Indiana Department of Education
Academic Standards Course Framework

COMPUTER TECH SUPPORT

Computer Tech Support allows students to explore how computers work. Students learn the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Through hands on activities and labs, students learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. Student should earn an industry-based certification at the end of the course.

- DOE Code: 5230
- Recommended Grade Level: Grade 10-12
- Recommended Prerequisites: Information Communications and Technology
- Credits: 1-3 credits per semester, maximum of 2 semesters, maximum of 6 credits
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
- This course is aligned with postsecondary courses for Dual Credit:
    - Ivy Tech
        - CINT 106 Micro Operating Systems
        - CINT 115 IT Essentials
        - CINT 116 PC Technician
    - Vincennes University
        - CMET 240 Computer Maintenance I

Dual Credit

This course provides the opportunity for dual credit for students who meet postsecondary requirements for earning dual credit and successfully complete the dual credit requirements of this course.

Application of Content and Multiple Hour Offerings

Intensive laboratory applications are a component of this course and may be either school based or work based or a combination of the two. Work-based learning experiences should be in a closely related industry setting. Instructors shall have a standards-based training plan for students participating in work-based learning experiences. When a course is offered for multiple hours per semester, the amount of laboratory application or work-based learning needs to be increased proportionally.

Career and Technical Student Organizations (CTSOs)

Career and Technical Student Organizations are considered a powerful instructional tool when integrated into Career and Technical Education programs. They enhance the knowledge and skills students learn in a course by allowing a student to participate in a unique program of career and leadership development. Students should be encouraged to participate in Business Professional of America, DECA, or Future Business Leaders of America, the CTSOs for this area.

Content Standards

Domain – Hardware

Core Standard 1 Students synthesize hardware and peripheral concepts critical to the design of a working computer system.

Standards

CTS-1.1 Identify the fundamental components of using personal computers including the identification and function of storage devices, motherboards, power supplies,

processors, memory, display devices, input devices, adaptor cards, ports, and cooling systems

CTS-1.2 Install, configure, optimize and upgrade personal computer components including storage devices, display devices, and basic input and multimedia devices

CTS-1.3 Identify the fundamental principles of using laptops and portable devices including form factors, peripherals, expansion slots, ports, communication connections and input devices

CTS-1.4 Install and configure printers and scanners

CTS-1.5 Describe processes used by printers and scanners including laser, ink dispersion, thermal, solid ink and impact printers and scanners

Domain – Troubleshooting, Repair, and Maintenance

Core Standard 2 Students validate practical skills for managing personal computers.

Standards

CTS-2.1 Apply and adapt troubleshooting methodologies and its relationship to the scientific method

CTS-2.2 Perform preventative maintenance on personal computer components including visual and audio inspection, driver and firmware updates, scheduling, use of appropriate repair tools and cleaning materials, and environmental factors

CTS-2.3 Identify tools, diagnostic procedures and troubleshooting techniques for personal computer components

CTS-2.4 Perform preventative maintenance of networks including securing and protecting network cabling

CTS-2.5 Identify tools, basic diagnostic procedures and troubleshooting techniques for laptops and portable devices including power conditions, video, keyboard, pointer and wireless card issues

CTS-2.6 Perform preventative maintenance on laptops and portable devices including cooling devices, hardware and video cleaning materials, operating environments, storage, transportation and shipping

CTS-2.7 Identify tools, diagnostic procedures, troubleshooting, and maintenance techniques for computer security

CTS-2.8 Identify tools, diagnostic procedures and troubleshooting techniques for operating systems including boot sequences, recognize and resolve common operational issues, explain common error messages and codes and operating system utilities

CTS-2.9 Perform preventative maintenance on operating systems by using common utilities, updates, scheduled backups/restores, and restore points

CTS-2.10 Apply command-line functions and utilities to manage operating system, including proper syntax and switches

CTS-2.11 Identify, isolate and resolve printer/scanner problems including defining the cause, applying the fix and verifying functionality

Domain – Operating Systems and Utilities

Core Standard 3 Students integrate software skills and troubleshooting utilities to manage reliable computer systems.

Standards

CTS-3.1 Identify the fundamentals of using operating systems as defined by the operating

system's name, purpose, and characteristics of the operating system components including registry, virtual memory and file system

CTS-3.2 Install, configure, optimize and upgrade operating systems

CTS-3.3 Install, configure, optimize and upgrade laptops and portable devices including power management and peripherals

CTS-3.4 Install, configure, optimize and upgrade virtual machines

Domain – Networking

Core Standard 4 Students evaluate networking concepts to build and maintain an operational network.

Standards

CTS-4.1 Identify names, purposes and characteristics of basic network protocols and terminologies

CTS-4.2 Install, configure optimize and upgrade networks

CTS-4.3 Summarize the basic networking fundamentals including technologies devices and protocols

CTS-4.4 Categorize network cables and connectors and their implantations

CTS-4.5 Differentiate different network types

Domain – Security

Core Standard 5 Students analyze security threats to ensure the health of the network.

Standards

CTS-5.1 Identify the fundamental principles of security including names, purposes, and characteristics of hardware and software security, wireless security, and data security

CTS-5.2 Install, configure, upgrade, and optimize security for hardware, software, and data

Domain – Employability and Operational Procedure

Core Standard 6 Students apply customer service concepts to be effective computer technicians.

Standards

CTS-6.1 Describe the aspects and importance of safety and environmental issues, safe work environments, equipment handling, and disposal of equipment

CTS-6.2 Employ good communication skills including listening and tact/ discretion when communicating with customers and colleagues

CTS-6.3 Employ job-related professional behavior including notation of privacy, confidentiality, and respect for the customer and customers' property

Process Standards

Common Core Literacy Standards for Technical Subjects

Reading Standards for Literacy in Technical Subjects 11-12

The standards below begin at grade 11 and define what students should understand and be able to do by the end of grade 12. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations – the former providing broad standards, the latter providing additional specificity.

Key Ideas and Details

11-12.RT.1 Cite specific textual evidence to support analysis of technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the

account.

11-12.RT.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

11-12.RT.3 Follow precisely a complex multistep procedure when performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure

11-12.RT.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context relevant to *grades 11-12 texts and topics*.

11-12.RT.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

11-12.RT.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integration of Knowledge and Idea

11-12.RT.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

11-12.RT.8 Evaluate the hypotheses, data, analysis, and conclusions in a technical subject, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

11-12.RT.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Range of Reading and Level of Text Complexity

11-12.RT.10 By the end of grade 12, read and comprehend technical texts in the grades 11-CCR text complexity band independently and proficiently.

Writing Standards for Literacy in Technical Subjects 11-12

The standards below begin at grade 11 and define what students should understand and be able to do by the end of grade 12. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations – the former providing broad standards, the latter providing additional specificity.

Text Types and Purposes

11-12.WT.1 Write arguments focused on *discipline-specific content*.

11-12.WT.2 Write informative/explanatory texts, including technical processes.

11-12.WT.3 Students will not write narratives in technical subjects. *Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In technical, students must be able to write precise enough descriptions of the step-by-step procedures they use in their technical work that others can replicate them and (possibly) reach the same results.*

Production and Distribution of Writing

11-12.WT.4 Produce clear and coherent writing in which the development, organization, and

style are appropriate to task, purpose, and audience.

11-12.WT.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

11-12.WT.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

Research to Build and Present Knowledge

11-12.WT.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

11-12.WT.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectivity to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

11-12.WT.9 Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing

11-12.WT.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

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