5 Information Systems and Security

Content Area: **Technology**
Course(s): **Computer Systems & Networking I**
Time Period: **April**
Length: **30 class periods**
Status: **Published**

Unit Overview:

This unit introduces:

- various components and types of information systems.
- data and information assets, intellectual property laws, and digital privacy.
- the most common threats to data confidentiality, integrity, and availability.
- basic security concepts, including authentication, authorization, accounting, and encryption.
- personal data and device security concepts and gives you practice configuring firewalls and anti-malware software on Windows.
- corporate data security policies and procedures, including fault tolerance, backup considerations, and disaster recovery.

Essential Questions:

- How do technology, people, and procedures work together in an information system?
- What are some principles of effective systems analysis and design?
- What role does project management play in the design and implementation of information systems?

Enduring Understandings:

- A system is a set of connected parts or procedures that lead to something being accomplished.
- An information system is a combination of technology, people, and procedures used to organize, analyze, and store data.
- In an information system, technology can be broken down into three basic parts: hardware, software, and data.
- Information systems can't work without the human resources and talent we can find in programmers, database administrators, system analysts, security specialists, and many more.
- To design and implement an effective and secure information system, systems analysts work closely with end-users, software engineers, systems administrators, and managers of the organization.
- The methodology used by systems analysts is called the System Development Life Cycle, or SDLC. Since software applications are typically central to an organization's system, SDLC can also stand for Software Development Life Cycle.
- Project management is integrating with each other varous systems that can span across multiple departments.

Standards/Indicators/Student Learning Objectives (SLOs):

Students will be able to:

- Describe the components of an information system and how they fit together.
- Compare and contrast different types of information systems, including transaction processing, management information systems, and expert systems.
- Conduct online research on a career that interests you in information technology.
- Identify the traditional stages of the System Development Life Cycle (SDLC).
- Describe modern alternatives to a linear process of systems analysis and design.
- Describe the role of project management in the design and implementation of information systems.

ITEC.9-12.9.4.12.K.(2).6	Employ knowledge of information system analysis and design to evaluate information systems.
ITEC.9-12.9.4.12.K.(4).3	Identify and analyze system and software requirements to ensure maximum operating efficiency.
ITEC.9-12.9.4.12.K.68	Demonstrate knowledge of the hardware components associated with information systems.
ITEC.9-12.9.4.12.K.69	Compare classes of software associated with the development and maintenance of information systems to develop software and maintain computer systems.
ITEC.9-12.9.4.12.K.70	Identify and compare new information systems trends and technologies to build an understanding of their potential influence on industry practices.
ITEC.9-12.9.4.12.K.72	Demonstrate technical knowledge of the Internet to develop and maintain information technology systems.
ITEC.9-12.9.4.12.K.73	Access and use Internet services to service and update information technology systems and to complete other information technology tasks.
ITEC.9-12.9.4.12.K.74	Install and configure software programs to maintain and update information technology systems.

Lesson Titles:

4.1 Information Systems
4.1.1 Introduction to Information Systems (3:15)
4.1.2 Types of Information Systems (0:13)
4.1.4 Systems Analysis and Design (5:01)
4.1.6 Project Management Facts

4.2.1 Data and Information Assets (2:38)
4.2.3 Copyright and Intellectual Property (5:14)
4.2.4 Trademarks and Patents (2:54)
4.2.6 Digital Privacy (3:07)

4.3.1 Confidentiality Concerns (0:13)
4.3.3 Integrity Concerns (0:13)
4.3.5 Availability Concerns (3:55)
4.3.7 Recognize Social Engineering Exploits (3:25)

4.4.1 Authentication (3:37)

4.4.3 Authorization (2:35)
4.4.5 Accounting (2:07)
4.4.7 Encryption (3:02)

4.5.1 Password Best Practices (0:13)
4.5.3 Securing Devices (4:41)
4.5.5 Ecommerce Safeguards (4:54)
4.5.7 Windows Defender (4:01)
4.5.9 Windows Firewall (5:18)
4.5.11 Use Windows Defender (1:33)
4.5.12 Use Windows Defender
4.5.13 Configure Windows Firewall (1:02)

4.6.1 Handling Confidential Information (5:02)
4.6.3 Fault Tolerance (2:27)
4.6.5 Backup Considerations (4:39)
4.6.7 Disaster Recovery (2:37)
4.6.9 Careers in Security (0:13)
4.6.11 Use Backup Software (1:11)
4.6.12 Use Backup Software

Career Readiness, Life Literacies, & Key Skills:

WRK.9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
WRK.9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
WRK.9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
WRK.9.2.12.CAP.9	Locate information on working papers, what is required to obtain them, and who must sign them.
TECH.9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
TECH.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.

Inter-Disciplinary Connections:

LA.RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.
LA.RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

Equity Considerations:

Holocaust Mandate

LGBTQ and Disabilities Mandate

Climate Change

CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
TECH.9.4.12.DC.8	Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection.

Asian American Pacific Islander Mandate

Summative Assessment:

- Labs (performance tests)
- Quiz on Corporate Data Security
- Quiz on Data
- Quiz on Information Systems
- Quiz on Personal Data and Device Security
- Quiz on Security Concepts
- Quiz on Threats to Data

Formative Assessment:

- Anticipatory set
- Closure
- Exit tickets
- Graphic organizers

- Pop-quizzes (not graded)
- Questioning
- Think-pair-share
- Warm-up

Benchmark Assessments

Skills-based assessment
Reading response
Writing prompt
Lab practical

Alternative Assessments

Performance tasks
Project-based assignments
Problem-based assignments
Presentations
Reflective pieces
Concept maps
Case-based scenarios
Portfolios

Resources & Materials:

- Online virtual labs
- Video lessons

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

Learning Activities:

- 4.1.7 Activity: Career Exploration
- 4.2.8 Activity: Research Privacy Issues
- 4.3.8 Recognize Social Engineering Exploits
- 4.4.9 Activity: Research Information Security
- 4.5.12 Use Windows Defender
- 4.5.14 Configure Windows Firewall
- 4.6.12 Use Backup Software

Instructional Strategies:

- Summarizing & Note Taking
- Direct Instruction
- Provide opportunities for student practice
- KWL Chart
- Chapter study guide
- Large group discussion

Blooms/DOK:

- Level 1: recall/remember vocabulary
- Level 2: categorize different types of information systems
- Level 3: compare and contrast various security threats
- Level 4: students develop a recommendation plan on how to best protect the SOHO computer and network

Modifications

ELL Modifications:

- Allow alternate responses
- Frequent breaks
- Give advanced notes
- Give extended time
- Model instructions
- Simplify instructions

IEP & 504 Modifications:

- Additional time as needed
- Pair with other students
- Preferential seating
- Print out the text in hardcopy
- Read instructions aloud

G&T Modifications:

- Competitions and collaborative projects
- Curriculum acceleration

- Enrichment activities
- Extracurricular activities
- High expectations
- Independent projects
- Multi-level differentiated curriculum
- Set individual goals
- Special projects (e.g. newsletter)

At Risk Modifications

- Continue to repeat and rephrase the major point(s) of the unit or lesson
- Elicit prior knowledge
- Give very basic introduction
- Include hands-on experiences and manipulatives whenever possible
- Insert meanings of vocabulary continuously throughout the lesson
- Offer copies of lecture notes
- Provide study guides for tests well in advance
- Schedule field trips at the beginning of the unit
- Use graphic organizers

Technology Materials and Standards:

- http://www.testout.com

TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.A.CS1	Understand and use technology systems.
TECH.8.2.12.E.4	Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements).

Computer Science and Design Thinking Standards:

CS.6-8.8.2.8.EC.1	Explain ethical issues that may arise from the use of new technologies.
CS.6-8.8.2.8.EC.2	Examine the effects of ethical and unethical practices in product design and development.
CS.6-8.8.2.8.ITH.2	Compare how technologies have influenced society over time.
CS.K-12.2.a	Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities.
CS.K-12.2.b	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness.
CS.K-12.2.c	Solicit and incorporate feedback from, and provide constructive feedback to, team members and other stakeholders.
CS.K-12.2.d	Evaluate and select technological tools that can be used to collaborate on a project.