Exam Content Background & Skill Set Summary

CERTIPORT™

Internet & Computing Core Certification

The Internet and Computing Core (IC³) credential provides an in-depth and dynamic standard and testing program on which to develop educational programs for broad-based Internet and computing skills. The purpose of the certification is to provide students and job seekers with the educational/training foundation to succeed not only in technical careers, but also in any field or job position requiring the use of computers.

IC³ Certification Development Objectives

IC³ is built around three critical objectives. As one understands these objectives, the design of the exams becomes clearer, and teachers and students are better able to develop classes and study around the IC³ curriculum.

IC³ is built on a framework of current thinking and best practices in technology education and training.

Over the last decade, new subject areas such as Information Literacy, Digital Literacy, Fluency in Information Technology, Media and Visual Literacy have been added to the definition of computer literacy education. The IC³ program is broad enough to cover the domains of all of these diverse areas of study, and these important schools of thought have been critical in informing the development of the program. However, IC³ identifies those areas of study most relevant to industry and academia through an in-depth research program.

IC³ adheres to the highest standards and principles for test development and validation used in the certification industry.

The IC³ certification exams have been developed under the supervision of professional psychometricians and test developers with expertise in the certification industry to ensure that the program fulfills all of the industry's highest standards for test integrity and validity.

Exams also make use of the latest testing technologies, notably the ability to integrate both performance-based and knowledge-based test items into certification exams. This ensures the fairest and most accurate testing experience possible.

IC³ stays up to date with new technology and will continue to keep its testing objectives and methodologies relevant to the latest technological trends.

The rapid pace of technological change requires that exams on basic Internet and computing competence be updated on a regular basis to reflect enhancements in products, new trends or advances in technology education and training. The development program for the IC³ certification includes scheduled ongoing research and regularly scheduled exam updates comparable to the update schedule of such popular certification programs as A+ and MCP.

Some of the developmental processes for IC³ include:

- A thorough review of existing local and international standards - including the latest ISTE NETS standards, the UK e-skills and QCA standards; technology

education standards from the education ministries, and educational technology standards from over forty states in the US.

- A review group of almost 300 subject matter experts (SMEs) to provide input on all of the elements of the IC^3 standard, including the updated IC^3 exam blueprints.

- An international Advisory Board known as the Global Digital Literacy Council consisting of distinguished scholars and professionals in areas of technology education, training, testing, professional and workforce development from government, industry and academia meet to approve the standard.

Exam Structure

The program is structured around three individual examinations:

- Computing Fundamentals
- Key Applications
- Living Online

A candidate will earn their certification when he or she has completed the three examinations successfully.

Computing Fundamentals Examination

The Computing Fundamentals examination covers subjects needed for a foundational understanding of computing, including knowledge and use of computer hardware, software, and operating systems.

Key Applications Examination

The Key Applications exam includes questions covering three applications (word processing, spreadsheet and presentation software) and includes questions on common features of all applications (starting, opening and saving files, etc.).

By requiring this exam for certification, the program assumes that an understanding of more than one application is required to be considered "literate" by the proposed standard. In the determination of which three applications were to be required in this exam, the selection of a word processing, spreadsheet and presentation software was supported by the popularity of these applications in software sales and training and testing programs and verified by additional research.

Living Online Examination

The Living Online examination covers aspects of working in an Internet or networked environment, including basic knowledge of networks and the Internet, skills in specific applications such as electronic mail software and Web browsers, skills required to find and evaluate information, and an understanding of issues related to computing and the Internet being used at work, home and school (ergonomics, security, ethics, Internet "rules of the road" or "netiquette," etc.).

Module 1: Computing Fundamentals - 2005 Standard

Objective 1.1
Identify types of computers, how they process information and how individual computers interact with other computing systems and devices

- Categorize types of computers based on their size, power and purpose
- Identify types of microcomputers
- Identify other types of computing devices
- Identify the role of the central processing unit
- Identify how the speed of the microprocessor is measured
- Identify the role of types of memory and storage and the purpose of each, including RAM, ROM and CD ROMs
- Identify concepts related to how memory is measured, including bits, bytes and megabytes
- Identify the flow of information between storage devices (such as floppy or hard disks) to the microprocessor and RAM in relation to everyday computer operations
- Identify the differences between large systems and desktop computers and appropriate uses for large vs. small systems
- Identify that computers integrate into larger systems in a variety of ways
- Identify how computers share data, files, hardware and software

Objective 1.2
Identify the function of computer hardware components

- Identify the types and purposes of external computer components, including standard input and output devices
- Identify the types and purposes of internal computer components
- Identify the types and purposes of specialized input devices (e.g. digital cameras and touch screens)
- Identify the types and purposes of specialized output devices (e.g. projectors)
- Identify the types and purposes of storage media (e.g. DVDs and network drives)
- Identify ports used to connect input and output devices to a computer (e.g. USB ports and Ethernet ports)
- Identify how hardware devices are installed on a computer system

Objective 1.3
Identify the factors that go into an individual or organizational decision on how to purchase computer equipment

- Identify criteria for selecting a personal computer
- Identify factors that affect computer performance
- Identify hardware and software considerations when purchasing a computer
- Identify other factors that go into decisions to purchase a computer including warranties and support agreements

Objective 1.4
1.4 Identify how to maintain computer equipment and solve common problems relating to computer hardware

- Identify how to protect computer hardware from theft or damage
- Identify factors that can cause damage to computer hardware or media (e.g. heat and humidity)
- Identify how to protect computer hardware from fluctuations in the power supply, power outages and other electrical issues
- Identify common problems associated with computer hardware such as inoperable hardware devices
- Identify common problems that can occur if hardware is not maintained properly
- Identify maintenance that can be performed routinely by users such as cleaning and defragmenting hard drives
- Identify maintenance that should ONLY be performed by experienced professionals
- Identify the steps required to solve computer-related problems

Objective 2.1
Identify how software and hardware work together to perform computing tasks and how software is developed and upgraded

- Identify how hardware and software interact
- Identify simple terms and concepts related to the software development process
- Identify issues relating to software upgrades such as pros and cons and methods to upgrade

Objective 2.2
Identify different types of software, general concepts relating to software categories, and the tasks to which each type of software is most suited or not suited

- Identify fundamental concepts relating to word processing and common uses for word-processing applications
- Identify fundamental concepts relating to spreadsheets and common uses for spreadsheet applications
- Identify fundamental concepts relating to presentation software and common uses for presentation applications
- Identify fundamental concepts relating to databases and common uses for database applications
- Identify fundamental concepts relating to graphic and multimedia programs and common uses for graphic or multimedia software
- Identify the types and purposes of different utility programs
- Identify other types of software
- Identify how to select the appropriate application(s) for a particular purpose, and problems that can arise if the wrong software product is used for a particular purpose

Objective 3.1
Identify what an operating system is and how it works, and solve common problems related to operating systems

- Identify the purpose of an operating system and the difference between operating system and application software
- Identify different operating systems including DOS, Windows and Macintosh
- Identify the difference between interacting with character-based and graphical operating systems
- Identify the capabilities and limitations imposed by the operating system
- Identify and solve common problems related to operating systems

Objective 3.2
Manipulate and control the Windows desktop, files and disks

- Identify elements of the Windows desktop
- Manipulate windows such as minimizing windows
- Shut down, Logoff and restart the computer
- Use the Windows Start menu and Taskbar
- Manipulate desktop folders and icons
- Manage files using the Windows Explorer/File Manager
- Identify precautions one should take when manipulating files including using standardized naming conventions
- Solve common problems associated with working with files

Objective 3.3
Identify how to change system settings, install and remove software

- Display control panels
- Identify different control panel settings
- Change simple control panel settings such as date and time settings
- Display and update a list of installed printers
- Identify precautions regarding changing system settings
- Install software including installing updates from online sources
- Identify common problems associated with installing and running applications

Module 2: Key Applications 2005 Standard

Objective 1.1
Be able to start and exit a Windows application and utilize sources of online help

- Start a Windows application
- Exit a Windows application
- Identify and prioritize help resources, including online help within software and contacting a help desk
- Use various forms of automated help

Objective 1.2
Identify common on-screen elements of Windows applications, change application settings and manage files within an application

- Identify on-screen elements common to Windows applications (e.g. menus, toolbars and document windows)
- Display or hide toolbars
- Switch between open documents
- Change views
- Change magnification level
- Create files
- Open files within an application and from the Windows desktop, identify file extensions including .xls or .doc
- Save files in specified locations/formats
- Close files
- Identify and solve common problems relating to working with files (e.g. product or version incompatibility)

Objective 1.3
Perform common editing and formatting functions

- Navigate around open files using scroll bars, keyboard shortcuts, etc.
- Insert text and numbers in a file
- Perform simple editing (e.g. cut, copy and move information)
- Use the Undo, Redo and Repeat commands
- Find information
- Replace information
- Check spelling
- Perform simple text formatting
- Insert pictures into a file
- Modify pictures in a file
- Add drawn objects into a file, including creating and modifying objects

Objective 1.4
Perform common printing functions

- Format a document for printing
- Preview a file before printing
- Print files, specifying common print options
- Manage printing and print jobs
- Identify and solve common problems associated with printing

Objective 2.1
Be able to format text and documents including the ability to use automatic formatting tools

- Identify on-screen formatting information, including breaks, paragraph markers etc.
- Select word, line, paragraph, document
- Change line and paragraph spacing
- Indent text
- Create and modify bulleted and numbered lists
- Use outline structure to format a document
- Insert symbols/special characters
- Insert date and time
- Insert, view and print document comments
- Display the ruler
- Use tabs
- Insert and delete a page break or section break
- Insert, modify and format page numbers
- Create, modify and format headers and footers
- Create, modify and format footnotes and endnotes
- Apply borders and shading to text paragraphs
- Create, modify and apply styles
- Copy formatting (Format Painter)
- Use language tools
- Use track changes in a document
- Display document statistics

Objective 2.2
Be able to insert, edit and format tables in a document

- Create a table
- Insert and edit data in a table
- Modify table structure
- Format tables
- Sort data in a table

Objective 3.1
Be able to modify worksheet data and structure and format data in a worksheet

- Identify how a table of data is organized in a spreadsheet
- Select information with the keyboard and mouse including selecting rows, columns and worksheets
- Insert and modify data
- Modify table structure
- Identify and change number formats, including currency, date and time and percentage formats
- Apply borders and shading to cells
- Specify cell alignment (e.g. wrapping text within a cell)
- Apply table AutoFormats

Objective 3.2
Be able to sort data, manipulate data using formulas and functions and add and modify charts in a worksheet.

- Sort worksheet data
- Demonstrate an understanding of absolute vs. relative cell addresses
- Insert arithmetic formulas into worksheet cells
- Demonstrate how to use common worksheet functions (e.g. SUM, AVERAGE and COUNT)
- Insert formulas that include worksheet functions into cells
- Modify formulas and functions
- Use AutoSum
- Identify common errors made when using formulas and functions
- Draw simple conclusions based on tabular data in a worksheet
- Insert and modify charts in a worksheet
- Be able to identify if a presented chart accurately represents worksheet data shown in a table
- Identify appropriate chart types for presenting different types of information

Objective 4.1
Be able to create and format simple presentations

- Identify effective design principles for simple presentations
- Manage slides (e.g. delete a slide)
- Add information to a slide
- Change slide view
- Change slide layout
- Modify a slide background
- Assign transitions to slides
- Change the order of slides in a presentation
- Create different output elements (speaker's notes, handouts, etc.)
- Preview the slide show presentation
- Navigate an on-screen slide show

Module 3: Living Online 2005 Standard

Objective 1.1
Identify network fundamentals and the benefits and risks of network computing

- Identify terminology relating to telecommunications, networks and the Internet
- Identify types of networks
- Identify how networks work
- Identify benefits of networked computing
- Identify the risks of networked computing
- Identify fundamental principles of security on a network

Objective 1.2
Identify the relationship between computer networks, other communications networks (like the telephone network) and the Internet

- Identify the different ways the telephone system is used to transmit information
- Identify that telecommunication devices such as modems convert information from analog to digital and digital to analog formats
- Identify the units used to measure data transmission rates
- Identify the Internet as a "super network" of smaller computer networks and that computers connect to the Internet via the "onramp" of a smaller computer network
- Identify the hardware and software required to connect to the Internet
- Identify different types of Internet connections and the advantages and disadvantages of each connection type
- Identify the roles and responsibilities of an Internet Service Provider (ISP)

Objective 2.1
Identify how electronic mail works

- Identify how electronic mail works on a network and on the Internet
- Identify the components of an electronic mail message
- Identify the components of an electronic mail address
- Identify when to use different electronic mail options
- Identify different ways electronic mail is accessed
- Identify the difference between standard electronic mail and other forms of messaging, such as paging or Instant Messaging

Objective 2.2
Identify how to use an electronic mail application

- Read and send electronic mail messages
- Identify ways to supplement a mail message with additional information
- Manage attachments
- Manage mail
- Manage addresses
- Identify the purpose of frequently used mail-configuration options

Objective 2.3
Identify the appropriate use of e-mail and e-mail related "netiquette"

- Identify the advantages of electronic mail
- Identify common problems associated with electronic mail
- Identify the elements of professional and effective e-mail messages
- Identify when other forms of correspondence are more appropriate than e-mail
- Identify when to include information from an original e-mail message in a response as a method of tracking the "history" of e-mail communication
- Identify appropriate use of e-mail attachments and other supplementary information
- Identify issues regarding unsolicited e-mail ("spam") and how to minimize or control unsolicited mail
- Identify effective procedures for ensuring the safe and effective use of electronic mail

Objective 3.1
Identify different types of information sources on the Internet

- Identify terminology related to the Internet
- Identify the purpose of a browser in accessing information on the World Wide Web
- Identify different elements of a Web site
- Identify different types of Web sites by their extensions, and the purposes of different types of sites
- Identify the difference between secure and unsecure Web sites (such as password-protected sites or sites secure for online transactions) and how to tell if a Web site is secure
- Identify different ways of communicating and corresponding via the Internet

Objective 3.2
Be able to use a Web browsing application

- Identify the make-up of a Web address/Uniform Resource Locator (URL)
- Navigate the Web using a browser
- Reload/Refresh the view of a Web page
- Show a history of recently visited Web sites and delete the list of recently visited Web sites
- Find specific information on a Web site
- Manage Bookmarked sites/Favorite sites
- Save the content of a Web site for offline browsing
- Copy elements of a Web site including copying text or media to another application
- Print all or specified parts of a Web site
- Download a file from a Web site to a specified location
- Identify settings that can be modified in a Web browser application
- Identify problems associated with using a Web browser

Objective 3.3
Be able to search the Internet for information

- Identify the ways a search engine classifies and looks for Web sites
- Identify other ways of searching for information on the Web
- Use a search engine to search for information based on specified keywords
- Search effectively
- Identify issues regarding the quality of information found on the Internet
- Identify how to evaluate the quality of information found on the Web

Objective 4.1
Identify how computers are used in different areas of work, school and home

- Identify how computers and the Internet are used to collect, organize, and evaluate information and promote learning
- Identify the technology and processes involved with computers operating "behind the scenes" in everyday activities
- Identify the impact of electronic commerce (e-commerce) on business, individuals and governments
- Identify technologies that support or provide opportunities to the disabled and disadvantaged such as voice recognition

Objective 4.2
Identify the risks of using computer hardware and software

- Identify how to maintain a safe working environment that comply with legal health and safety rules
- Identify injuries that can result from the use of computers for long periods of time
- Identify risks to personal and organizational data
- Identify software threats, including viruses and WORMS

Objective 4.3
Identify how to use computers and the Internet safely, legally, ethically and responsibly

- Identify reasons for restricting access to files, storage devices, computers, networks, and certain Internet sites
- Identify concepts related to intellectual property laws including copyrights, trademarks and plagiarism
- Identify the principles regarding when information can or cannot be considered personal, including the difference between computer systems owned by schools or businesses that may have rules and guidelines as to who owns data stored on the system, and computers owned by individuals
- Identify how to avoid hazards regarding electronic commerce, including giving credit card information only on secure sites
- Identify how to protect privacy and personal security online, including understanding how Web sites track your activity online using "cookies" and other "behind-the-scenes" systems
- Identify how to find information about rules regarding the use of computers and the Internet, including laws, use policies at school, and company guidelines at places of employment
- Identify how to stay informed about changes and advancements in technology
- Identify how to be a responsible user of computers and the Internet