Computer Science Education

Frequently Asked Questions

A list of FAQ's was compiled based on feedback from throughout the state. This FAQ is divided into five different areas: Senate Bill 200, Nevada Department of Education, Teacher Certification and Training, Elementary CS and CET, and Secondary CS and CET. If you would like to add a question to this document, please send it to Cindi Chang, EPP over Computer Science at the Nevada Department of Education.

Definitions

Question	Answer
What is the difference between computer literacy and computer science? Aren't they both computer education and technology?	**Computer literacy**, sometimes referred to as *computer technology* involves learning how to **use** computers in society - e.g. learning digital citizenship, learning to type on a keyboard, and learning how to use productivity tools such as word processing, spreadsheets, and presentation software. Computer Science involves learning the skills necessary to **create** artifacts using computers and computer science - e.g. learning how to create and use algorithms, learning how computer systems and networks are designed, data collection and storage, critical thinking and problem solving, programming, and ways to impact society through computing. Students with a knowledge base in computer science can use their *computational thinking* skills to create software tools, apps, websites, and future technologies. In Nevada, Computer Education and Technology is the overarching designation that houses both the Computer Technology standards and the Computer Science standards. These disciplines, though different, combine to give all students the necessary tools to be digitally literate citizens today and in the future.

What does CT stand for? What is CET?	CT stands for Computational Thinking. CET stands for Computer Education and Technology.
Is Computer Science part of STEM?	The STEM Education Act of 2015 expanded the definition of STEM - science, technology, engineering, and mathematics - to include computer science. [STEM Education Act of 2015](#)

Senate Bill 200

Question	Answer
Is the funding going to be administered as a regular reimbursement grant? If not, instructions on how we request the funds, whether we need to send a budget to somebody or have local control. When are the funds going to be released?	Grants contact person: Sondra Neudauer NDE CS Contact: Cindi Chang FY 18 Process: Funding was allocated and sent out to Clark, Washoe, and rural/charters in December, 2017. Expenditures must be pre-approved by the EPP at NDE prior to any purchasing and a budget/narrative plan must be submitted. Once approved, and purchases have been made, then a Request for Funding form must be submitted to the Grants contact person so that reimbursement may be made. All expenditures must be completed by June 30, 2018. FY 19 Process: Beginning of April, 2018 - Applications for rural/charters go out. End of April, 2018 - Rural/charters applications due to EPP at NDE, including budget and narrative; Clark & Washoe budget and narrative due to EPP at NDE May, 2018 - Awards sent to districts/charters June, 2018 - Districts may begin submitting funding requests for approval to EPP at NDE July, 2018 - Approved expenditures may begin and RFA forms may be submitted to Grants and EPP. June 30, 2019 - End of allocation period
Who is part of the CS sub committee	Computer Science subcommittee members
For the requirements set to take place beginning July 2018, what work has been done to date to prepare their implementation?	(S.B. 200 - Sections 3 & 5) Districts and charters are currently putting processes in place (curriculum, resources, etc) to address computer technology education in elementary school AND to address the addition of computer science and computational thinking in the ½ credit HS computer education technology course. Senate Bill 200 funding has been allocated to assist them in this process. (S.B. 200 - Section 4b) The Nevada Department of Education and the Computer

	Science Subcommittee of the Governor's STEM Advisory Council have a process in place by which they will review all instruction and make recommendations to the State Board AND post the recommended instructional resources on the NDE website.
Senate Bill 200 states that "students MUST pass Algebra and Geometry" but does this specifically imply that is only for student to use CS as a 4th math credit?	Senate Bill 200 allows for an approved Computer Science Course: AP CS Principles, AP CS A, or CTE Computer Science pathway course (no other CTE pathway substitutions), to count for a 3rd year science OR 4th year math. Only one credit may count. A student may count a CS course for their 4th year of math if they have passed their Algebra 1 and Geometry courses at some point in their high school experience.
Can a student take AP Computer Science Principles as a Freshman?	Absolutely. This is encouraged so they can use the principles taught of computer science, problem solving, and computational thinking, in other subject areas throughout the rest of their high school experience.
If an eighth grader has Algebra 1 as their math class, can they take AP CS Principles at the same time?	No. Advanced Placement courses are recognized as college credit (at the discretion of the college) and must be taken in high school.
What is currently approved as a CS course in high school?	The CTE Course Catalog outlines the sequence for 2018-19. Changes for 2019-20 will be requested Spring of 2018.
Can the "rigorous CS class" for a math/science credit be the same class as the current ½ credit?	No.
What is the criteria that will be used to evaluate a CS course for approval (Section 8b)?	The Computer Science subcommittee of the Governor's STEM Advisory Council will make recommendations to the State Board regarding the evaluation of the courses to be approved. First and foremost, the proposed CS course must align with the Nevada K-12 computer science standards. The effective date of 2020 was given to allow time for the aligning of systems to begin accepting proposed courses for approval.
What does this mean: "The Department of Education, in consultation with the STEM Advisory Council (Computer Science Sub	Per Senate Bill 200 legislation, the Computer Science subcommittee of the Governor's STEM Advisory Council is the advisory body

Committee) will review all instruction and make recommendations to the School Board Section 4b?"	for computer science education initiatives in the state. One of the duties outlined for this council is to review the curriculum of instruction to be used by districts, along with the Nevada Department of Education, and make recommendations to the State Board on their approval as to satisfying the requirements in the K-12 Computer Science Standards.
How will it work if a CS course counts as a math/science credit for millennium scholarship in 2017 (Section 7) if it won't count toward college admissions until 2020 (Section 6) if the state approves the course, which is not until 2022?	Effective now, a student may use one of the approved Computer Science courses (as stated above) towards either a 4th math credit OR a 3rd science credit and that will satisfy the Millennium Scholarship requirements (i.e. college scholarship). The colleges and universities have until 2020 to get their systems in line to begin accepting these approved Computer Science courses towards college admissions as recognized replacements for a 4th year math or 3rd year science credit on student transcripts. There are current approved courses, as stated above, and additional courses in computer science that may come up in the future must be vetted by the Department of Education in consultation with the STEM Advisory Council (CS subcommittee) and brought before the State Board for approval, just as these current ones have been.
Before beginning 6th grade, all students are required to receive instruction in computer education and technology as approved by the state board, so does this mean schools could address all of the standards, in say, one special class at one grade level?	How this requirement is implemented is up to either the district or each individual school and their resources - teachers, computers, lab time, etc. ***Computer Education Technology***: **Productivity tools -** Some elementary schools have special rotations, such as art and PE each week. If a school chooses to incorporate a rotation to cover the computer education and technology requirements then that would be appropriate. The goal is that when our students are taking their SBAC's and other online exams, that we are testing them on their content knowledge and not on their computer skills or lack thereof. This lack of computer usage skills for

	some students is preventing an equitable testing environment for *all* students that must be corrected. This instruction prior to 6th grade will also help our students be more successful in middle and high school, as they continue to use applications and other productivity tools . **Computer Science -** Elementary schools should incorporate the computer science standards within each classroom, since they tie in with other NVACS's The critical thinking, problem solving, and computational thinking skills our students will acquire over time through these standards will help them be more successful in all subject areas. ***Equity of access to all students should be the priority for CS.***
Do we know what the percentage of instructional time will be required for CS in the current ½ credit courses?	The State Board has not made a decision on this matter, however the recommendation may be 50% instruction on productivity tools and other computer technology usage, and 50% on computer science and computational thinking
If a ½ CS credit is already a graduation requirement, how will the requirement for all high schools to offer a CS course by 2022 need to be different?	The ½ credit graduation requirement will have a percentage of productivity tool instruction and a remaining percentage of computer science (CS) and computational thinking (CT) instruction. There is not enough time in that 18 week course to cover the high school computer science standards. High schools have until 2022 to offer a course that would satisfy those 9-12 CS standards.
Is AP CS Principles an approved course already?	Yes

Nevada Department of Education

Question	Our Answer
Is the funding going to be administered as a regular reimbursement grant? If not, instructions on how we request the funds, whether we need to send a budget to somebody or have local control.	Grants contact person: Sondra Neudauer NDE CS Contact: Cindi Chang FY 18 Process: Funding was allocated and sent out to Clark,

When are the funds going to be released?	Washoe, and rural/charters in December, 2017. Expenditures must be pre-approved by the EPP at NDE prior to any purchasing and a budget/narrative plan must be submitted. Once approved, and purchases have been made, then a Request for Funding form must be submitted to the Grants contact person so that reimbursement may be made. All expenditures must be completed by June 30, 2018. FY 19 Process: Beginning of April, 2018 - Applications for rural/charters go out. End of April, 2018 - Rural/charters applications due to EPP at NDE, including budget and narrative; Clark & Washoe budget and narrative due to EPP at NDE May, 2018 - Awards sent to districts/charters June, 2018 - Districts may begin submitting funding requests for approval to EPP at NDE July, 2018 - Approved expenditures may begin and RFA forms may be submitted to Grants and EPP. June 30, 2019 - End of allocation period
Are teacher education programs throughout Nevada informing the graduates of this new requirement for 2018?	Processes are being put in place to inform change in the teacher education programs at the NSHE level.
Is there going to be a requirement for teacher re-certification to have a course in this? What are the licensing requirements to teach CS?	Licensing regulation updates are in progress. Elementary teachers will have no additional licensing or endorsement.
What about homeschooled students?	We encourage all students in Nevada to study computer science and computational thinking following the approved K-12 Computer Science Standards in order to provide them with the necessary skills to ensure future success in a career path of their choice, virtually all careers. However, the educational plan of a homeschooled student is up to the child's parent inclusive of the subject areas listed in NRS 388D.050.
Who is part of the CS sub committee	Computer Science subcommittee members
Is Computer Science part of STEM?	The STEM Education Act of 2015 expanded the definition of STEM - science, technology,

	engineering, and mathematics - to include computer science. STEM Education Act of 2015
How will the CS for All piece be measured, particularly in the elementary schools?	Presently, measures of CS education in all grade levels consist of administrative supervision, to include teacher lesson plans and classroom observation. Future measurements will be developed at the state level.
How will this measurement affect schools' accountability?	The first step in the process was to develop approved K-12 Computer Science Standards. Professional development of teachers is the next highest priority to ensure broadened implementation of computer science and computational thinking at all grade levels. Computer science is everywhere. The goal is to give our students the necessary skills in computational thinking, critical thinking and problem solving that are found in both technical and non-technical career paths. All industries require aptitude in approaching complex problems, breaking them into smaller, manageable pieces, and finding solutions in a logical manner. Measurements to determine effective instruction and learning are under consideration.
I'm a NR21 school. How does this fit with my 1:1 program?	NCLabs has software available on the NR21 schools. Please contact Pavel Solin for more information about training and support. There are many other computer science education resources available to support your NR21 schools. Please visit STEMHub website - CS pages for additional resources.
Do we know what the percentage of instructional time will be required for CS in the current ½ credit courses?	50% instruction on productivity tools and other computer technology usage 50% on computer science and computational thinking
Are the Computer Science standards that are in draft on the NDE website going to be merged with the Computer Technology standards on the website or will they still be considered separate standards/areas?	The 2010 Computer Technology standards that are currently on the NDE website are up for revision this year. The writing team that will be assembled will make the determination to either merge the two or keep them separate.

	Both the *Computer Technology* standards (usage) and the *Computer Science* standards (creation) are under the "umbrella" called **Computer Education and Technology**.
If a ½ CS credit is already a graduation requirement, how will the requirement for all high schools to offer a CS course by 2022 need to be different?	The ½ credit graduation requirement is 50% productivity tool instruction and 50% computer science (CS) and computational thinking (CT). There is not enough time in that 50% (CS/CT) to cover the high school computer science standards. High schools have until 2022 to offer a course that would satisfy those 9-12 CS standards - such as Computer Science Principles, CS CTE courses, or others that will be approved in the future.

Teacher Certification and Training

Question	Answer
Are teacher education programs throughout Nevada informing the graduates of this new requirement for 2018?	Processes are being put in place to inform change in the teacher education programs at the NSHE level.
Is there going to be a requirement for teacher re-certification to have a course in this? What are the licensing requirements to teach CS?	Licensing regulation updates are in progress. Elementary teachers will have no additional licensing or endorsement.
Where can I get trained on CS Principles?	The state Regional Professional Development Program is ready and available to provide training in computer science education for teachers at all grade levels. Contact Frank Mathews or Glenn Krieger for more information on available trainings.
Elementary: What training is available to the instructor?	The state Regional Professional Development Program is ready and available to provide training in computer science education for teachers at all grade levels. Contact Frank Mathews or Glenn Krieger for more information on available trainings. State trainings will begin Spring, 2018.
Elementary: Will the instructor need to be licensed as a teacher, CTE, para, or have a certificate of some kind?	Elementary licenses cover all subjects, so, an additional endorsement is not needed, however teacher professional development is recommended.
I'm a NR21 school. How does this fit with my 1:1 program?	NCLabs has software available on the NR21 schools. Please contact Pavel Solin for more information about training and support. There are many other computer science education resources available to support your NR21 schools. Please visit STEMHub Website - CS pages for additional resources.
Do you have to have an endorsement to teach Computer Science at the junior high/middle school level? High school level?	Current licensing endorsements of record are the ones needed to teach computer science courses, HOWEVER, proposed licensing updates are in progress. If a teacher holds an active endorsement and is currently teaching computer classes, they will **not** have to update their endorsement. Professional development is suggested as

	needed for that teacher to be current with the changes to the standards.
	Elementary teachers will have no additional licensing or endorsement requirements, however professional development in computer science and computer ed technology is ***highly recommended.*** Contact [Frank Mathews](#) or [Glenn Krieger](#) for more information on available trainings.

New Middle/junior high teachers of CS and the ½ credit course:
After licensing endorsement revisions go through, a middle/junior high teacher *new to teaching computer science* would need a 'Concepts of Computer Science, Computational Thinking, and Technology" endorsement (9 credits)

New high school teachers of the ½ credit course or Computer Science Principles:
After licensing endorsement revisions go through, a high school teacher *new to teaching computer science* would need a 'Concepts of Computer Science, Computational Thinking, and Technology" endorsement (9 credits)

New high school teachers of the CTE Computer Science pathway:
After licensing endorsement revisions go through, a high school teacher *new to teaching computer science* would need an 'Advanced Computer Science" endorsement (12 credits) OR a 3-cr methods course and pass the Computer Science Praxis exam.

The two *proposed* licensing endorsements are meant to build upon each other. |
| Do you have to attend code.org training in Principles or Discoveries to be able to teach the courses for high school credit? Or can you just use the free resources and teach the course? | The CS Principles and CS Discoveries curriculum by Code.org is free as well as their training, which may help districts get started with implementing computer science education in their schools. Note: other curriculum that meets the new K-12 Computer Science standards will be reviewed as they are submitted to the state. |

	The benefit of attending the CS Principles or CS Discoveries trainings with RPDP is 1.) These trainings will count towards the credit requirements for teacher endorsement, 2.) The teacher will become part of a statewide cohort of teachers who mentor each other and share resources, 3.) This is an approved training by the College Board for the teaching of CS Principles, and 4.) The resources and best practices shared in the trainings are invaluable for teachers new to this subject area.

Elementary CS and CET

Question	Answer
What about homeschooled students?	We encourage all students in Nevada to study computer science and computational thinking following the approved K-12 Computer Science Standards in order to provide them with the necessary skills to ensure future success in a career path of their choice, virtually all careers. However, the educational plan of a homeschooled student is up to the child's parent inclusive of the subject areas listed in NRS 388D.050.
Elementary: What is to be taught in the class?	In elementary school, the standards state that students may start with unplugged activities, essentially talk about concepts of computers without programming. By the end of elementary school, students increasingly move toward using computational concepts on computers.
Elementary: Will a computer lab/room be required and should it be?	The standards do not require a specific lab room be used. The teacher can decide how best to serve their students.
Elementary: What programs should be taught? - computer literacy AND computer science/computational thinking Is there a computer language they should be teaching?	The standards provide broad leeway for what teachers use in terms of programs. From a computer literacy perspective, using the *productivity tools* such as spreadsheets or word processing systems is rational. For computer science, teachers may choose any age appropriate programming languages or technologies that they think will best serve their students.
Elementary: What training is available to the instructor?	The state Regional Professional Development Program is ready and available to provide training in computer science education for teachers at all grade levels. Contact Frank Mathews or Glenn Krieger for more information on available trainings. State trainings will begin Spring, 2018.
Elementary: Will the instructor need to be licensed as a teacher, CTE, para, or have a certificate of some kind?	Elementary licenses cover all subjects, so, an additional endorsement is not needed, however teacher professional development is recommended.

| Before beginning 6th grade, all students are required to receive instruction in computer education and technology as approved by the state board, so does this mean schools could address all of the standards, in say, one special class at one grade level? | How this requirement is implemented is up to either the district or each individual school and their resources - teachers, computers, lab time, etc.

Computer Education Technology<u>:</u>
Productivity tools -
Some elementary schools have special rotations, such as art and PE each week. If a school chooses to incorporate a rotation to cover the computer education and technology requirements then that would be appropriate. The goal is that when our students are taking their SBAC's and other online exams, that we are testing them on their content knowledge and not on their computer skills or lack thereof. This lack of computer usage skills for *some* students is preventing an equitable testing environment for *all* students that must be corrected. This instruction prior to 6th grade will also help our students be more successful in middle school, entering with prior knowledge in technology usage.

Computer Science -
Elementary schools should incorporate the computer science standards within each classroom, since they tie in with other NVACS's The critical thinking, problem solving, and computational thinking skills our students will acquire over time through these standards will help them be more successful in all subject areas. ***Equity of access to all students should be the priority for CS.*** |

Secondary CS and CET

Question	Our Answer
What about homeschooled students?	We encourage all students in Nevada to study computer science and computational thinking following the approved K-12 Computer Science Standards in order to provide them with the necessary skills to ensure future success in a career path of their choice, virtually all careers. However, the educational plan of a homeschooled student is up to the child's parent inclusive of the subject areas listed in NRS 388D.050.
If students take Computer Science Principles, what course will follow in the CTE Pathway? CS 1 or CS 2?	The CTE Course Catalog outlines the sequence for 2018-19. Changes for 2019-20 will be requested Spring of 2018.
Where can I get trained on CS Principles?	The state Regional Professional Development Program is ready and available to provide training in computer science education for teachers at all grade levels. Contact Frank Mathews or Glenn Krieger for more information on available trainings.
If students have CS Discoveries (Code.org) in middle school do I want to offer them Exploring Computer Science (Code.org) in high school too?	No. These Code.org courses are very similar and it would be redundant for students to take both of them.
I'm a NR21 school. How does this fit with my 1:1 program?	NCLabs has software available on the NR21 schools. Please contact Pavel Solin for more information about training and support. There are many other computer science education resources available to support your NR21 schools. Please visit STEMHub Website - CS pages for additional resources.
Do we know what the percentage of instructional time will be required for CS in the current ½ credit courses?	50% instruction on productivity tools and other computer technology usage 50% on computer science and computational thinking
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	Computer Science standards will be reviewed as they are submitted to the state. The benefit of attending the CS Principles or CS Discoveries trainings with RPDP is 1.) These trainings will count towards the credit requirements for teacher endorsement, 2.) The teacher will become part of a statewide cohort of teachers who mentor each other and share resources, 3.) This is an approved training by the College Board for the teaching of CS Principles, and 4.) The resources and best practices shared in the trainings are invaluable for teachers new to this subject area.
Is CS Principles an approved course already?	Yes