Computing in the Modern World
Course Syllabus
Eagle's Landing High School

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Department: Career, Technology, and Agricultural Education (Business and Computer Science)

Description:
The goal of this course is to provide all students with an introduction to the principles of computer science and its place in the modern world. This course should also help students to use computers effectively in their lives, thus providing a foundation for successfully integrating their own interests and careers with the resources of a technological society.

In this course, high school students can acquire a fundamental understanding of the operation of computers and computer networks and create useful programs implementing simple algorithms. By developing Web pages that include images, sound, and text, they can acquire a working understanding of the Internet, common formats for data transmission, and some insights into the design of the human-computer interface. Exposure to career possibilities and discussion of ethical issues relating to computers should also be important threads in this course.

Course Objectives:
Unit 1: HARDWARE AND SOFTWARE COMPONENTS
Students will be able to describe the major hardware and software components of a computer and their interaction. Students will be able to compare and contrast computer features. Students will demonstrate an understanding of how numbers, characters, images, sounds/songs, and videos are represented in a computer.

1. **BCS-CMW-4. Students will describe the major hardware and software components of a computer and their interactions.**
2. **BCS-CMW-5. Students will compare and contrast computer features.**
3. **BCS-CMW-6. Students will demonstrate an understanding of how numbers and characters are represented in a computer.**
4. **BCS-CMW-7. Students will demonstrate an understanding of how pictures, sounds, and video are represented in a computer.**

Unit 2: NETWORKING BASICS
Students will demonstrate knowledge of basic computer components and networks. Student will demonstrate knowledge of the issues in connecting a computer to a network, data transmission, and networking trends.

5. **BCS-CMW-8. Students will demonstrate knowledge of basic components of computer networks.**
6. **BCS-CMW-9. Students will demonstrate knowledge of the issues involved in connecting a computer to a network.**
7. **BCS-CMW-10. Students will demonstrate an understanding of key issues in data transmission.**
8. **BCS-CMW-11. Students will demonstrate knowledge of networking trends and issues.**

Unit 3: WEB DESIGN/INTERNET ESSENTIALS STANDARDS
Students will execute Internet searches, explain the importance of Internet security, create basic Web sites, and evaluate Web sites.

9. **BCS-CMW-12. Students will demonstrate the ability to search for information and evaluate search results.**
10. **BCS-CMW-13. Students will examine Internet security issues and recognize the importance of working in a secure environment.**
11. **BCS-CMW-14. Students will evaluate, compare, and contrast Web sites.**
12. **BCS-CMW-15. Students will design and create a basic Web site.**

Unit 4: PROBLEM SOLVING

Students will focus on developing various problem-solving strategies. Students will apply problem-solving strategies to solve specific problems.

13. **BCS-CMW-16.   Students will discuss examples that identify the broad interdisciplinary utility of computers and algorithmic problem solving in the modern world.**
14. **BCS-CMW-17. Students will apply strategies to solve various problems.**
15. **BCS-CMW-18. Students will apply algorithmic thinking to solve problems.**
16. **BCS-CMW-19.   Students will demonstrate an understanding of the basic steps in algorithmic problem solving.**

Unit 5: PROGRAMMING

Students will be introduced to basic programming concepts.

17. **BCS-CMW-20. Students will demonstrate an understanding of basic programming concepts**.

Unit 6: DATA STRUCTURES

Students will show the ability to use an ordered data structure.

18. **BCS-CMW-23. Students will show the ability to use an ordered data structure.**

Unit 7: LIMITS OF COMPUTING

Students will understand that there are limits to computing.

19. **BCS-CMW-21. Students will demonstrate an understanding of the limitations of algorithms.**

Unit 8: CAREERS, ETHICS, AND HISTORY OF COMPUTING

Students will explore careers in the field of computing, identify key developments in the history of computing, and identify professional and ethical issues involved with computing in our society.

20. **BCS-CMW-1. Students will explore the different careers available in the field of computing.**
21. **BCS-CMW-2.   Students will identify key developments and individuals relating to the history of computing and explore emerging technologies.**
22. **BCS-CMW-3.   Students will examine the professional and ethical issues involved in the use of computer technology**

Unit 9: Final Project

Recommended Materials:
- ❖ 512 MB – 2 GB USB Flash Drive (Avoid U3 Smart Flash Drives)
- ❖ Folder (Prongs with Pockets)
- ❖ Notebook Paper
- ❖ Pen or Pencil
- ❖ Ear buds (used as needed)

Grading Policy:

Classwork	45%
Tests	30%
Projects (Labs/On-Line Activities)	25%
Final Exam	15%

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

- ❖ **CTAE-FS-1 Technical Skills:**
  Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

- ❖ **CTAE-FS-2 Academic Foundations:**
  Learners achieve state academic standards at or above grade level.

- ❖ **CTAE-FS-3 Communications:**
  Learners use various *communication skills in expressing and interpreting information.*

- ❖ **CTAE-FS-4 Problem Solving and Critical Thinking:**
  Learners define and solve problems, and use problem-solving and improvement methods and tools.

- ❖ **CTAE-FS-5 Information Technology Applications**:
  Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

- ❖ **CTAE-FS-6 Systems:**
  Learners understand *a variety of organizational structures and functions.*

- ❖ **CTAE-FS-7 Safety, Health and Environment:**
  Learners employ *safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.*

- ❖ **CTAE-FS-8 Leadership and Teamwork:**
  Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

- ❖ **CTAE-FS-9 Ethics and Legal Responsibilities:**
  Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

- ❖ **CTAE-FS-10 Career Development:**
  Learners plan and manage academic-career plans and employment relations.

- ❖ **CTAE-FS-11 Entrepreneurship:**
  Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.