOR 8.1 (Webb Level: 2): Describe the negative and positive impacts of social media

SUB-INDICATOR 8.2 (Webb Level: 2): Explain the ways in which technology is used to invade personal privacy

SUB-INDICATOR 8.3 (Webb Level: 1): Identify ethical issues related to digital technology

Knowledge (Factual):	**Understand (Conceptual):**	**Skills (Application):**
Understand the impact of social media on personal privacy.	Understand the overall impact of social media on society.	Differentiate between the appropriate and inappropriate and uses of social media.

Benchmarks
Students will be assessed on their *ability* to:

- Identify technology issues related to freedom of speech.

- Research technologies and the digital footprints left by them.
- Research how laws have impacted invasion of personal privacy devices.
- Explain how ethics play a role in personal, professional, and governmental use of technology.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
RI1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain. RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.	Students will explain orally or in a writing/multi-media project the role that ethics play in personal, professional, and governmental use of technology. Included may be past cases of inappropriate and appropriates uses. Case studies may be used to analyze use.

INDICATOR #IT 9: **Explore careers in information technology.**

SUB-INDICATOR 9.1 (Webb Level: 1): Identify skills, interests, and abilities related to information technology.

SUB-INDICATOR 9.2 (Webb Level: 2): Compare personal interest survey results with information technology occupations

SUB-INDICATOR 9.3 (Webb Level: 3): Research labor market information for information technology.

SUB-INDICATOR 9.4 (Webb Level: 2): Demonstrate necessary job skills needed for Information and Technology industries

Knowledge (Factual):	**Understand (Conceptual):**	**Skills (Application):**
Skills, interests and abilities related to	Career options available in information technology	Explore how your skills, interests and abilities

information technology.		match Information Technology careers.

Benchmarks
Students will be assessed on their *ability* to:

- SD MyLife assessments including career matchmaker and ability profiler.
- Consider the financial impact of an Information Technology career.
- Display ability to work as part of a team and take direction from others.

Academic Connections

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INDICATOR #IT 10: Demonstrate knowledge of the software development process.		
SUB-INDICATOR 10.1 (Webb Level: 3): Apply tools for developing software applications		
SUB-INDICATOR 10.2 (Webb Level: 2): Demonstrate knowledge of programming structures		
Knowledge (Factual): The software development process.	**Understand (Conceptual):** Necessary tools and programing structures to	**Skills (Application):** Develop a software application.

	develop a software application.	

Benchmarks
Students will be assessed on their *ability* to:

- Use online resources to create and debug a block program.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
RI4.Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text. RI7.Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Students will use online resources to debug a block program. Research the tools needed to create and implement software. Present in writing or a multi-media project.

Additional Resources
Please list any resources (e.g., websites, teaching guides, etc.) that would help teachers as they plan to teach these new standards.