

Institute for Certification of Computer Professionals

Review Dates: October 1987; November 1988; August 1991; February 1996; December 2003

Effective Dates: See specific examinations.

Organization Description: The Institute for Certification of Computing Professionals (ICCP) is a nonprofit professional credentialing body founded in 1973 by eight professional computer societies. Today, the ICCP is managed by six computer societies; three representatives of the 55,000 holders and 18 affiliate organizations. These professional societies, as represented by ICCP, aim to promote professionalism in the computer industry through certification, education, and public awareness. The ICCP certificate programs recognize the high standards and level of knowledge and skill in the information, communications, and technology industry. ICCP sponsors six certification programs: Associate Computing Professional (ACP), Certified Business Intelligence Professional, Certified Computer Programmer (CCP), Certified Computing Professional (CCP), Certified Data Processor (CDP), Certified Systems Professional (CSP). In January 1994, the ICCP examinations became computer based and are administered daily through a network of proctors located throughout the country and the world. For security purposes, examinees must present two forms of photo ID when registering to take the examination. Examinees who do not pass may retake the examination after 30 days. More than 50,000 computer professionals have attained ICCP certification.

Organization Contact: Institute for Certification of Computing Professionals, 2350 East Devon Avenue, Suite 115, Des Plaines, IL 60018, (800) 843-8227 or (847) 299-4227, Fax (847) 299-4280, e-mail: office@iccp.org, www.iccp.org.

Source of Official Student Records: Institute for Certification of Computing Professionals, 2350 East Devon Avenue, Suite 115, Des Plaines, IL 60018, (800) 843-8227, (847) 299-4227, Fax (847) 299-4280, e-mail: office@iccp.org, www.iccp.org, and the College Credit Recommendation Service, American Council on Education, One Dupont

Circle NW, Suite 250, Washington, DC 20036-1193, e-mail: credit@ace.nche.edu.

Effective Dates: May 1990—the passing score required to award credit for the core and specialty examinations is 70 percent. No marks are deducted for incorrect answers. For each of the above examinations 110 questions are presented in 90 minutes and a normalized score of 70 out of the 100 scored questions is required for passing at the professional level.

How Examination Results are Reported: The scores as reported on an official performance profile showing the detail subject category performance and a comparison against the overall group of exam takers, plus a summary of percentages achieved.

Associate Computing Professional (ACP), Certified Computing Professional (CCP)

Credit Recommendation: See Figure 1, Core and Specialty Examination Credit Recommendations for ACP and CCP, for recommended lower-division/associate degree semester hours.

Effective Dates: January 1994–December 2001

Description: All candidates for the ACP and CCP certification examinations must complete the core examination. ACP candidates must also successfully complete one computer language speciality examination. To satisfy the certification requirements for the CCP, candidates must also pass two specialty examinations of their choice or two programming languages. See Figure 1 for core and specialty examination descriptions.

Associate Computer Professional (ACP), Certified Computer Programmer (CCP), Certified Data Processor (CDP), Certified Systems Professional (CSP)

Credit Recommendation: See Figure 2, Core and Specialty Examination Credit Recommendations for ACP, CCP, CDP, and CSP, for recommended lower-division/associate degree semester hours.

Effective Dates: May 1990–December 1993

Description: All candidates for the ACP, CCP, CDP, and CSP certification examinations must complete the core examination. ACP candidates must also successfully complete one computer speciality examination. To satisfy the certification requirements for the CCP, CDP, or CSP, candidates must also pass two specialty examinations: one required

and one of their choice. (See core and specialty examination descriptions at the end of this section.)

Skills Measured: (See core and specialty examination descriptions at the end of this section.)

Core and Specialty Examination Descriptions

(for examinations offered after May 1990)

Core Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: The core examination covers a range of topics considered to be required of every information systems and information technology professional today.

Skills Measured:

Human organization and framework—business environment; management; technology transfer; interpersonal communication; professional issues

Systems concepts—types of systems; application strategies Systems development

systems development cycle; systems integration; tools and techniques

Data and information—data architecture; data management

Technology—hardware; software

Associated disciplines—financial management; management science; systems auditing; mathematics; statistics

Core Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: The core examination covers a range of topics considered to be required of every information systems and information technology professional today.

Skills Measured:

Human organization and framework—business environment; management; technology transfer; interpersonal communication; professional issues

Systems concepts—types of systems; application strategies

Data and information—data architecture; data management

Systems development—systems development cycle; systems integration; tools and techniques

Technology—hardware; software

Associated disciplines—financial management; management science; systems auditing; mathematics; statistics

Specialty Examinations

Business Information Systems Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination is designed to test the candidate's knowledge of business information systems theory and practice at a level of competency appropriate to senior information systems (IS) professionals. The candidate should understand the concepts and characteristics of related areas of knowledge such as finance and business economics.

Skills Measured:

Business information systems applications—financial planning/decision support; accounting; organizational performance; marketing and sales; materials management; productions and distribution management

Business information systems environment—the system analysis/design function; the database design function; the applications programming function; the computer operations function; the quality control function; the information center function

Business information systems considerations—user/IS relations; business economics; IS resource management; EDP equipment use; software development environment.

Business Information Systems Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination is designed to test the candidate's knowledge of business information systems theory and practice at a level of competency appropriate to senior information systems (IS) professionals. The candidate should understand the concepts and characteristics of related areas of knowledge such as finance and business economics.

Business information systems applications—financial planning/decision support; accounting; organizational performance; marketing and sales; materials management; productions and distribution management

Business information systems environment—the system analysis/design function; the database design function; the applications programming function; the computer operations function; the quality control function; the information center function

Business information systems considerations—user/IS relations; business economics; IS resource management; EDP equipment use; software development environment

Data Communications Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests knowledge in telecommunications (including voice and analog signals), data communications, and computer networks (including distributed processing). Test content also requires broad theoretical knowledge and practical experience needed to manage, advise, and implement work involving communications systems.

Data communications theory—information theory; protocols; layering; interfaces

Networking theory—topology; connectivity; queuing theory; flow and capacity

The ISO OSI reference model—physical layer; data link layer; network layer; transport layer; session layer; presentation layer; application layer

Established communication systems—standards organizations and standards; telecommunications; data communications; computer communications and networks

Hardware—data switches; modems/codecs; multiplexers/concentrators; communications controllers; front-end processors; buses and channels; fiber-optic devices; telephone systems; computer terminals

Usage and design—user needs; access rights and privacy; security; costs; analysis tools and software; comparisons; reliability and pathology

Data Resource Management Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests for knowledge of theory and professional practices associated with development and management of corporate-wide data resources at the conceptual, logical, and physical levels.

Data resource management functions—data administration; database administration

Data analysis—planning for data; data modeling concepts; data standards; data and business systems; management of data infrastructure

Database design—database management system (DBMS) concepts and usage; decision support v. operational databases; distributed data; performance tuning; storage; backup and recovery; linking

process logic and data; management of data storage technologies; structured query language (SQL) considerations.

Data Resource Management Examination

Credit Recommendation: See Figure 1.

Effective Dates: 1994–December 2001

Description: This examination tests for a knowledge of theory and professional practices associated with development and management of corporate-wide data resources at the conceptual, logical, and physical levels.

Data resource management functions—data administration; database administration

Data analysis—planning for data; data modeling concepts; data standards; data and business systems; management of data infrastructure

Database design—database management system (DBMS) concepts and usage; decision support v. operational databases; distributed data; performance tuning; storage; backup and recovery; linking process logic and data; management of data storage technologies; structured query language (SQL) considerations

Internetworking and Communications Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests knowledge in telecommunications (including voice and analog signals), data communications, and computer networks (including distributed processing). Test content also requires broad theoretical knowledge and practical experience needed to manage, advise, and implement work involving communications systems.

Skills Measured:

Data communications theory—information theory; protocols; layering; interfaces

Networking theory—topology; connectivity; queuing theory; flow and capacity

The ISO OSI reference model—physical layer; data link layer; network layer; transport layer; session layer; presentation layer; application layer

Established communication systems—standards organizations and standards; telecommunications; data communications; computer communications and networks

Hardware—data switches; modems/codecs; multiplexers/concentrators; communications controllers; front-end processors; buses and channels; fiber-

optic devices; telephone systems; computer terminals

Usage and design—user needs; access rights and privacy; security; costs; analysis tools and software; comparisons; reliability and pathology.

IS CORE (outcome assessment) Examination

Credit Recommendation: See Figure 3.

Effective Dates: May 2004–Present (see Figure 3)

Description: The ICCP and 20 universities and colleges have developed the IS–Core examination as an outcome assessment examination for two- and four-year college programs.

Skills Measured:

IT skills—software development, web development, database, systems integration,

Organizational and professional skills—business fundamentals, individual and team personal skills,

Strategic organizational development systems—organizational systems development, project management

IT Management Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests the candidate's knowledge of the theory and practice of management, including the usage of managerial concepts and functions.

Skills Measured:

General management and organizational concepts—business functions; business economics; management systems; management functions; managerial roles; politics and pressure groups; business ethics and organizational values

Project management—project staffing and roles; defining project objectives; determining project activities; estimating; planning and scheduling; monitoring and control; project evaluation; tools for project management; consultants

Information Systems (IS) Management—the IS organization; information center/user services; technical services; system performance criteria; capacity planning and procurement; security, protection and controls; contingency planning; IS human resource management; critical/key success factors

Language examinations: C, C++, COBOL, RPG, Pascal, BASIC

Credit Recommendation: 3 credits for each language exam

Effective Dates: January 2002–Present (see Figure 3)

Description: Principles of programming, program testing, and programming environments.

Skills Measured:

75% Computer programming and software

25% Systems—project definition; analysis; design; implementation; software maintenance; and post-implementation review.

Management Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests the candidate's knowledge of the theory and practice of management, including the usage of managerial concepts and functions.

General management and organizational concepts—business functions; business economics; management systems; management functions; managerial roles; politics and pressure groups; business ethics and organizational values

Project management—project staffing and roles; defining project objectives; determining project activities; estimating; planning and scheduling; monitoring and control; project evaluation; tools for project management; consultants

Information systems (IS) management—the IS organization; information center/user services; technical services; system performance criteria; capacity planning and procurement; security, protection and controls; contingency planning; IS human resource management; critical/key success factors

Microcomputing and Networks Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests the candidates for a knowledge of theory and professional practices associated with the management workgroup clusters of micro-computing devices at the conceptual, logical, and physical levels. The examination also tests the candidates' understanding of the theories and practices used in developing, deploying, and managing microcomputing in an office environment.

Skills Measured:

Resource management functions—general administration; technical administration; end-user support

Microcomputer architecture—system unit; peripherals

Microcomputer software—applications; systems software

Network technology—networking concepts; local area networking (LAN); wide area networking (WAN); value-added networks (VAN)

Microcomputing and Networks Examination

Credit Recommendation: See Figure 1.

Effective Dates: 1994–December 2001

Description: This examination tests the candidates for a knowledge of theory and professional practices associated with the management workgroup clusters of microcomputing devices at the conceptual, logical, and physical levels. The examination also tests the candidates' understanding of the theories and practices used in developing, deploying, and managing microcomputing in an office environment.

Resource management functions—general administration; technical administration; end-user support

Microcomputer architecture—system unit; peripherals

Microcomputer software—applications; systems software

Network technology—networking concepts; local area networking (LAN); wide area networking (WAN); value-added networks (VAN)

Office Information Systems Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests for a knowledge of office information systems theory, design, and application gained through formal education and practical experience.

Office environment—centralization/decentralization; environmental engineering for efficiency; technology evaluation

Office technologies—internal/external communications; image; storage media; public access techniques; installation, maintenance, and security of information systems; records management; managing to prevent obsolescence

End-user computing—product evaluation, analysis, and support; information center;

coordinating and supporting end-user application development; managing resistance

Office Information Systems Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests for a knowledge of office information systems theory, design, and application gained through formal education and practical experience.

Office environment—centralization/decentralization; environmental engineering for efficiency; technology evaluation

Office technologies—internal/external communications; image; storage media; public access techniques; installation, maintenance, and security of information systems; records management; managing to prevent obsolescence

End-user computing—product evaluation, analysis, and support; information center; coordinating and supporting end-user application development; managing resistance

Procedural Programming Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests the knowledge and skills of the candidate in the areas of software design and implementation.

Skills Measured:

Data and file organization—data formats, internal and external; data structures; file structures; database models

Program design—process; methods; representation

Procedural program structure—data definition; control structures; subprograms

Procedural programming considerations—order of implementation; exception and interrupt handling; style; program efficiency; testing and debugging; maintenance procedures; fundamental algorithms

Integration with hardware and software—hardware components; language paradigm selection; utilities; operating systems interface; communications and distributed processing

Procedural Programming Examination

Credit Recommendation: See Figures 1 and 2.
Effective Dates: May 1990–December 2001

Description: This examination tests the knowledge and skills of the candidate in the areas of software design and implementation.

Data and file organization—data formats, internal and external; data structures; file structures; database models

Program design—process; methods; representation

Procedural program structure—data definition; control structures; subprograms

Procedural programming considerations—order of implementation; exception and interrupt handling; style; program efficiency; testing and debugging; maintenance procedures; fundamental algorithms

Integration with hardware and software—hardware components; language paradigm selection; utilities; operating systems interface; communications and distributed processing

Scientific Programming Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests the candidate's knowledge in numerical methods, statistical methods, data reduction techniques, simulation and database design techniques for scientific data systems. Candidates should have a reading knowledge of computer application areas such as graphics and numerical control.

Skills Measured:

Language—detailed knowledge of FORTRAN; structured techniques in FORTRAN

Fundamental concepts—numerical methods; statistical methods; simulation/modeling; scientific data storage; floating point arithmetic

Computer application systems—graphics; numerical control; process control; simulation; optimization; image processing; computer-aided design and manufacturing.

Scientific Programming Examination

Credit Recommendation: See Figure 2.

Effective Dates: May 1990–December 1993

Description: This examination tests the candidate's knowledge in numerical meth-

ods, statistical methods, data reduction techniques, simulation and database design techniques for scientific data systems. Candidates should have a reading knowledge of computer application areas such as graphics and numerical control.

Language—detailed knowledge of FORTRAN; structured techniques in FORTRAN

Fundamental concepts—numerical methods; statistical methods; simulation/modeling; scientific data storage; floating point arithmetic

Computer application systems—graphics; numerical control; process control; simulation; optimization; image processing; computer-aided design and manufacturing

Software Engineering Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination measures the candidate's knowledge of software delivery as approached from the discipline of software engineering. It also tests for knowledge of specific methodologies.

Skills Measured:

Computer system engineering—computer-based systems; computer system life-cycle modeling; hardware considerations; software considerations; human considerations

Software project planning—project planning objectives; software scope; resources; metrics for software productivity; software project estimation; decomposition techniques; empirical estimation models; automated estimation tools; software project scheduling; software acquisition; organizational planning

Software requirements—analysis principles; object-oriented analysis; software prototyping; system analysis; requirements analysis methodologies; data flow-oriented analysis methods; data structure-oriented methods; data structured systems development; Jackson system development

Software design—the design process; design fundamentals; modular design; data flow-oriented design; data structure-oriented design; object-oriented design; real-time design; model-based design; procedural design

Programming languages and coding—the translation process; programming language characteristics; programming language fundamentals; language classes; programming aids; coding style; efficiency

Software quality assurance—software quality and quality assurance; software review; formal technical reviews; software quality metrics; software reliability; software quality assurance approach

Software testing techniques—software testing fundamentals; white box testing; basis path testing; loop testing; black box testing; proof of correctness; strategic approach to software testing; unit testing; integration testing; validation testing; system testing; debugging

Software maintenance and configuration management—maintenance characteristics; maintainability; maintenance tasks; maintenance side effects; software configuration management

Software Engineering Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination measures the candidate's knowledge of software delivery as approached from the discipline of software engineering. It also tests for knowledge of specific methodologies.

Computer system engineering—computer-based systems; computer system life-cycle modeling; hardware considerations; software considerations; human considerations

Software project planning—project planning objectives; software scope; resources; metrics for software productivity; software project estimation; decomposition techniques; empirical estimation models; automated estimation tools; software project scheduling; software acquisition; organizational planning

Software requirements—analysis principles; object-oriented analysis; software prototyping; system analysis; requirements analysis methodologies; data flow-oriented analysis methods; data structure-oriented methods; data structured systems development; Jackson system development

Software design—the design process; design fundamentals; modular design; data flow-oriented design; data structure-oriented design; object-oriented design; real-time design; model-based design; procedural design

Programming languages and coding—the translation process; programming language characteristics; programming language fundamentals; language classes; programming aids; coding style; efficiency

Software quality assurance—software quality and quality assurance; software review; formal technical reviews; software quality metrics; software reliability; software quality assurance approach

Software testing techniques—software testing fundamentals; white box testing; basis path testing; loop testing; black box testing; proof of correctness; strategic approach to software testing; unit testing; integration testing; validation testing; system testing; debugging

Software maintenance and configuration management—maintenance characteristics; maintainability; maintenance tasks; maintenance side effects; software configuration management

Systems Development Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests the candidate's knowledge of the theory and practice of systems analysis, systems design, and systems implementation.

Skills Measured:

Systems analysis—general system theory; preliminary studies; problem definition; data gathering and analysis; system requirements

Systems design and implementation—alternative systems design; logical design; detailed system design; privacy, security, and controls; system implementation; system evaluation and maintenance

The systems analyst as a professional—organizational roles of the systems professional; interpersonal roles of the systems professional; communication skills; identifying key individuals.

Systems Development Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests the candidate's knowledge of the theory and practice of systems analysis, systems design, and systems implementation.

Systems analysis—general system theory; preliminary studies; problem definition; data gathering and analysis; system requirements

Systems design and implementation—alternative systems design; logical design; detailed system design; privacy, security, and controls; system implementation; system evaluation and maintenance

The systems analyst as a professional—organizational roles of the systems professional; interpersonal roles of the systems professional; communication skills; identifying key individuals

Systems Programming Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination tests the candidate's knowledge of a variety of architectural design structures for computing systems and their implementation trade-offs, as well as how the design structures may be realized with hardware components in localized or distributed program and data environments.

Skills Measured:

Languages—assembly language concepts; reading knowledge of PASCAL

Operating systems—processor dispatching; interrupt handling; paging supervisor; resource allocation; input/output spooling; operator communication; program loading; memory protection and privileged instruction

Language processing—parsing and syntactic/semantic analysis; code generation and optimization; module collection and address resolution; development techniques

Concurrent and distributed processing—communication protocols; network architecture; multitasking; dynamic resource allocation; security

Data management systems—physical data structure; logical data models; concurrent access control; data integrity

Computer architecture and implementation—base components of computer design; gates and elementary logic; microprogramming; processor components; instruction set architecture

Performance evaluation—performance measurement; modeling and simulation; tuning

Software tools

System management—security; software installation; software tailoring.

Systems Programming Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests the candidate's knowledge of a variety of architectural design structures for computing systems and their implementation trade-offs, as well as how the design structures may be realized with hardware components in localized or distributed program and data environments.

Languages—assembly language concepts; reading knowledge of PASCAL

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Language processing—parsing and syntactic/semantic analysis; code generation and optimization; module collection and address resolution; development techniques

Concurrent and distributed processing—communication protocols; network architecture; multitasking; dynamic resource allocation; security

Data management systems—physical data structure; logical data models; concurrent access control; data integrity

Computer architecture and implementation—base components of computer design; gates and elementary logic; microprogramming; processor components; instruction set architecture

Performance evaluation—performance measurement; modeling and simulation; tuning

Software tools

System management—security; software installation; software tailoring

Systems Security Examination

Credit Recommendation: See Figure 3.

Effective Dates: January 2002–Present (see Figure 3)

Description: This examination covers the development of client server applications across and the use of secure Internet applications. Considerable programming and applications development knowledge and skills are assessed as well as knowledge of newer technologies such as Java, HTML, XML, and HTTPS secure servers.

Skills Measured:

- General page design concepts*
- General server concepts*
- Development tools/environment*
- Programming languages*
- Programming concepts*
- Project management*
- Site management and security*
- Database and data access*
- File formats and streaming media.*

Systems Security Examination

Credit Recommendation: See Figures 1 and 2.

Effective Dates: May 1990–December 2001

Description: This examination tests the candidate's knowledge and understanding of the usage of systems security theory, techniques, and practice. The examination emphasizes applying knowledge to deal with real-world security issues.

Risk Assessment—organization; systems and data asset valuation; threat characteristics; risk assessment; dealing with risk

Recovery from information service interruption—recoverable storage management; business continuity planning; disaster management

Information and system security—telecommunications; database security; cryptography; operating systems; microcomputers and local area networks; physical security

Security in system design—system security objectives and functions; data integrity assurance; life-cycle approach

Security management—policy setting, implementation, and administration; security awareness; information ethics; personnel issues; evaluation of security measures

Specialty Examination Descriptions

(For examinations prior to May 1990)

General Description of ACP, CCP, CDP, and CSP Examinations: The ACP, CCP, CDP, and CSP examinations were administered twice a year at approximately 150 testing sites in the United States, Canada, Europe, and Asia. The examinations were available to personnel in military installations through the Defense Activity for Non-Traditional Education Support (DANTES). To qualify to take the examinations, candidates had to meet specific educational and/or work experience requirements. Formal courses were not required before a candidate could take the examinations. However, many candidates found it helpful to take formal or review courses or to study independently before taking the examinations. ICCP did not sponsor courses to help candidates to prepare for the examination, but it did publish a study guide.

The certification examinations consisted of two parts: the core examination and the specialty examinations. The three-hour core examination consisted of 200 multiple-choice questions. Each one-and-one-half-hour specialty examination consisted of 100 multiple-choice questions. To earn the CCP, CSP, or CDP certifications, the examinee had to successfully complete the core examination plus two specialty examinations.

Associate Computer Professional (ACP), General Examination

Credit Recommendations (according to subject area):

Hardware—At the lower-division baccalaureate/associate degree level, three semester hours in introduction to data processing, computer organization, or computer architecture are recommended.

Programming—At the upper-division baccalaureate degree level, six semester hours in survey of programming languages, introduction to programming, file structures, or introduction to data communications are recommended.

Management—At the lower-division baccalaureate/associate degree level, three semester hours in introduction to business or data processing management are recommended.

Quantitative methods—At the lower-division baccalaureate/associate degree level, three semester hours in college or business mathematics are recommended.

Systems—At the upper-division baccalaureate degree level, six semester hours in introduction to systems analysis, systems design technique, or online systems analysis and design are recommended.

Language examinations (ADA, C, BASIC, COBOL, FORTRAN, PASCAL, and RPG)—At the lower-division baccalaureate/associate degree level, three semester hours per language section passed are recommended.

Effective Dates: Prior to May 1990

Description: The general section of the ACP examination consisted of 180 questions in five subject areas. For more information, see “General Description of ACP, CCP, CDP, and CSP Examinations.”

Skills Measured: (Approximate Percentage of Examination by Content Area)

17% Hardware—computers (components and functions, computer characteristics); peripherals (human interface, machine interface); data communications (transmission media, devices, transmission protocols, networks)

42% Computer programming and software—principles of programming (computer instructions, program structure, programming techniques, program testing, other considerations); programming environment (systems software, application languages, programmer productivity tools); end-user software (communication, information management, personal productivity tools)

5% Principles of data processing management—project management; management of quality and continuity

9% Accounting and quantitative methods—accounting and finance (basic accounting process, cost accounting, accounting applications, computer auditing and control, use of accounting and financial information); quantitative methods (mathematics, statistics, management science); mathematics of finance and accounting

27% Systems—project definition; analysis; design; implementation; software maintenance; post-implementation review

Certified Data Processor (CDP) Examination

Credit Recommendations (according to subject area):

Computer hardware—At the lower-division baccalaureate/associate degree level, three semester hours in introduction to data processing, introduction to CIS computer organization, or computer architecture are recommended.

Computer programming and software—At the upper-division baccalaureate degree level, six semester hours in introduction to programming, proficiency in one language or other language experience, file structures, or introduction to data communications are recommended.

Principles of management—At the upper-division baccalaureate degree level, six semester hours in introduction to business, principles of management, information resources management, data processing management, operations management, or supervision and management are recommended.

Methods and applications—At the lower-division baccalaureate/associate degree level, six semester hours in principles of accounting I and II, six semester hours in college or business mathematics, and three semester hours in introduction to statistics are recommended.

Systems—At the upper-division baccalaureate degree level, six semester hours in introduction to system analysis, systems design and techniques, or online system design and analysis are recommended.

Effective Dates: 1982–May 1990

Description: The CDP examination consisted of five subject areas, with sixty questions per subject area. The passing score required for a credit award was 70 percent in each subject area. For more information, see “General Description of ACP, CCP, CDP, and CSP Examinations.”

Skills Measured:

Section 1: Computer hardware—computers (components and functions, computer characteristics); peripherals (human interface, machine interface); data communications (transmission media, devices, transmission protocols, networks)

Section 2: Computer programming and software—principles of programming (computer instructions, program structure, programming techniques, program testing, other considerations); programming environment (systems software, application languages, programmer productivity tools); end-user software (communication, information management, personal productivity tools)

Section 3: Principles of management—principles of general management (organizational principles, planning principles, control and direction principles, staffing and personnel principles); principles of data processing management (general data processing management, project management, management of the computer services, management of quality and continuity)

Section 4: Methods and applications—accounting methods (financial accounting, cost accounting, financial management); accounting applications (the general ledger and financial statements, accounting subsystems); quantitative methods (principles of mathematics, statistics); management applications (management science, EDP auditing, other management applications)

Section 5: Systems—project definition (feasibility study, project scope and objectives, economic considerations); analysis (fact-finding techniques, requirements definition, structured analysis); design (outputs, file and database design, inputs, external design, internal design); implementation (training, conversion, acceptance testing, installation); software maintenance (change initiation, program change procedures, change implementation); system reviews (types of reviews, review techniques)

Certified Systems Professional (CSP) Examination

Credit Recommendation: At the upper-division baccalaureate level, three semester hours in introductory management and three semester hours in systems analysis are recommended. Further credit may be awarded upon review of the individual’s current and relevant work experience. All five subject areas must be successfully completed for the credit award.

Effective Dates: Prior to May 1990

Description: The CSP examination consisted of five subject areas, with sixty questions in each area. The passing score required for a credit award was 70 percent in each subject area. For more information, see “General Description of ACP, CCP, CDP, and CSP Examinations.”

Section 1: Environment of systems—the organizational context (organizational classifications, organizational structures, politics and pressure groups, business economics, organizational roles of the systems); the interpersonal context (interpersonal roles of the systems professional, communication skills, business ethics and etiquette, identifying key individuals)

Section 2: Project management—general knowledge and skills (management theory, management functions, management systems); specific knowledge and skills (project planning, managing resources, monitoring and controlling progress, using project management tools)

Section 3: Systems analysis—preliminary studies (purpose of preliminary study, preliminary study plan, data gathering for preliminary study, data analysis for preliminary study, feasibility); problem definition (setting management objectives, systems objectives); data gathering and analysis (study plan, data collection, data information analysis); system requirements (functions common to all information systems, detailed function statements, resource requirements of operational system)

Section 4: Systems design and implementation—alternative systems design (identification of, evaluation of, and presentation of alternatives); logical design (user system requirements, general design specification); detailed system design (process design, file design, database design, software development, documentation); security and controls (security management, access controls, communication security, data integrity and reliability, audit trails); system implementation (testing, conversion); system evaluation and maintenance (evaluation, maintenance)

Section 5: Tools and technologies—tools (systems, programming); technologies (hardware, software, systems)

Figure 1: Core and Specialty Examination Credit Recommendations for ACP¹ and CCP²

Core Examination (Effective Dates: January 1994–December 2001)

Area	Credit Recommendation
Introduction to computing, computer information systems, or data processing	3
Introduction to business	3
Introduction to systems analysis	3
Introduction to management, supervision, operations management, or principles of management	3
Introduction to database management	3
Introduction to quantitative methods	2
Total	17

Specialty Examinations

Exam	Credit Recommendation
Business information systems	3
Data communications	3*
Data resource management (Database management systems or Information systems resource management)	3*
Management (Computer systems management or Information systems management)	3**
Microcomputing and networks (Introduction to microcomputer hardware and software [2 credits] and Introduction to Local Area Networks [2 credits])	4
Office information systems	3
Procedural programming (Introduction to programming [2 credits] and Data structures [2* credits])	4
Software engineering	3*
Systems development (Systems development methodologies or Systems analysis and design)	3*
Systems programming or Assembly language programming	3*
Systems security	3
Languages (BASIC, C, C++, COBOL, PASCAL, RPG/400 programming) (three per examination)	3

¹ For each examination successfully completed, three semester hours at the lower-division/associate degree are recommended.

² To satisfy the certification requirements for the CCP, candidates must not only pass the core examination but they must also pass two specialty examinations of their choice or two programming languages. Recommended specialty examinations and languages are listed in this figure.

* Upper-division level credit

** Lower- or upper-level credit

Figure 2: Core and Specialty Examination Credit Recommendations for ACP¹, CCP², CDP², and CSP²**Core Examination (May 1990–December 1993)**

Area	Credit Recommendation
Introduction to computing, computer information systems, or data processing	3
Introduction to database management	3
Business organization	3
Introduction to systems analysis	3
Introduction to management, supervision, operations management, business, or principles of management	3
Associated disciplines	2
Total	17

Specialty Examinations

Exam	Credit Recommendation
Business information systems	3*
Data communications	3*
Management (Computer systems management, Information systems management, or Information resource management)	3*
Office information systems	3
Procedural programming (Introduction to procedural programming [2* credits], Programming [2* credits], Principles of computer programming [2* credits], or Techniques of procedural programming [2* credits], and Data structures [2* credits])	4
Scientific programming (Numerical methods or Numerical analysis)	3*
Software engineering	3*
Systems development (Advanced systems analysis or Computer systems development)	3*
Systems programming	3*
Systems security	3*

¹ Candidates applying for the ACP certification must also take a computer language examination. For each examination successfully completed, three semester hours at the lower-division/associate degree are recommended.

² To satisfy the certification requirements for the CCP, CDP, or CSP, candidates must not only pass the core examination but they must also pass two specialty examinations: one required and one of their choice. Recommended specialty examinations are listed in this figure.

* Upper-division level credit

** Lower- or upper-level credit

Figure 3: Core and Specialty Examination Credit Recommendations

Core Examination (Effective Dates: January 2002-Present [Except where noted])

Exam	Credit Recommendation	Level
IT Core		
Introduction to computer science or CI	3	L
Introduction to business	2	L
Introduction to system analysis	2	L
Introduction to database management	2	L
Total	9 semester hours	
IT Core (Effective Dates: May 2004-Present)		
IT skills	2	L/U
Organizational and professional skills	2	L/U
Strategic organizational development	2	L/U
Total	6 semester hours	

Specialty Examinations

Exam	Credit Recommendation	Level
Business information systems	3	L
Data communications	3	U
Data resource management	3	U
Management (CIS/MIS)	3	L/U
Microcomputing and networks	4	L
Office information systems	3	L
Procedural programming	2	L
	2	U
Software engineering	3	U
Systems development	3	U
Systems programming	3	U
Systems security	3	U
Programming languages (3 credits per exam) (BASIC, RPG/400 programming, COBOL, Pascal, C, C++)	18 (for all 6 exams)	U
Web development	2	U
Total for all specialty exams	55 semester hours	

Notes: L = Lower Division Baccalaureate/Associate Degree Category
 U = Upper Division Baccalaureate Degree Category
 L/U = Lower Division or Upper Division