Computer Science Coding and Data Collection Guidelines

Computer Science is a new and rapidly evolving subject area. This document is intended to help districts determine what courses can count for the computer science offer-and-teach requirements and how computer science and computer science-related courses are determined for state data collection purposes.

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Course Information

Computer Science vs. Career Technical Education – Information Solutions (CTE-IS)

Computer Science

Offer-and-Teach Requirement

In order to report a course as Computer Science to fulfill the offer-and-teach requirement, the following must apply:

- Course is considered to be a "high-quality" computer science course
- Course is not reported as part of a CTE-IS Strand
- Course must be offered "on campus"
- Perkins and RPP funds cannot be used for Computer Science courses
- Courses must be flagged with the accreditation area **"10"** for Computer Science (CS) in the Student Reporting in Iowa application (SRI)
    - Once the "**10**" offer-and-teach requirement is met, courses can be flagged with the accreditation are of **"9"** for CTE in Secondary CTE Reporting Application (SCTERA) to be added to a CTE-IS strand if taught by a CTE-IS licensed educator
- Course must be coded with one of the SCED Codes from the Computer Science SCED Codes Tables

High-Quality Computer Science

High-quality means that computer science instruction is aligned to the Iowa Computer Science/ CSTA Student Standards (3A and/or 3B at high school level) and contains 20 hours of coding/programming.

Basic and Advanced Courses

Basic courses are introductory-level courses that do not require other courses as prerequisites. These course normally (but not always) meet the 3A CSTA Student Standards.

Advanced courses require other courses as prerequisites, require some specialized prior knowledge or are otherwise substantially more challenging/rigorous than basic courses. These course typically (but not always) meet the 3B CSTA Student Standards.

Teacher Endorsement

There are the following Computer Science Endorsements available:

- K-8 (Endorsement 277),
- 5-12 (Endorsement 278),
- K-12 Specialist (Endorsement 2781)

A Computer Science Endorsement **is not required** to teach computer science. The teacher does need to be endorsed at the grade level in which they are teaching computer science.

Career Technical Education – Information Solutions (CTE-IS)

CTE-IS expands on Computer Science as defined above to also include computer science-related courses (cyber security, IT, web design, etc.) that focus on the applied use of computer science to prepare students for the workforce.

In order to report a course as part of a **CTE-IS Strand,** the following must apply:

- Meets Iowa CTE-IT Standards beyond the integrated CSTA Student Standards
- Meets the CSTA Student Standards **and** is not reported as fulfilling the CS offer and teach requirements
- Can be used to apply for Perkins and RPP funds
- Courses must be flagged with accreditation area **"9"** for Career and Technical Education SCTERA (Secondary CTE Reporting Application).
- It must be taught by a CTE-IS licensed teacher
- Stand-alone courses not tied to a CTE-IS strand and not meeting the **"10"** requirements can be coded as a **"9"** if the teacher is a licensed CTE-IS educator

Basic and Advanced Courses

Basic courses are introductory-level courses that do not require other courses as prerequisites. Basic courses can be used to meet the offer-and-teach requirement.

Advanced courses require other courses as prerequisites, require some specialized prior knowledge or are otherwise substantially more challenging/rigorous than basic courses. Advanced courses can not be used to meet the offer-and-teach requirement.

Teacher Endorsement

If the computer science course is used to fulfill the CTE-IS strand requirements and/or to apply for Perkins or RPP funds, the teacher MUST have the CTE-IT endorsement (Endorsement 279).

Computer Science and CTE-IS SCED Codes Tables

The tables below are organized by the following Computer Science Topic areas:

Within each topic area, there are separate tables for those courses that can be coded as a **10 for Computer Science (CS)** to meet the offer-and-teach requirement and can be coded as a **9 for CTE** if the CTE-IS requirements are met. And tables for courses that can only be coded as a **9 for CTE** due to the specific focus of the content. These tables will also note if the courses contained will be considered as Computer Science or CS-Related for data collection purpose, as well as if the courses are considered to be Basic or Advanced.

Computer Science

The following guidelines apply to the courses in this table:

- Basic courses in this section can be coded as a **10 for Computer Science (CS)** to meet offer-and-teach requirement.
- Advanced courses in this section can be coded as a **10 for Computer Science (CS)**, but can not be used to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if offer-and-teach reporting has been completed and CTE-IS requirements are met.
- Are always considered Computer Science for data collection purposes.

SCED Code	Course Title	Course Description
10011	CS Principles (Basic Course)	Computer Science Principles courses provide students the opportunity use programming, computational thinking, and data analytics to create digital artifacts and documents representing design and analysis in areas including the Internet, algorithms, and the impact that these have on science, business, and society. Computer Science Principles courses teach students to use computational tools and techniques including abstraction, modeling, and simulation to collaborate in solving problems that connect computation to their lives.
10012	Exploring CS (Basic Course)	Exploring Computer Science courses present students with the conceptual underpinnings of computer science through an exploration of human computer interaction, web design, computer programming, data modeling, and robotics. While these courses include programming, the focus is on the computational practices associated with doing computer science, rather than just a narrow focus on coding, syntax, or tools. Exploring Computer Science courses teach students the computational practices of algorithm design, problem solving, and programming within a context that is relevant to their lives.
10013	PLTW CS Essentials (Basic Course)	Following Project Lead the Way's suggested curriculum, PLTW Computer Science Essentials (formerly known as PLTW Introduction to Computer Science) courses introduce students to computational thinking concepts, fundamentals, and tools. Students will increase their understanding of programming languages through the use of visual and text-based programming. Projects will include the creation of apps and websites to address real-life topics and problems.
10015	PLTW CS Principles (Basic Course)	Following Project Lead the Way's suggested curriculum to prepare students for the College Board's Advanced Placement Computer Science Principles exam, PLTW Computer Science Principles (formerly known as PLTW Computer Science and Software Engineering) courses are designed to help students develop computational thinking, and introduce students to possible career paths involving computing. These courses help students build programming expertise and familiarity with the Internet using multiple platforms and programming languages. Course content may include application development, visualization of data, cybersecurity, and simulation.
10019	AP CS Principles (Basic Course)	Following the College Board's suggested curriculum designed to parallel college-level computer science principles courses, AP Computer Science Principles courses introduce students to the fundamental ideas of computer science and how to apply computational thinking across multiple disciplines. These courses teach students to apply creative designs and innovative solutions when developing computational artifacts. These courses cover such topics as creative development, data, algorithms and programming, computer systems and networks, and the impact of computing.

SCED Code	Course Title	Course Description
10021	CS Discoveries (Basic Course)	Computer Science Discoveries is a highly interactive and collaborative introduction to the field of computer science. The course takes a wide lens on computer science by covering topics such as problem solving, programming, physical computing, user centered design, and data. Students build their own websites, apps, animations, games, and physical computing systems. Students create and share their own content to meet various design challenges, as well as implement computational solutions to problems that impact their communities. Along the way, they practice design, testing, and iteration, as they come to see that failure and debugging are an expected and valuable part of the programming process.
10014	PLTW CS A (Advanced Course)	Following Project Lead the Way's suggested curriculum to prepare students for the College Board's Advanced Placement Computer Science A exam, PLTW Computer Science A (formerly known as PLTW Computer Science Applications) courses focus on extending students' computational thinking skills through the use of various industry-standard programming and software tools. In these courses, students collaborate to design and produce solutions to real-life problems.
10151	Business Programming (Advanced Course)	Business Programming courses provide students with experience in using previously written software packages. Topics may include loops, arrays, and functions as well as instruction on how to design and write programs of their own. These courses contain a business industry focus and provide an overview of the principles of object-oriented design and programming (e.g., Visual Basic [VB], C++, Java, RPL) related to the business industry.
10152	Computer Programming (Advanced Course)	Computer Programming courses provide students with the knowledge and skills necessary to construct computer programs in one or more languages. Computer coding and program structure are often introduced with block-based languages, but other text-based languages may be used. Students learn to structure, create, document, and debug computer programs. Advanced courses may include instruction in object-oriented programming to help students develop applications for Windows, database, multimedia, games, mobile and/or web environments. An emphasis is placed on design, style, clarity, and efficiency. In these courses, students apply the skills they learn to relevant authentic applications.
10153	Visual Basic (Advanced Course)	Visual Basic (VB) Programming courses provide an opportunity for students to gain expertise in computer programs using the Visual Basic (VB) language. As with more general computer programming courses, the emphasis is on how to structure and document computer programs and how to use problem-solving techniques. These courses cover such topics as the use of text boxes, scroll bars, menus, buttons, and Windows applications. More advanced topics may include mathematical and business functions and graphics.
10154	C++ Programming (Advanced Course)	C++ Programming courses provide an opportunity for students to gain expertise in computer programs using the C++ language. As with more general computer programming courses, the emphasis is on how to write logically structured programs, include appropriate documentation, and use problem-solving techniques. More advanced topics may include multi-dimensional arrays, functions, sorting, loops, and records.
10155	Java Programming (Advanced Course	Java Programming courses provide students with the opportunity to gain expertise in computer programs using the Java language. As with more general computer programming courses, the emphasis is on how to structure and document computer programs, using problem-solving techniques. Topics covered in the course include syntax, I/O classes, string manipulation, and recursion.

SCED Code	Course Title	Course Description
10156	Computer Programming – Other Languages (Advanced Course)	Computer Programming—Other Language courses provide students with the opportunity to gain expertise in computer programs using languages other than those specified (such as Pascal, FORTRAN, Python, or emerging languages). As with other computer programming courses, the emphasis is on how to structure and document computer programs, using problem-solving techniques. As students advance, they learn how to best utilize the features and strengths of the language being used.
10157	AP CS A (Advanced Course)	Following the College Board's suggested curriculum designed to mirror college-level computer science courses, AP Computer Science A courses emphasize object-oriented programming methodology with a focus on problem solving and algorithm development. These courses cover such topics as object-oriented program design; program implementation; program analysis; standard data structures; standard algorithms; and the ethical and social implications of computing systems.
10159	IB CS (Advanced Course)	IB Computer Science courses prepare students to take the International Baccalaureate Computer Science exams. The courses emphasize system fundamentals, computer organization, and networks, as well as the fundamental concepts of computational thinking, the development of practical computational solutions, and programming. IB Computer Science courses also cover the applications and effects of the computer on modern society as well as the limitations of computer technology.
10160	Particular Topics in Computer Programming (Advanced Course)	These courses examine particular topics in computer programming other than those already described elsewhere in this classification system
10197	Computer Programming – Independent Study (Advanced Course)	Computer Programming—Independent Study courses, often conducted with instructors as mentors, enable students to explore topics related to computer programming. Independent Study courses may serve as an opportunity for students to expand their expertise in a particular specialization, to explore a topic in greater detail, or to develop more advanced skills
10198	Computer Programming – Workplace Experience (Advanced Course)	Computer Programming—Workplace Experience courses provide students with work experience in fields related to computer programming. Goals are typically set cooperatively by the student, teacher, and employer (although students are not necessarily paid). These courses may include classroom activities as well, involving further study of the field or discussion regarding experiences that students encounter in the workplace.
10199	Computer Programming – Other (Advanced Course)	Other Computer Programming courses.

Information Technology

Information Technology - Table 1 (Computer Science)

The following guidelines apply to the courses in this table:

- Coded as a **10 for Computer Science (CS)** to meet offer-and-teach requirement.
- Code as a **9 for CTE** if offer-and-teach reporting has been completed and CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10001	Introduction to Computer Technology (Basic Course)	Formerly known as Introduction to Computers, Introduction to Computer Technology courses introduce students to computers, including peripheral and mobile devices; the functions and uses of computer technology; the language used in the industry; possible applications of various computer-based technologies; and occupations related to computer technology hardware and software industries. These courses typically explore legal and ethical issues associated with computer technology use, as well as how changes influence modern society. Students may also be required to perform some computer technology operations.
10251	Computer Technology (Basic Course)	Computer Technology courses introduce students to the features, functions, and design of computer hardware and provide instruction in the maintenance and repair of computer components and peripheral devices.

Information Technology - Table 2 (CS-Related)

The following guidelines apply to the courses in this table:

- Code as a **9 for CTE** due to the specific focus of the content and CTE-IS requirements are met.
- Are considered as CS-Related for data collection purposes if the focus is on the use, “help desk” type tasks, installation and/or maintenance.

SCED Code	Course Title	Course Description
10003	Computer & Information Technology (Basic Course)	Computer and Information Technology courses teach students to operate and use computer and information technology, emphasizing their role as tools to communicate more effectively, conduct research more efficiently, and increase productivity. Course content includes the legal and ethical issues involved with computer technology and use.
10004	Computer Applications (Basic Course)	In Computer Applications courses, students acquire knowledge of and experience in the proper and efficient use of previously written software packages. These courses explore a wide range of applications, including (but not limited to) word-processing, spreadsheet, presentation, graphics, and database programs. Courses may also cover the use of electronic mail and online collaborative software.

SCED Code	Course Title	Course Description
10005	Business Computer Applications (Basic Course)	In Business Computer Applications courses, students expand their knowledge of and experience in the proper and efficient use of previously written software packages, particularly those used in business. Generally, these courses explore a wide range of applications including (but not limited to) word processing, spreadsheet, presentation, graphics, and database programs, and they may also cover topics such as electronic mail, desktop publishing, and telecommunications. Advanced topics may include integrated software applications, including printed, electronic, and Web publications; computer maintenance activities; and Web site development.
10009	Internet Skills (Basic Course)	Internet Skills courses introduce students to the World Wide Web and the Internet. Course content may include search techniques and algorithms, web browser utilization, website creation, and the history of the Internet.
10010	Computer Literacy (Basic Course)	Computer Literacy courses provide to students the knowledge and ability to use computers and technology efficiently. Typically, course content includes exposure to word-processing, spreadsheet, and presentation applications, but also may include the various uses of computers in modern society. Specific course content aligns with state standards to promote students' technological literacy.
10252	Computer Maintenance (Basic Course)	Computer Maintenance courses prepare students to apply basic electronic theory and principles in diagnosing and repairing personal computers and input/output devices. Topics may include operating, installing, maintaining, and repairing computers, network systems, digital control instruments, programmable controllers, and processors.
10253	Information Support & Services (Advanced Course)	Information Support and Services courses prepare students to assist users of personal computers by diagnosing their problems in using application software packages and maintaining security requirements.
10254	IT Essentials: PC Hardware & Software (Advanced Course)	IT Essentials: PC Hardware and Software courses provide students with in-depth exposure to computer hardware and operating systems. Course topics include the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Students learn to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. In addition, these courses introduce students to networking and often prepare them for industry certification.
10255	CISCO – The Panduit Network Infrastructure Essentials (PNIE) (Advanced Course)	CISCO—PNIE courses provide students with the knowledge to create innovative network infrastructure solutions. These courses offer students basic cable installer information and help them acquire the skills to build and use the physical layer of network infrastructure and develop a deeper understanding of networking devices.
10256	Particular Topics in Information Support Services (Advanced Course)	These courses examine particular topics in computer support, maintenance, and repair other than those already described elsewhere in this classification system.
10297	Information Support & Services – Independent Study (Advanced Course)	Information Support and Services—Independent Study courses, often conducted with instructors as mentors, enable students to explore topics related to computer information support and services. Independent Study courses may serve as an opportunity for students to expand their expertise in a particular specialization, to explore a topic in greater detail, or to develop more advanced skills.
10299	Information Support & Services – Other (Advanced Course)	Other Information Support and Services courses.

Information Systems

Information Systems - Table 1 (Computer Science)

The following guidelines apply to the courses in this table:

- Code as a **10 for Computer Science (CS).** Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10007	IB Digital Society (Advanced Course)	IB Digital Society courses prepare students to take the International Baccalaureate Digital Society exams and examine the interaction among digital systems, technology, and society. Course content uses inquiry processes to integrate concepts, content, and contexts around the impact of digital systems. In these courses, students also discuss and evaluate how digital systems affect individuals, relationships among people, and institutions and societies. This course was formerly called IB Information Technology in a Global Society.
10054	Data Systems Processing (Advanced Course)	Data Systems/Processing courses introduce students to the uses and operation of computer hardware and software and to the programming languages used in business applications. Students typically use BASIC, COBOL, and/or RPL languages as they write flowcharts or computer programs and may also learn data-processing skills.
10097	Management Info Systems – Independent Study (Advanced Course)	Management Information Systems—Independent Study courses, often conducted with instructors as mentors, enable students to explore topics related to management information systems. Independent Study courses may serve as an opportunity for students to expand their expertise in a particular specialization, to explore a topic in greater detail, or to develop more advanced skills.

Information Systems - Table 2 (CS-Related)

The following guidelines apply to the courses in this table:

- These courses will be coded as a **9 for CTE** due to the specific focus of the content if CTE-IS requirements are met.
- Are considered CS-Related for data collection purposes as the focus is on the application or use of information systems within business management contexts without emphasis/training on programming information systems.

SCED Code	Course Title	Course Description
10002	Computing Systems (Basic Course)	Computing Systems courses offer a broad exploration of the use of computers in a variety of fields. These courses have a considerable range of content, but typically include the introduction of robotics and control systems, computer-assisted design, computer-aided manufacturing systems, and other computer technologies as they relate to industry applications.
10008	Particular Topics in Computer Literacy (Advanced Course	These courses examine particular topics related to general computer literacy other than those already described elsewhere in this classification system, such as privacy issues or instruction in using a particular software application.
10055	Particular Topics in Management Information (Advanced Course)	These courses examine particular topics in management information systems other than those already described elsewhere in this classification system.

Networking

Networking - Table 1 (Computer Science)

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS.** Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10006	Telecommunications (Advanced Course)	Telecommunications courses address the growth in global communications and the emerging equipment and systems needed to successfully communicate in a global environment. These courses cover such topics as data communication protocol and systems, government regulations of the communications industry, the use of cost-effective and productive tools to transmit messages and data, and live synchronistic video exchanges. Other topics may include telecommunications terminology, tools and test equipment; customer service experience; and installation, repair, and delivery of telecommunications systems. In these courses, students may learn about such communication systems as e-mail, internet, or e-commerce, local area network (LAN), wide area network (WAN), voice transmission, cell phone technology, teleconferencing, and videoconferencing.
10101	Network Technology (Advanced Course)	Network Technology courses address the technology involved in the transmission of data between and among computers through data lines, telephone lines, or other transmission media, such as hard wiring, wireless, cable networks, and so on. These courses may emphasize the capabilities of networks, network technology itself, or both. Students typically learn about network capabilities and network technology, including the software, hardware, and peripherals involved in setting up and maintaining a computer network.
10107	Wireless Networks (Advanced Course)	Wireless Networks courses focus on the design, planning, implementation, operation, and trouble-shooting of wireless computer networks, including local access networks (LANs). These courses typically include a comprehensive overview of best practices in technology, security, and design.

Networking - Table 2 (CS-Related)

The following guidelines apply to the courses in this table:

- These courses will be coded as a **9 for CTE** due to the specific focus of the content if CTE-IS requirements are met.
- Are considered CS-Related for data collection purposes if the focus is on “help desk” type tasks, use, installation and/or maintenance.

SCED Code	Course Title	Course Description
10102	Networking Systems (Advanced Course	Networking Systems courses are designed to provide students with the opportunity to understand and work with hubs, switches, and routers. Students develop an understanding of LAN (local area network), WAN (wide area network), wireless connectivity, and Internet-based communications (including cloud-based computing), with a strong emphasis on network function, design, and installation practices. Students acquire skills in the design, installation, maintenance, and management of network systems that may help them obtain network certification.
10103	Area Network Design Protocols (Advanced Course)	Area Network Design and Protocols courses address the role of computers in a network system, the Open Systems Interconnection (OSI) model, structured wiring systems, and simple LAN (local area network) and WAN (wide area network) designs.
10104	Router Basics (Advanced Course	Router Basics courses teach students about router components, installation, and configuration using routers (e.g., CISCO) switches and the IOS (Internetwork Operation System). These courses also cover such topics as TCP/IP protocol, IP addressing, subnetting concepts, and network trouble-shooting.
10105	Netware Routing (Advanced Course	NetWare Routing courses introduce students to such topics as Virtual LANs (VLAN) and switched internetworking, comparing traditional shared local area network (LAN) configurations with switched LAN configurations, and they also discuss the benefits of using a switched VLAN architecture. These courses also may cover routing protocols like RIP, IGRP, Novell IPX, and Access Control Lists (ACLs).
10106	Wide Area Telecommunications and Networking (Advanced Course)	Wide Area Telecommunications and Networking courses provide students with the knowledge and skills to enable them to design Wide Area Networks (WANs) using ISDN, Frame-Relay, and PPP. These courses provide students with an understanding of internetworking and expertise in trouble-shooting and assessing the adequacy of network configurations to meet changing conditions. Topics may include also Local Area Network (LAN) segmentation.
10110	Microsoft Certified Professional (MCP) (Advanced Course)	Microsoft Certified Professional courses provide students with the knowledge and skills necessary to be employed as a network administrator in the latest Windows server-networking environment. Topics include installing, configuring, and trouble-shooting the Windows server. These courses prepare students to set up network connections; manage security issues and shares; and develop policies. Students are typically encouraged to take the MCP exam.
10111	Particular Topics in Networking Systems (Advanced Course)	These courses examine particular topics in networking systems other than those already described elsewhere in this classification system.
10112	Local Area Networking (Advanced Course)	Local Area Networking courses introduce students to local area networking (LAN) administration skills, operating systems, basic user skills, defining network objects, building a simple LAN topology applying principles of cabling, LAN switching, designing file systems, managing user access, securing file systems, working with directory service software security, implementing network printing, implementing login scripts, and managing user environments.

SCED Code	Course Title	Course Description
10147	Networking Systems – Independent Study (Advanced Course)	Networking Systems—Independent Study courses, often conducted with instructors as mentors, enable students to explore topics related to networking systems. Independent Study courses may serve as an opportunity for students to expand their expertise in a particular specialization, to explore a topic in greater detail, or to develop more advanced skills.
10148	Networking Systems – Work Experience (Advanced Course)	Networking Systems—Workplace Experience courses provide students with work experience in fields related to networking systems. Goals are typically set cooperatively by the student, teacher, and employer (although students are not necessarily paid). These courses may include classroom activities as well, involving further study of the field or discussion regarding experiences that students encounter in the workplace.
10149	Networking Systems – Other (Advanced Course)	Other Networking Systems courses.

Cybersecurity

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS)**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10016	PLTW Cybersecurity (Advanced Course)	Following Project Lead the Way's suggested curriculum, PLTW Cybersecurity courses introduce students to the tools and concepts of cybersecurity. In these courses, students are encouraged to understand vulnerabilities in computational resources and to create solutions that allow people to share computing resources while retaining privacy. These courses also introduce students to issues related to ethical computing behavior.
10020	Cybersecurity (Advanced Course)	Cybersecurity courses introduce students to the concepts of cybersecurity. These courses provide students with the knowledge and skills to assess cyber risks to computers, networks, and software programs. Students will learn how to create solutions to mitigate cybersecurity risks. These courses may also cover the legal environment and ethical computing behavior related to cybersecurity.
10108	Network Security (Advanced Course)	Network Security courses provide students with an understanding of network security principles and implementation. Course topics usually include authentication, the types of attacks and malicious code that may be used against computer networks, the threats and countermeasures for e-mail, Web applications, remote access, and file and print services. These courses may also cover a variety of security topologies as well as technologies and concepts used for providing secure communication channels, secure internetworking devices, intrusion detection systems, and firewalls.
10301	Computer Forensics (Advanced Course)	Computer Forensics courses address the preservation, identification, extraction, documentation, and interpretation of computer data. Topics covered may include legal concepts, evidence handling and preservation, file system structures, chain of custody, and identification and recovery of computer data. These courses may also cover the need to perform an investigation and how to collect evidence and analyze data.
10302	Cyber Crime (Advanced Course	Cyber Crime courses cover legal and ethical behavior associated with network security. Topics may include discussions about current common practices used to secure networks, how to test these networks, and presents methods that can be used to create a secure network environment. These courses may also cover the impact federal and state legislation has had on information technology practices.

Data Science

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
25052	Data Science (Advanced Course)	Data Science courses prepare students to think critically about data and develop the tools, techniques, and principles for reasoning about the world with data. These courses teach students to use scientific methods, data sampling and probability, algorithms, and systems to analyze structured and unstructured data. Students will use modern data analysis tools, including computer programming languages. Course topics may include big data, data cleaning, data modeling, data mining, artificial intelligence, correlation and causation, and bias and uncertainty.

Database

Database - Table 1 (Computer Science)

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Can be coded as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10053	Database Applications (Advanced Course	Database Application courses provide students with an understanding of database development, modeling, design, and normalization. These courses typically cover such topics as SELECT statements, data definition, manipulation, control languages, records, and tables. In these courses, students may use Oracle WebDB, SQL, PL/SQL, SPSS, and SAS and may prepare for certification.
10055	Particular Topics in Management Information (Advanced Course)	These courses examine particular topics in management information systems other than those already described elsewhere in this classification system.

Database - Table 2 (CS-Related)

The following guidelines apply to the courses in this table:

- These courses will be coded as a **9 for CTE** due to the specific focus and advanced nature of the content if CTE-IS requirements are met.
- Are considered CS-Related for data collection purposes if the focus is on access without learning database design principles or querying.

SCED Code	Course Title	Course Description
10051	Information Management (Advanced Course)	Information Management courses provide students with the knowledge and skills to develop and implement a plan for an information system that meets the needs of business. Students develop an understanding of information system theory, skills in administering and managing information systems, and the ability to analyze and design information systems.
10052	Database Management and Data Warehouse (Advanced Course)	Database Management and Data Warehousing courses provide students with the skills necessary to design databases to meet user needs. Courses typically address how to enter, retrieve, and manipulate data into useful information. More advanced topics may cover implementing interactive applications for common transactions and the utility of mining data.

Web/Software Development

Web/Software Development - Table 1 (Computer Science)

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10201	Webpage Design (Advanced Course)	Web Page Design courses teach students how to design websites by introducing them to and refining their knowledge of site planning, page layout, graphic design, and the use of markup languages—such as Extensible Hypertext Markup, JavaScript, Dynamic HTML, Document Object Model, and Cascading Style Sheets—to develop and maintain a web page. These courses may also cover security and privacy issues, copyright infringement, trademarks, and other legal issues relating to the use of the Internet. Advanced topics may include the use of forms and scripts for database access, transfer methods, and networking fundamentals.
10206	Mobile Applications (Advanced Course)	Mobile Applications courses provide students with opportunities to create applications for mobile devices using a variety of commercial and open source software. These courses typically address the installation and modification of these applications, as well as customer service skills to handle user issues.

Web/Software Development - Table 2 (CS-Related)

The following guidelines apply to the courses in this table:

- These courses will be coded as a **9 for CTE** due to the specific focus of the content if CTE-IS requirements are met.
- Are considered CS-Related for data collection purposes if the focus is on web/software design (graphics, UI, organizing information, etc.).

SCED Code	Course Title	Course Description
10202	Computer Graphics (Basic Course)	Computer Graphics courses provide students with the opportunity to explore the ways in which computers can produce visual imagery that communicates information and ideas effectively to multiple audiences using a variety of media and formats. Course topics may include principles and elements of design, image creation, image manipulation, and image types.
10203	Interactive Media (Advanced Course)	Interactive Media courses provide students with the knowledge and skills to create, design, and produce interactive digital media products and services. The courses may emphasize the development of digitally generated and/or computer-enhanced media. Course topics may include 3D animation, graphic media, web development, and virtual reality. Upon completion of these courses, students may be prepared for industry certification.
10204	Particular Topics in Media Technology (Advanced Course)	These courses examine particular topics in internet design and applications other than those already described elsewhere in this classification system.

SCED Code	Course Title	Course Description
10247	Media Technology – Work Experience (Advanced Course	Media Technology—Workplace Experience courses provide students with work experience in fields related to media technology. Goals are typically set cooperatively by the student, teacher, and employer (although students are not necessarily paid). These courses may include classroom activities as well, involving further study of the field or discussion regarding experiences that students encounter in the workplace.
10249	Media Technology – Other (Advanced Course)	Other Media Technology courses.

Game Design/Development

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
10205	Computer Gaming & Design (Advanced Course)	Computer Gaming and Design courses prepare students to design computer games by studying design, animation, artistic concepts, digital imaging, coding, scripting, multimedia production, and game play strategies. Advanced course topics include, but are not limited to, level design, environment and 3D modeling, scene and set design, motion capture, and texture mapping.

Robotics

Robotics - Table 1 (Computer Science)

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
21009	Robotics (Advanced Course)	Robotics courses help students develop and expand their skills and knowledge of robotics and related scientific and engineering topics. Course topics may include principles of mechanics, electronics, hydraulics, pneumatics, programmable logic controllers. These courses may emphasize the use of engineering principles to design and build robots, construct and connect sensors, and program robots in the programming language.

Robotics - Table 2 (CS-Related)

The following guidelines apply to the courses in this table:

- These courses will be coded as a **9 for CTE** due to the specific focus of the content.
- Considered CS-Related for data collection purposes if the focus is on the mechanical aspects of building, maintaining, and /or controlling robots.

SCED Code	Course Title	Course Description
13104	Mechatronics (Advanced Course)	Mechatronics courses provide students with instruction and experience in mechatronics, a multidisciplinary subject involving mechanics, electronics, control theory, and computer science to design and manufacture products. Mechatronic systems form the foundation of robotics, automation, and advanced manufacturing (such as 3D printing). These courses typically expose students to the theoretical basis of mechatronics in addition to applying these theories to hands-on projects.

AI & Machine Learning

The following guidelines apply to the courses in this table:

- Can be coded as a **10 for CS**. Though it can be coded **10 for CS**, the content is too advanced to meet the offer-and-teach requirement.
- Code as a **9 for CTE** if CTE-IS requirements are met.
- Are considered as Computer Science for data collection purposes if the focus is on understanding different types of hardware and software and how they work together.

SCED Code	Course Title	Course Description
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