

# TechTalk

Professional Development

Offered in Partnership with



## “Full STEAM Ahead with Coding in the Elementary Classroom” EDCI 643-024

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### Background:

How do we develop the 21st Century problem solver? One way is through coding or computer programming, writing a set of instructions that a computer understands so it will perform a task. With jobs that require the need for computer programming, it is never too early to introduce students to a variety of computer science concepts. This course will provide you with an understanding of the basics of computational thinking and programming. You will have the opportunity to examine a variety of resources and programs that support coding and computational thinking in the classroom. Foster creativity, collaboration and curiosity in the classroom in the context of learning fundamental computer science concepts.

**Target Audience:** K-5 Elementary Educators

**Graduate Credit:** 3 credits (50 contact hours)

### Course objectives:

Upon successful completion of this course, the learner will:

1. Examine various computer science standards and identify national resources that support computer science education in K–5.
2. Identify state and local initiatives that support computer science programs.
3. Explore resources for teaching computer science concepts for either a technology based or non-technology-based classroom.
4. Explore various online communities for computer science resources.
5. Plan for introducing new knowledge and tools through inquiry or design
6. Plan and create student projects/artifacts that support computational thinking, algorithmic thinking and design
7. Develop scoring rubrics that will be used to assess student products.

Last updated 11/11/2018

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**Methodology:**

This course is taught through a distance-learning format, supported through an assortment of readings, videos, assignments, discussions, and assessments. Participants will need to have a computer with Internet access.

**Course Requirements:**

The course has four separate modules. Each module must be completed prior to completing the next module. Each module consists of readings and videos, an assessment, a discussion board, and an assignment.

**Module 1: “Fundamentals of Computer Science”**

**Module 2: “Coding and Computer Science Resources”**

**Module 3: “Planning and Designing Instruction”**

**Module 4: “Evaluation and Next Steps”**

**Final Grade Range:**

- A 93-100%
- A- 90-92%
- B+ 87-89%
- B 83-86%
- B- 80-82%
- C+ 77-79%
- C 73-76%
- C- 70-72%
- F Below 70

\*You must attempt every assignment in order to receive a final grade.

# “Full STEAM Ahead with Coding in the Elementary Classroom” Module 1

## Course Completion Checklist w/ Grading Rubric:

You can check your grades by clicking on “Tools” and “My Grades”.

Module 1: “Fundamentals of Computer Science”			Points Earned	
Videos/Readings	<ul style="list-style-type: none"> <li>● What is Computational Thinking?</li> <li>● Why We Teach Coding in Elementary School</li> <li>● Computer Science Curriculum State and National</li> <li>● Code Studio: Kid Tested, Teacher Approved</li> <li>● Computer Science, STEM Integration and Teacher Collaboration</li> <li>● Computer Science is For Everyone</li> </ul> <p>By completing the Module 1 assessment, you are confirming that you have watched all of the videos and read all of the readings.</p>		_____ / 4 points	
Discussion Board	<p>(4 points) The discussion board response includes a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● Intentions for taking this course</li> <li>● 1-2 specific SMART goals for your learning</li> </ul>	<p>(2 points) The discussion board response is missing one or more of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● Intentions for taking this course</li> <li>● 1-2 specific SMART goals for your learning</li> </ul>	<p>(0 points) The discussion board response does not include any of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● Intentions for taking this course</li> <li>● 1-2 specific SMART goals for your learning</li> </ul>	_____ / 4 points
Assignment	<p>Research your state and national computer science curriculum. Develop a one-page document that outlines your goals for integrating computer science components into your classroom. Outline one lesson you could add computer science elements to. Refer to the “Module 1 Assignment Requirements”.</p>		_____ / 12 points	
Assessment	<p>Each question is worth 1 point each. You can take the assessment as many times as you want.</p>		_____ / 5 points	

Last updated 11/11/2018

# “Full STEAM Ahead with Coding in the Elementary Classroom” Module 2

## Course Completion Checklist w/ Grading Rubric:

You can check your grades by clicking on “Tools” and “My Grades”.

Module 2: “Coding and Computer Science Resources”			Points Earned	
Videos/Readings	<ul style="list-style-type: none"> <li>Teaching Elementary Students to Code: Kids Want to Code</li> <li>Coding Resources</li> </ul> <p>By completing the Module 2 assessment, you are confirming that you have watched all of the videos and read all of the readings.</p>		_____ / 4 points	
Discussion Board	<p>4 points) The discussion board response includes a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>Examine 2-3 resources provided in this section and explain how you will use these resources in your classroom. Provide input to other participants’ ideas.</li> </ul>	<p>(2 points) The discussion board response is missing one or more of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>Examine 2-3 resources provided in this section and explain how you will use these resources in your classroom. Provide input to other participants’ ideas.</li> </ul>	<p>(0 points) The discussion board response does not include any of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>Examine 2-3 resources provided in this section and explain how you will use these resources in your classroom. Provide input to other participants’ ideas.</li> </ul>	_____ / 4 points
Assignment	<p>Analyze three different computer science activities/programs that you will use in your classroom. Create a detailed implementation plan that you will share with other teachers in your district. Refer to the “Module 2 Assignment Requirements”.</p>		_____ / 12 points	
Assessment	<p>Each question is worth 1 point each. You can take the assessment as many times as you want.</p>		_____ / 5 points	

Last updated 11/11/2018

# “Full STEAM Ahead with Coding in the Elementary Classroom” Module 3

## Course Completion Checklist w/ Grading Rubric:

You can check your grades by clicking on “Tools” and “My Grades”.

Module 3: “Planning and Designing Instruction”			Points Earned	
Videos/Readings	<ul style="list-style-type: none"> <li>● Getting Started with Coding – Step 1</li> <li>● Getting Started with Coding – Step 2</li> <li>● Getting Started with Coding – Step 3</li> <li>● Tips for Teaching Coding in the Classroom</li> <li>● A Delightful Way to Teach Kids About Computers</li> <li>● Bring Computer Science to Life in Your Elementary Classroom Webinar</li> <li>● Beyond the Hour of Code Podcast</li> </ul> <p>By completing the Module 3 assessment, you are confirming that you have watched all of the videos and read all of the readings.</p>		_____ / 4 points	
Discussion Board	<p>(4 points) The discussion board response includes a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● What will your instruction and activities look like in your classroom?</li> <li>● Design a reflection and goal-setting activity and provide input to other participant’s ideas.</li> </ul>	<p>(2 points) The discussion board response is missing one or more of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● What will your instruction and activities look like in your classroom?</li> <li>● Design a reflection and goal-setting activity and provide input to other participant’s ideas.</li> </ul>	<p>(0 points) The discussion board response does not include any of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● What will your instruction and activities look like in your classroom?</li> <li>● Design a reflection and goal-setting activity and provide input to other participant’s ideas.</li> </ul>	_____ / 4 points
Assignment	<ul style="list-style-type: none"> <li>● Create two different reference guides/videos for students on various coding elements.</li> </ul> <p>Refer to the “Module 3 Assignment Requirements”.</p>		_____ / 12 points	
Assessment	<p>Each question is worth 1 point each. You can take the assessment as many times as you want.</p>		_____ / 5 points	

Last updated 11/11/2018

# “Full STEAM Ahead with Coding in the Elementary Classroom” Module 4

## Course Completion Checklist w/ Grading Rubric:

You can check your grades by clicking on “Tools” and “My Grades”.

Module 4: “Evaluation and Next Steps”			Points Earned	
Videos/Readings	<ul style="list-style-type: none"> <li>● The 4 C’s</li> <li>● Project Work</li> <li>● Authentic Assessment</li> <li>● Coding and Computer Science Resources for PLN</li> <li>● Student Contests and Resources</li> </ul> <p>By completing the Module 4 assessment, you are confirming that you have watched all of the videos and read all of the readings.</p>		_____ / 4 points	
Discussion Board	<p>(4 points) The discussion board response includes a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● How will you evaluate your program</li> <li>● Two takeaways from the course that you will share with others and provide input to other participant’s ideas.</li> </ul>	<p>(2 points) The discussion board response is missing one or more of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● How will you evaluate your program</li> <li>● Two takeaways from the course that you will share with others provide input to other participant’s ideas.</li> </ul>	<p>(0 points) The discussion board response does not include any of the following: a detailed (5 or more sentences) response, including:</p> <ul style="list-style-type: none"> <li>● How will you evaluate your program</li> <li>● Two takeaways from the course that you will share with others provide input to other participant’s ideas.</li> </ul>	_____ / 4 points
Assignment	<ul style="list-style-type: none"> <li>● Plan and create student projects/artifacts that support computational thinking, algorithmic thinking and design that reflects and applies course concepts for teaching others. Plan for implementation of the created artifact and evaluation of its success.</li> </ul> <p>Refer to the “Module 4 Assignment Requirements”.</p>		_____ / 12 points	
Assessment	<p>Each question is worth 1 point each. You can take the assessment as many times as you want.</p>		_____ / 5 points	

Last updated 11/11/2018