Last updated: May 10, 2024
NEW ITEMS ARE NOTED IN RED

Background Context

Over the last 8 years, the CS4RI initiative has focused on providing CS curriculum and professional development to all RI schools, building educator capacity, developing rigorous and sustainable K-12 CS pathways, and building demand for CS education. CS4RI has also helped support schools and districts grow their CS programs through planning workshops and participation in a federal Education Innovation Research grant. Currently, there are 32 CTE IT CS programs at high schools across the state, as well as many more local CS pathways for students to access. Rhode Island also offers students Computer Science course opportunities through its All Course Network.

On November 15, 2022, the RI Council on Elementary and Secondary Education approved Readiness-Based Graduation Requirements for all RI students beginning with the graduating Class of 2028. RIDE's adoption of Readiness-Based Graduation Requirements presents an opportunity for increasing engagement through real-world, relevant learning experiences in all RI K-12 schools. Specifically, this ensures Rhode Island students graduate high school prepared with the knowledge and skills necessary for the 21st century, which includes graduating proficient in Computer Science. The adoption of Readiness-Based Graduation Requirements set the default expectation that all students will graduate proficient in computer science by earning, at minimum, 0.5 credits of computer science during their secondary school experience (middle or high school) for high school graduation purposes.

Computer Science Data Collection

Data collection around computer science programs is critical to inform programmatic decisions and to develop new baselines, determine LEAs needs and track the impact of investments. This will require accurate information on both course offerings and the demographics of students participating in courses. The data collection for Computer Science implementation is designed to have minimal demand on LEA's resources by utilizing TCS data and the CS4RI partner code in the SECTION elements. Completion of the CS4RI partner code will require good communication with the data managers from school personnel to ensure accuracy.

Frequently Asked Questions

How is CS4RI Data Collected?

The **Teacher / Course / Student** (TCS) system already in place allows for accurate data collection. RIDE is counting stand-alone courses with SCED codes and CS4RI partner codes entered in the **SECTION file** in the TCS data collection. For courses offered across the grade levels integrated into various content areas, there are integrated Partner codes that can be used.

What TCS - COURSE Data Elements do I need to focus on?

RIDE primarily determines CS4RI implementation based on the **SECTION information**. (See Notes on SECTION Data Elements), but SCED codes are also used. Based on past practice by districts, the CS4RI SCED Codes are typically one of the following listed in the table below. RIDE strongly encourages districts to utilize the table as guidance. LEAs also need to add a partner code in the SECTION data elements. The appropriate SCED Code is best determined by the district. Other possible SCED codes for CS courses can be found here. The **Local Course ID** and the **Local Course Title** are assigned at the local level.

SCED Course Title	SCED Code	SCED Code Description
Computer Mathematics with Algebra	02156 **OR** **Algebra SCED CODE**	Intended for students who have attained the objectives of Algebra I, Computer Mathematics with Algebra courses include a study of computer systems and programming and use the computer to solve mathematics problems.
Computer Science Principles	10011	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. **Note: This is the code to use for the RI-CSE proficiency course.**
Exploring Computer Science	10012	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. **Note: This is the code to use for URI's Intro to Computing and Data Science course.**
PLTW Computer Science Essentials	10013	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.

PLTW Computer Science A	10014	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.
PLTW Computer Science Principles	10015	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.
PLTW Cybersecurity	10016	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.
AP Computer Science Principles	10019	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 abstraction, communication of information using data, algorithms, programming, and the Internet, global impact.
Cybersecurity	10020	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.
Computer Science Discoveries	10021	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.
COMPUTER SCIENCE (PRIOR-TO-SECONDARY)	10022	Computer Science (prior-to-secondary) courses cover basic principles of computer science. In these courses, students learn how to develop and follow basic algorithms, collect and organize data, troubleshoot hardware and software issues, and think critically about online safety and responsibility. Topics may also include modeling network and

		transmission protocols; transforming data using computational tools; iteratively developing, testing, and documenting programs; computational thinking; and addressing bias and accessibility in the design and development of technologies. Courses may include learning about emerging technologies. **Note: This code should be used for any stand-alone class at the K-5 level.**
AP Computer Science A	10157	Following the College Board's suggested curriculum designed to mirror college-level computer science courses, AP Computer Science Applications 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.
Data Science	22161	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. **Note: This code should be used for the Data Science, AI, and You course.**
Data Science Applications	22162	Data Science Applications courses emphasize the practical uses of data science concepts and the transformation of data to knowledge. Students will explore real-world datasets and answer questions using hands-on analysis, project-based learning, and programming software.
Computer Programming – Workplace Experience	10198	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.
Computer Programming – Other	10199	Other Computer Programming courses.

Robotics	21009	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.
IB Computer Science	10159	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.

There are other SCED codes that may be more appropriate for specific courses. They can be found under the Computer Programming Subject at necs.ed.gov/scedfinder. You can also visit cs4ri.org/hsgrant for SCED code information.

What TCS – SECTION Data Elements do I need to focus on?

LEAs should identify stand-alone full year or semester-long Computer Science Courses with a **CS4RI Partner Code from the list below in the SECTION field, "CS4RIPARTNERCODE".** Use the information found in the table below for the **CS4RI Partner Codes**. The **Local Section ID** and the **Local Course ID** are assigned at the local level.

CS4RI Partner Codes			
Item Value	Value Name	Definition / Description	Typical Grade Band
BOOTSTRAP	Bootstrap	CS4RI Professional Development Partner offering Computer Science course content integrated into existing algebra course	Grades 8-10
TEALS	TEALS	CS4RI Professional Development Partner offering Intro to Computer Science Programming and AP Computer Science Applications	Grades 9-12
URI	URI	CS4RI Professional Development Partner offering Intro to Computing and Data Science	Grades 9-12
URICODE	URI / Code.org	CS4RI Professional Development Partner offering AP Computer Science Principles	Grades 9-12
URIDISC	URI / Code.org Discoveries	CS4RI Professional Development Partner offering Code.org Computer Science Discoveries	Grades 6-9 Grades 9-12
PLTW-G	PLTW Gateway	CS4RI Professional Development Partner offering Gateway – Design and Modeling, Automation and Robotics, App Creator, and Computer Science for Innovators and Makers	Grades 6-8

PLTW-E	PLTW-Essentials	CS4RI Professional Development partner offering Computer Science course covering the major topics, big ideas, and computational thinking practices used by computing professionals to solve problems.	Grades 6-8
PLTW-CSP	PLTW Computer Science Principles	CS4RI Professional Development Partner offering AP Computer Science Principles	Grades 9-12
PLTW-CSA	PLTW Computer Science A	CS4RI Professional Development Partner offering AP Computer Science A	Grades 9-12
RI-CSE	RI-CS Exploration	CS4RI developed course to meet the CS proficiency requirement	Grades 6-12
LOCAL	LEA curriculum	Locally developed curriculum specifically addressing CS proficiency requirement	Grades 6-12
CS4RI-WBL	CS4RI Work-Based Learning	CS4RI Professional Development Partner, URI, offering project-based learning computer science course	Grade - 10
OTHER	Other	Other CS course or curriculum not listed	Grades 6-12

How is it reported when CS content is integrated into a course rather than delivered in a stand-alone course?

CS content can often be integrated into core classwork rather than delivered as a stand-alone course. Identify integrated computer science programs with an **Integrated Computer Science Program Code(s) in the "INTCSPROGRAMCODE" field in TCS SECTION data element for the core class.** Curriculum which could be delivered through an integrated model are listed in the table below.

Integrated CS Program Code			
Item Value	**Value Name**	**Definition / Description**	Typical Grade Band
CS4RI2101	Code.org - CS Fundamentals	CS4RI - CS Fundamentals integrated into (Math, ELA, Sci, SS, Library, etc.) Instructional units comprised of 12 - 24 lessons integrated across K-5 curriculum in which students learn CS fundamentals by engaging in both online and offline CS activities.	Grades K-5
CS4RI2102	Copernicus - Creative Computing with Scratch Jr.	CS4RI - Copernicus - Creative Computing with Scratch Jr. K-2 integrated into (Math, ELA, Sci, SS, Library, etc.) instructional units integrated into existing curriculum in which students use a drag and drop programming language to code, create, and share interactive stories, animations, games, music, and more as they learn problem solving and other fundamental CS concepts.	Grades K-2

CS4RI2103	Coding as Another Language Curriculum - Scratch Jr.	CS4RI – Coding as Another Language –Scratch Jr. K-2 Utilizing the Coding as Another Language Curriculum, students learn fundamental CS concepts through 24 lessons that include unplugged activities and the plugged activities with the Scratch Jr. App. Curriculum can be delivered as part of Math, ELA, Sci, SS, STEAM/STEM or Library classes by classroom or special area teacher)	Grades K-2
CS4RI2140	PLTW - Launch	CS4RI - PLTW - Launch integrated into (Math, ELA, Sci, SS, Library, etc.) 8 instructional modules totaling ~80 hours of content integrated across grades K-5. PLTW's entire K-12 CS experience involves interdisciplinary learning; exposing students not only to computer science, but to various disciplines and subjects, helping them understand how computer science relates to the world around them.	Grades K-5
CS4RI2201	Copernicus - Creative Computing with Scratch	CS4RI - Copernicus - Creative Computing with Scratch integrated into (Math, ELA, Sci, SS, Library, etc.) instructional units integrated into existing curriculum in which students use a drag and drop programming language to code, create, and share interactive stories, animations, games, music, and more as they learn problem solving and other fundamental CS concepts.	Grades 3-8
CS4RI2202	URI - CS Discoveries	CS4RI - Six instructional modules distributed in courses in 6-8th grade. Based on code.org course. Modules include Problem Solving, Internet, Programming, Design, Data, Physical Computing.	Grades 6-8
CS4RI2206	PLTW - Gateway Automation and Robotics	PLTW Gateway integrated unit integrated in grades 6-8; each unit is 45 minutes/45 days of instruction in which students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms	Grades 6-8
CS4RI2207	PLTW - Gateway App Creator	PLTW Gateway integrated unit integrated in grades 6-8; each unit is 45 minutes/45 days of instruction exposing students to computer science by computationally analyzing and developing solutions to authentic problems through mobile app development and conveying the positive impact of the application of computer science to other disciplines and to society.	Grades 6-8
CS4RI2208	PLTW - Gateway CS for Innovators and Makers	PLTW Gateway integrated unit integrated in grades 6-8; each unit is 45 minutes/45 days of instruction allowing students to discover computer science concepts and skills by creating personally relevant, tangible, and shareable projects. Students learn about programming for the physical world by blending hardware design and software development. They design and develop a physical computing device, interactive art installation, or wearable, and plan and develop code for microcontrollers that bring their physical designs to life.	Grades 6-8

CS4RI2302	Bootstrap - Data Science	CS4RI - 20 hour instructional modules integrated in existing course. Bootstrap: Data Science teaches students to view programs as questions we ask of data. Students form their own questions about the world around them, and learn to analyze data critically and carefully to find answers to their own compelling problems.	Grades 9-12
CS4RI2210	RI-CS Exploration	CS4RI developed course to meet the CS proficiency requirement being delivered modularly, integrated into other courses.	Grades 6-12
CS2000	LEA curriculum	Locally developed curriculum specifically addressing CS proficiency requirement being delivered modularly, integrated into other courses.	Grades 6-12

Where can the Data Manager find TCS specifications?

Visit the RIDE website for more information on the Teacher Course Student specifications, appropriate submission process, additional data element descriptions, validations, and updates. It is recommended that the Data Manager communicate closely with school leaders (Superintendents and Principals) to determine key CS4RI point people within each district to confirm courses requiring CS4RI data codes.

Does a technology class count for CS4RI?

No, Computer Science is more than coding or a technology class with a focus on applications such as PowerPoint, Word, and Excel. Unless the technology class is embedded with the study of Computer Science, it does not count. According to the RI State Computer Science Standards, Computer Science is the study of computers and algorithmic processes, including their principles, their hardware and software designs, their implementation, and their impact on society. A 0.5 credit in Computer Science is now a graduation requirement (beginning with the Class of 2028). Guidance on this credit requirement can be found here.

What if the curriculum being used is not listed?

RIDE is looking at courses that utilize curriculum from our Professional Development Partners and are delivered either in a stand-alone or integrated fashion. If districts are using other curriculum or a locally developed curriculum, please use the other code or the local code for CS proficiency courses. Please reach out to cs4ri@ride.ri.gov to share what curriculum you are using.

Where do I go for more information?

Visit http://CS4RI.org for information about the professional development providers, opportunities for schools, news & events. Contact Brittany Brown (Brittany.Brown@ride.ri.gov) for additional information.