

University of North Florida
College of Education and Human Services
Project InTERSECT
Computational Thinking Badge

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CT Badge Goals

These 8 badge modules prepare preservice elementary teachers to integrate computational thinking in curriculum and instruction using problem solving, introductory coding, and digital tools.

CT Badge Overview

We will develop a working knowledge of computational thinking as a set of critical skills that leverage the problem-solving potential of computers across school subjects. Computational thinking can be integrated in PK-6 curricula by tinkering, coding, and problem solving with a variety of digital tools. We will learn about seven computational thinking concepts (sequences, loops, events, parallelism, conditionals, operators, and data) using unplugged activities and multiple programming environments. Finally, we will study pedagogies which facilitate meaningful learning opportunities, assess student understandings of computing.

CT Badge Course Delivery

This course will be delivered online in an asynchronous format using weekly modules within the Canvas Learning Management System (LMS).

To participate in this course, you will need to satisfy the following technical requirements:

- Maintain high-speed Internet access with standard up-to-date browsers
- Use Gmail and Canvas as the official methods of communication
- Access course materials in our [Computational Thinking Course Materials](#) folder
- Create logins and passwords to access supplemental websites
 - Scratch Programming Environment (<https://scratch.mit.edu/join>)
- Download software to computer or tablet as part of course requirements.
 - ScratchJr Programming Environment (<https://www.scratchjr.org/>)

Note: This application is only available from the Apple Store or Google Play. There is an open-source application available to download to a Windows 10 device with similar functionality (<https://jfo8000.github.io/ScratchJr-Desktop/>)

Required Textbook

- Williams, H. (2021). *No Fear Coding: Computational Thinking Across the K-5 Curriculum*. ISTE.

Learning Objectives

- Decompose real-world problems into manageable sub-problems in order to integrate existing procedures and solutions

- Solve a variety of non-routine problems and design ways to integrate non-routine problem solving within an elementary environment
- Compare and refine multiple algorithms for the same task and determine which is most appropriate
- Create and implement curricula that align computational thinking with other subject areas using technology

Norms for Participation in Weekly Modules

- Modules will be made available **every Tuesday at 8:00am** with an accompanying Canvas email summarizing expectations and due dates.
- Weekly asynchronous module participation includes discussions of readings and small group problem solving related to computational thinking skills and pedagogies.
- You must complete the associated module exit ticket by **Monday at 11:59pm**. If you are not able to meet a due date, please email your badge facilitator in advance.
- Your facilitator will provide weekly feedback on your module work in our shared Google class slides and in your individual digital interactive notebook (DINb) Google slides.
- You may need to revise your work or respond to additional questions if we see that you still have room to grow in your understanding.
- You must earn a 100% on all module exit tickets to complete this course.

Weekly Module Topics

What is Computational Thinking?	
Week 1	What is Computational Thinking?
Week 2	Decomposition and Algorithmic Thinking
Week 3	Pattern Seeking and Generalization
Week 4	Abstraction
Week 5	Logical Thinking and Debugging
Physical Computing	
Week 6	Physical Computing with Bee-Bots
Integrating Computational Thinking in PK-3 STEM Curriculum	
Week 7	Integrating Computational Thinking in PK-3 Mathematics
Week 8	Integrating Computational Thinking in PK-3 Science