

Computer Science Concepts and Teaching Methods Syllabus

CodeHS Professional Development Online Course - Elementary

Details

Course delivery method: Self-paced, online delivery with in-course supports

Contact hours: Approximately 35-40 hours

Prerequisite(s): For K-8 pre-service and in-service teachers

Course Description

This is the first CS Concepts and Teaching Methods course that focuses on teaching computer science in elementary schools. It addresses how teaching computer science to this age group is different from teaching older students, and the methods, theories, and strategies in this course reflect what is developmentally appropriate for students in lower age groups.

Course Outcomes (aligned to CSTA Standards for CS Teachers as noted)

Participants will

1. Develop pedagogical content knowledge and practical experience to be an effective CS teacher (1.1a, 2.2a, 3.3f, 5.5a-f)
2. Evaluate curriculum and resources for teaching computing and impacts of computing (1.1a, 1.1f, 2.2a, 2.2c, 2.2e, 4.4a)
3. Create lesson plans and other resources to implement an equitable and accessible computing program in the classroom (1.1a, 1.1e, 2.2a, 2.2b, 2.2e, 4.4b, 4.4c, 4.4f, 5.5a-f)
4. Select ways to increase student programming success through differentiation (1.1a, 2.2a, 2.2b, 2.2e, 4.4c, 4.4f, 5.5a, 5.5d)
5. Explore how to make computer science exciting and engaging for students (1.1a, 2.2c, 3.3f, 4.4d, 5.5a, 5.5a-f)

6. Demonstrate how to design and assess effective programming via formative and summative assessments, programming assignments, and student projects, including group projects (1.1a, 1.1e, 2.2e, 4.4e, 4.4g, 5.5c-f)

More Information

Course Overview	
Welcome	This short module introduces a few key principles and ideas for teaching computer science and provides an opportunity for goal setting and joining computer science PLCs. • Course Description • Course Syllabus & Outline • Getting Help in your Online Course • CodeHS Knowledge Base • Connect with the CodeHS Educator Community • Goal setting
Introduction to CodeHopJr	In this module, participants are introduced to the CodeHopJr platform and work through related student lessons. • Intro to CodeHopJr • Benefits of Early CS Education • Navigating the CodeHop Jr Interface • Exploring Characters and Backdrops
Introduction to CodeHop for Upper Elementary	In this module, participants are introduced to the CodeHop for Upper Elementary platform and work through related student lessons. • Intro to CodeHop for Upper Elementary • Navigating the CodeHop Interface • Building Your First CodeHop Project • Exploring Sprite and Backdrop Properties
Pedagogical Knowledge in Practice	This module introduces key pedagogical content knowledge and how it can impact practical experiences in the CS classroom and lessons. • Cognitive load theory • Block Model • TIPP & SEE Model • The PRIMM approach (Predict-Run-Investigate-Modify-Make)

	● Fostering Computational Thinking
Teaching Digital Citizenship and Cyber Hygiene	This module introduces the basics of digital citizenship and cyber hygiene. It includes common misunderstandings, ways to teach these concepts in the classroom, and how to grade student work. ● Digital footprint and reputation ● Cyberbullying and internet safety ● Privacy and security ● Effective internet searches ● Evaluating online resources ● Creative credit and copyright
Instructional Strategies in the CS Classroom	This module explores topics to help educators scaffold content and expose students to an inviting and engaging CS classroom experience. ● Collaboration Ideas and Techniques ● Differentiation ● The Inclusive CS Classroom ● Culturally-relevant pedagogy ● Interdisciplinary Lessons ● Physical Computing Lessons ● Open-Ended Projects
Assessing Student Mastery	Participants gain insight into assessing different types of problems, projects, and activities and how to provide constructive feedback to students. ● Assessing student mastery ● Feedback, formative vs. summative assessment ● Assessing with rubrics ● Using assessment data
Course Wrap-up and What's Next	● End of Course Project & Reflection ● Course Survey ● Connect via Reaching CS Professional Learning Communities ● Certificate of Completion

Access to Course Learning Resources, Course Assignments, & Projects

All course learning resources, assignments, activities, and projects are housed in the CodeHS LMS. All coursework will be completed and submitted via the CodeHS LMS. The course assignments and assessments include coding examples, exercises, grade-and-respond activities, and free-response questions, reflections, and a cumulative final project.

Communication & Support

The instructor(s) (CodeHS team members) will communicate with participants via the course for individual questions and feedback.

Getting Help with Activities

Participants can use the Conversation tab in the code editor to ask questions about any of the activities in the course. Course instructor(s) will respond to questions and provide feedback in this area as well. More information about getting help with coursework can be found [HERE](#).

Course Criteria for Completion

To be considered for a completion certificate or graduate hours, the following criteria will be required for successful completion of the course:

- Complete at least 90% of the course assignments.
- Complete and submit the end-of-module activities and the final capstone project.

References

CSTA Standards for Computer Science Teachers <https://csteachers.org/teacherstandards/interactive/>

