Date Approved by DJUSD Board of Education: _____

Davis Joint Unified School District

Course descriptions are updated and reviewed with all new text adoptions.

Secondary Course Description

COVER PAGE

1. Course Title:
CyberSecurity: ICT Essentials 1

2. Transcript Title / Abbreviation:

3. Transcript Course Code / Number (Office Use Only):
761600

4. School: Davis Senior High School

5. District: **Davis Joint Unified School District**

6. Length of Course: 1 year

7. School / District Web Site: **http://www.djusd.k12.ca.us/**

8. School Contact

Name: **Kevin Anderson**

Title/Position: **Teacher**

Phone: **Ext.:**

Fax:

E-mail: kanderson@djusd.net

9. Subject Area:

- ☐ History/Social Science
- ☐ English
- ☐ Mathematics
- ☐ Science
- ☐ Language other than English
- ☐ Visual & Performing Arts
- ☒ DJUSD Graduation Elective
- ☐ College Prep Elective (will seek UC/CSU approval)

10. Grade Level(s):
10 - 12

11. Seeking "Honors" Distinction? ☐ Yes ☒ No

12. Credit Value:

- ☐ 0.5 (half year or semester equivalent)
- ☒ 1.0 (one year equivalent)
- ☐ 2.0 (two year equivalent)
- ☐ Other: _____

13. Was this course previously approved by UC? ☐ Yes ☒ No

If so, in what year? _____ **Under what course title?** _____

14. Pre-Requisites: None

Co-Requisites:

15. Preliminary Approval - Secondary Site Principal Signature (Must be signed before proceeding to Step 16):

_____

16. Date Course Proposal with Preliminary Approval (Step 15) sent to Associate Superintendent, Educational Services: _____

17. Review & Approval:

Date		Signature
_____	**Site Curriculum and Instruction Leadership Team**	**Signature/Title** _____
_____	**Secondary Department Articulation/Collaboration**	**Signature/Title** _____

Secondary Principal Signatures: _____ _____

Date: _____ _____ _____

BACKGROUND INFORMATION

Brief Course Description:
Cybersecurity: ICT Essentials 1 prepares students for a career in network administration, and technical support with a focus on cybersecurity. The course includes a series of technical subjects that provide hands on knowledge and skills in computer hardware, operating systems, networking, and security concepts. Industry based curricula are utilized in a networked environment to assist in preparing students for industry recognized certifications. Students go through intricate problem solving exercises that mimic the technical challenges of the real world. The program targets students preparing for careers in Cybersecurity and Information and Communications Technology.

Context for Course:

List the State/District Standards addressed in this course.

Students understand the use of different types of peripherals and hardware appropriate to media and technology:
Students understand the process necessary to accomplish a task by using effective resource management.
Students understand how training and support ensure efficient, productive systems operations.

History of Course Development:

The Tech Assistant course was implemented several years ago. Industry standards have changed where there is now more emphasis on CyberSecurity, linux operating systems, and additional networking concepts covered in this course. There is now UC A-G credit available for this course that matches the changing industry standards.

COURSE GOALS AND/OR MAJOR STUDENT OUTCOMES

Description of how this course supports district goal to increase student awareness and appreciation of diversity:
Career Technical Education serves and meets the needs all students. This course is articulated to Sacramento City college and helps students who do not want to follow a traditional college path develop skills necessary to succeed in the workforce. This course promotes logic and troubleshooting skills necessary for all students to succeed.

COURSE OBJECTIVES

- Define information technology (IT) and describe the components of a personal computer
- Describe how to protect self, equipment, and the environment from accidents, damage, and contamination

- Explain and perform preventive maintenance
- Explain the steps of the troubleshooting process and perform basic Troubleshooting
- Upgrade or replace components of a laptop, printer, or scanner based on customer needs
- Configure computers to attach to an existing network Implement basic physical and software security principles
- Apply good communication skills and professional behavior while working with customers
- Assess customer needs, analyze possible configurations, and provide solutions or recommendations for hardware, operating systems, networking, and security

COURSE OUTLINE

Course Catalog Description

1 year: 10 credits
(May be taken for 1 years).

College Credit: Is available for this course.

College credit will be granted only if the student successfully completes all course work in the Tech Assistant courses, including final examination(s), of the high school course, with a grade of "A" or "B," and if the student has completed the Sacramento Community College application and obtained a Sacramento City College student identification number. The college credit is for CISC 360 which is a transferable level course.

Course content:

Ethics and Technology

Topics include:

The purpose of the U.S. Patriot Act and the Computer Security Act.
The purpose of COPPA Children's
Online Privacy Protection Act.
Maintaining privacy of others.
Common federal, state, and international laws related to computer use and security.
Intellectual property.
Common copy-write and plagiarism violations and infringements, e.g. software, media, etc.

Key assignments include:

Analyze a security issue whose ethics are questionable, form an opinion and verbally support position through a debate. Students must respond thoughtfully to diverse perspectives, synthesize comments, claims and evidence made on all sides of the issue, resolve contradictions when possible, and determine what additional information or research is required to deepen the investigation.

Within this assignment, students will:
Utilize critical thinking to make sense of problems and persevere in solving them.
Model integrity, ethical leadership, and effective management.
Work productively in teams while integrating cultural/global competence.
Conduct research to solve a problem unique to the Information Technology and Systems industry using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.Initiate and participate effectively in collaborative discussions, building on others ideas and expressing their own clearly and persuasively.
Within this assignment, students will:
Conduct research to narrow or broaden the inquiry, synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
Integrate and evaluate multiple sources of information in order to address a question or solve a problem. Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

Technology

Mathematics

Topics and assignments include:

Proper technical notations when calculating rates and capacities of specific computer components and technologies. Converting and applying decimal binary and hexadecimal expressions using basic arithmetic functions, exponent relations, or algebraic fundamentals.

Hardware Fundamentals

Topics include:

Names, purposes, and characteristics of key components and system modules common to a PC.
Names and performance characteristics of common ports, associated connectors, cabling and the peripherals that use them.
Basic procedures for upgrading or replacing common field replaceable modules including CPU, RAM, drives and add-on cards.
Procedures for installing/replacing a new device including loading and configuring device drivers. The Intel x86 microprocessor genealogy and its relationship to the MS Operating System
Primary and secondary storage devices.
Different power supplies and how they apply to different form factors, including connector pin-outs and their electrical values. Differences between direct current (DC) and alternating current (AC).
Popular motherboard form factors, components, and features.
Configuration of typical CMOS parameters when setting up a new motherboard.
Procedures to optimize PC operations by reducing latency, using specialized devices, or applying temperature control practices.
Identifying and selecting appropriate Input and Output Devices and their connections. Differentiating between different printer types.
Common printer problems and techniques used to resolve them.

Operating Systems

Topics include:

Major desktop components, user interfaces, and their functions.

Typical system resource (IRQ, DMA, I/O address) allocations and demonstrate procedures for altering these device settings.

Basic system boot sequences and boot methods, and how to create an emergency boot disk with utilities.

Installation of any Linux distribution.

Procedures for installing current PC based operating systems from a bootable CD including related CMOS settings.

Basic procedures for creating and managing drives, directories, and files using their respective utilities and editors.

Proper command line use and syntax.

System Utilities and Troubleshooting

Topics include:

Demonstrate system recovery and restore using Windows Boot Options Menu.

Common audible and visual POST codes to isolate operating system boot failures from peripheral device failures.

Purpose of the registry and its use.

Common disk management tasks, including partitioning.

Best practices for using built-in operating system diagnostic tools including drive utilities, e.g. MSCONFIG.

Basic TCP/IP Networking

Topics include:

Identify common technologies for Internet connectivity, related cabling and components, and their performance characteristics.

Configuring Windows systems to connect to a LAN/WAN and troubleshooting a TCP/IP network using various procedures including the command line interface.

Configuring Cisco devices to connect to a LAN/WAN and troubleshoot a TCP/IP network using various procedures including the command line interface.

Configuring Linux systems to connect to a LAN/WAN and troubleshoot a TCP/IP network using various procedures including the command line interface.

Three major types of network media.

Seven layers of the OSI model and four layers of TCP/IP model.

System and Network Security

Topics include:

Use of various real time antivirus software and virus scanners to prevent and remove malicious software.

Firewall components including: common ports, router access control lists, and port forwarding used to secure the network perimeter.

Different virus types and how they are transmitted. Authentication technologies utilized or security purposes.

The characteristics of a strong password security system.

TEXTS AND SUPPLEMENTAL INSTRUCTIONAL MATERIALS

Cisco Academy Website has all of the course materials for students. Also professormesser.com http://www.professormesser.com/securityplus/sy0401/sy0401courseindex/ may be used.

Previously Adopted? [x] Yes [ ] No (If no, provide information directly below)		
Cost per book	**Total Cost**	**Budget Source**
Other:		

DIFFERENTIATED INSTRUCTIONAL METHODS AND/OR STRATEGIES

Strategies for Supporting School Goal of Improving Writing Skills:

Students will write reports regarding implementation of computer technologies, troubleshooting, and form summaries within these reports. They will also perform documentation of jobs completed.

ASSESSMENT METHODS AND/OR TOOLS

Exams, and Assignments

There are assignments, exams, skills exam, and final.

ASSESSMENT CRITERIA

Grading will be based on completion of hands-on laboratory exercises, online (electronic) examinations, and completion of other assignments. The grading scale for the courses is based on a weighted average of these levels, with particular weight being given to the hands-on laboratory exercises.

HONORS COURSES ONLY

Indicate how this honors course is different from the standard course.

N/A