



SCHOOL OF EDUCATION

*Engaging diverse communities through leading and learning for social justice.*

[www.csusm.edu/soe](http://www.csusm.edu/soe)

<b>Course &amp; Section Nos.</b>	<b>EDT 635, Section 1</b>
<b>Course Title</b>	<b>Introduction to Computational Thinking and Programming</b>
<b>Class Roster No.</b>	<b>22294</b>
<b>Course Day(s)</b>	<b>Online</b>
<b>Time</b>	<b>Online</b>
<b>Course Location</b>	<b>Online</b>
<b>Semester / Year</b>	<b>Open labs - (Dates and locations to be announced)</b> <b>Spring 2017</b>
<b>Instructor</b>	Matthew Evans
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<b>Office</b>	On campus or at location by agreement
<b>Office Hours</b>	By Appointment or via Google Hangout

**WELCOME!**

**SCHOOL OF EDUCATION MISSION & VISION STATEMENT**

*(Adopted by SOE Governance Community, January 2013)*

***Vision***

To serve the educational needs of local, regional, and global communities, the School of Education advances innovative practice and leadership by generating, embracing, and promoting equitable and creative solutions.

***Mission***

The mission of the School of Education community is to collaboratively transform education. We:

- Create community through partnerships
- Promote and foster social justice and educational equity
- Advance innovative, student-centered practices
- Inspire reflective teaching and learning
- Conduct purposeful research
- Serve the School, College, University, and Community

**BASIC TENETS OF OUR CONCEPTUAL FRAMEWORK**

- Student centered education
- Research and theory specific to the program field inform practice
- Connections and links between coursework and application
- Strong engagement between faculty and candidates
- Co-teaching clinical practice
- Culturally responsive pedagogy and socially just outcomes

## **COURSE DESCRIPTION**

### **Hardware Operations and Functions to Support Teaching and Learning**

Prepares educators to develop basic understanding of computational thinking and programming to support 21<sup>st</sup>-century teaching and learning.

### **Introduction to Computational Thinking and Programming**

This 3-unit course is designed as part of the Education Technology Certificate Program.

### **Graduate Credit**

This is a graduate level course, and successful completion can be applied toward the Masters' in Education General Option.

### **Credit Hour Policy Statement**

Per the University Credit Hour Policy, students are expected to devote 45 hours per unit of credit (135 hours for 3 credit) for online courses.

## **REQUIRED TEXTS, MATERIALS AND/OR ACCOUNTS**

No required texts or materials.

## **COURSE LEARNING OUTCOMES**

In the end of this course, students will learn:

1. a form of reasoning, or problem solving, called Computational Thinking (CT).
2. what a computer can do and the primitive operations it can perform.
3. what an algorithm is and learn to design simple algorithms.
4. a subset of programming applications and languages.

## **PARTICIPATION STRUCTURE**

### **Discussion Forums:**

Throughout the semester, you will engage in whole group discussions in the form of an online discussion forum around assigned readings using Cougar Courses. Each student will be responsible for answering discussion questions posed by the instructor, and responding to two of their classmates' posts. When participating in online discussion forums, make sure to respond directly to the discussion question, include pertinent information in your response, make reference to ideas previously discussed, and offer critical analysis of a key theme or existing post that deepens or extends the conversation.

### **Cougar Courses**

Access from <https://cc.csusm.edu/>, where course materials and assignments are posted. Any changes to assignments will be announced via Cougar Course News Forum which notifies you in your Cougar email.

## SCHEDULE/COURSE OUTLINE

### Course Schedule

Please note that modifications to course activities and readings may occur at the discretion of the instructor. Any changes to assignments and/or structure of the course will be announced via News Forum and e-mail. In order to successfully complete this course, ***all assignments must be completed*** at an acceptable level noted on assignment directions. **All assignments and course activities are due by 11:55 pm on the due date.**

Date	Topic	Assignment
<b>Module1</b> Week 1	<ul style="list-style-type: none"> <li>● Introductions &amp; Class Norms</li> <li>● Review Syllabus, Cougar Courses Webpage &amp; Resources</li> <li>● How to Capture Screenshots</li> <li>● Change profile picture in Cougar course</li> </ul>	<b>Forum Post #1:</b> "Introduce Yourself" <ul style="list-style-type: none"> <li>● Initial Post DUE Jan. 26</li> <li>● 2 Peer Posts DUE Jan. 29</li> </ul> <b>Assignment:</b> Complete: Complete Survey: EDST 635 - Spring 2016
<b>Module 1</b> Week 2	What is computational thinking (CT)?	<b>Watch:</b> <a href="#">Jeannette Wing on Computational Thinking</a> <b>Read:</b> <a href="#">Wing (2006)</a> <a href="#">Barr, Harrison, &amp; Conery (2011)</a> <b>Forum Post #2:</b> Why is it important to teach computational thinking in the K-12 classroom? <ul style="list-style-type: none"> <li>● Initial Post DUE February 2</li> <li>● 2 Peer Posts DUE February 5</li> </ul>
<b>Module 2</b> Week 3	CT Core Concepts and Skills	<b>Read:</b> <a href="#">CT Teacher Resources (pp. 1-23)</a> <b>Forum Post #3:</b> Find and share an example of CT from your own area of teaching. <ul style="list-style-type: none"> <li>● Initial Post DUE February 9</li> <li>● 2 Peer Posts DUE February 12</li> </ul>
<b>Module 2</b> Week 4	Algorithms, Debugging, & Loops Introduction to Pair Programming	<b>Assignment:</b> Complete "Course 1 (Ages4-6)" - on <a href="#">Code.Org</a> DUE February 19 <b>Read:</b> <a href="#">Prottzman (2014)</a>
	Abstraction & Problem Decomposition	<b>Assignment:</b> Complete "Course 3 (All Ages)" on <a href="#">Code.org</a> DUE February 26 <b>Forum Post #4:</b> Reflection on coding with Code.org. <ul style="list-style-type: none"> <li>● Initial Post DUE February 23</li> <li>● 2 Peer Posts DUE February 26</li> </ul>
<b>Module 3</b> Week 6	Introduction to Scratch	<b>Read:</b> <a href="#">Computational Thinking with Scratch</a> <b>Assignment:</b> Pair Programming DUE March 5 <b>Journal Entry #1:</b> DUE March 5

<b>Module 4</b> Week 7	Introduction to Codesters	<b>Forum Post #5:</b> Pair Programming Reflection <ul style="list-style-type: none"> <li>• Initial Post DUE March 9</li> <li>• 2 Peer Posts DUE March 12</li> </ul> <b>Assignment:</b> Complete "Introduction to <a href="#">Codesters</a> Lesson" DUE March 12 <b>Journal Entry #2:</b> DUE March 12
<b>Module 4</b> Week 8	Teaching CT and Programming I	<b>Read:</b> <a href="#">Czerkawski (2015)</a> <b>Forum Post #6:</b> What skills and knowledge does an educator need to teach CT and programming/coding? <ul style="list-style-type: none"> <li>• Initial Post DUE March 16</li> <li>• 2 Peer Posts DUE March 20</li> </ul>
Week 9 <b>Mar. 21-27</b>	<b>Spring Break</b>	<b>No class. Enjoy your break.</b>
<b>Module 5</b> Week 10	Introduction to HTML	<b>Assignment:</b> Complete "HTML & CSS Course: Unit 1 Introduction to HTML on <a href="#">Codecademy</a> " DUE April 2
<b>Module 5</b> Week 11	Introduction to CSS	<b>Assignment:</b> Complete "HTML & CSS Course: Unit 4 Introduction to CSS on <a href="#">Codecademy</a> " DUE April 19 <b>Journal Entry #3:</b> DUE April 9
<b>Module 6</b> Week 12	Teaching CT and Programming II	<b>Read:</b> <a href="#">Kak (2015)</a> <b>Forum Post #7:</b> Has your knowledge, concept, and perspective of CT changed? <ul style="list-style-type: none"> <li>• Initial Post DUE April 13</li> <li>• 2 Peer Posts DUE April 16</li> </ul>
<b>Module 6</b> Week 13	Final Project	<b>Review:</b> <a href="#">Sykora (2014)</a> <b>Review:</b> <a href="#">Computational Leadership Toolkit</a> <b>Forum Post #8:</b> Share Your Plan for Final Project <ul style="list-style-type: none"> <li>• Initial Post DUE April 20</li> <li>• 4 Peer Posts DUE April 23</li> </ul>
<b>Module 7</b> Week 14	Final Project	
<b>Module 7</b> Week 15	Final Project Course Evaluations	<b>Final Project:</b> DUE May 14 <b>Journal Entry#4:</b> DUE May 14

## COURSE REQUIREMENTS AND GRADED COURSE COMPONENTS

### Course Assignments

#### Understanding of computing and computing languages using the following:

1. [code.org](http://code.org) (blocks and coding)
2. [codecademy.com](http://codecademy.com) (python)
3. [codecademy.com](http://codecademy.com) (HTML & CSS)

**Pair Programming:** You will work on a design challenge with a fellow student in class and engage in pair programming-- a technique programmers use to collaboratively work on coding. Students will use Google Hangout to work on the design challenge together while alternating the roles of a driver and a navigator. Pairs will choose to edit and further develop the following project in Scratch to create a digital story: <https://scratch.mit.edu/projects/29321004/#editor>. Pairs must add at least one more sprite to the story, and utilize Motion, Looks, Sound, Events, and Control in their design.

**Journaling:** Throughout the course, at the end of some modules you will reflect on your learning and journal. Each journal you will be asked a specific question to reflect upon. In addition, for each journal, you should address the following three questions:

1. How is your understanding of computational thinking and programming evolving or changing?
2. How are you developing confidence in learning and teaching computational thinking and programming?
3. What are some challenges, difficulties, or barriers you have experienced?

Please connect the journals to the readings assigned or other readings you may have completed. Please make sure to reference any readings.

The journals are for your reflection. They will be a dialogue between only you and the instructor. There will be no judgment of what you write. Your writing will be a mindful practice for you. The instructor will be reading your journals with empathy and understanding. The journals are meant to be rich and authentic, please be honest with your reflections and try not to hold anything back.

#### **Final Project:**

You have two options for a final project (see below). It is possible to collaborate on the final project. The only requirement is that you work in pairs and share the workload. You will have 2-3 weeks to work on your final project and submit the final version. Every final project will go through the following sequence:

Draft & Peer Review  
Final Submission

#### **Option 1:**

Create a Google Slide presentation of infographics, research, resources on why computational thinking should be taught in the K-12 environment. The presentation can act as a resource for your school site and/or district.

#### **Option 2:**

Create a game, a digital story, or an app using in Code.org, Scratch, or an application of your choice. Your design should involve interactive, engaging, and seamless (bug free) learner experience. Your design should address a learning goal and identify the targeted age group. For apps, make sure to have at least 5 pages with each page having a button that directs the learner to the home page and/or the next page. For games, make sure your game has a goal, rules, and core game mechanics (what players need to do to progress and beat the game). Your game must be playable. For digital stories, you have to have at least 3 characters, and

a storyline with the following elements: problem, climax, and resolution. All projects must utilize graphics/visuals.

**Distribution of Points:**

Assignments	Points
<b><i>EDT 635 Student Survey</i></b>	10
<b><i>Intro. to CT: <a href="#">Code.org</a></i></b> Complete "Course 1 (Ages4-6)" - 25 points Complete "Course 3 (All Ages)" - 25 points	50
<b><i>Python: <a href="#">Codesters.com</a></i></b> Complete "Introduction to <a href="#">Codesters</a> Lesson - 50 points	50
<b><i>HTML &amp; CSS: <a href="#">Codecademy.com</a></i></b> Complete "HTML & CSS Course: Unit 1 Introduction to HTML - 50 points Complete "HTML & CSS Course: Unit 4 Introduction to CSS - 50 points	100
<b><i>Pair Programming: <a href="#">Scratch</a></i></b> Work in pairs to complete an assignment using <a href="#">Scratch</a>	50
<b><i>Final Project: Create Game or App</i></b>	150
Participation Structures	Points
<b><i>Discussion Forums:</i></b> <i>Initial Post:</i> 15 points <i>2 Peer Post:</i> 5 points per peer post x 2 25 points per discussion forum x 7* 40 points for final project discussion * Discussion forums are graded every week starting the first week of classes.	215
<b><i>Journals:</i></b> 20 points per journal entry x 4	80
<b>Total Course Points:</b>	705 points

## **Grading Standards**

All assignments, requirements, due dates and scoring rubrics will be available through Cougar Courses. *You are responsible to successfully submit all assignments, review instructor's feedback, and track your grades and progress in the course.* In order to successfully complete this course, all assignments must be completed at an acceptable level noted on assignment directions. All assignments are due by 11:55 p.m. on the due date, unless specified otherwise. **No credit will be awarded if you miss the deadline for posting on discussion forums.**

## **Course Grades**

Final grades are calculated on the standard of:

A: 93% - 100%	A-: 90% - 92%	B+: 87% - 89%	B: 83% - 86%
B-: 80% - 82%	C+: 77% - 79%	C: 73% - 76%	C-: 70% - 72%
D: 60% - 69%	F: below 60		

Failure to complete this course with a grade of C+ or higher will prohibit a teacher candidate from entering a teaching credential program.

## **Final Exam Statement**

There will be no final exam.

## **School of Education/Course Attendance Policy**

Due to the dynamic and interactive nature of courses in the School of Education, all candidates (course participants) are expected to participate actively. Should the candidate (course participants) have extenuating circumstances, s/he should contact the instructor as soon as possible. *(Adopted by the COE Governance Community, December, 1997).*

## **Policy on Late/Missed Work**

**Late assignment policy:** 10% deduction for being one day late, 20% deduction two days late, 30% deduction three days late, and so on. After a week, seven days following the due date, no assignments will be accepted. If extraordinary circumstances occur, please contact the instructor BEFORE the deadline.

## **Student Collaboration Policy**

Some assignments in this course require students to collaborate. It is expected that all participants in this course to cooperate, share in collaborative assignments by being responsible for shared work divisions, meeting deadlines and ensuring collaborative assignments are completed in the best format possible.

## **GENERAL CONSIDERATIONS**

### **CSUSM Academic Honesty Policy**

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy. All assignments must be original work, clear and error-free. All ideas/material that are borrowed from other sources must have appropriate references to the original sources. Any quoted material should give credit to the source and be punctuated accordingly.

Academic Honesty and Integrity: Students are responsible for honest completion and representation of their work. Your course catalog details the ethical standards and penalties for infractions. There will be zero tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty, in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole.

Incidents of Academic Dishonesty will be reported to the Dean of Students. Sanctions at the University level may include suspension or expulsion from the University.

Refer to the full Academic Honesty Policy at:

[http://www.csusm.edu/policies/active/documents/Academic\\_Honesty\\_Policy.html](http://www.csusm.edu/policies/active/documents/Academic_Honesty_Policy.html)

### **Plagiarism**

As an educator, it is expected that each candidate (course participant) will do his/her own work, and contribute equally to group projects and processes. Plagiarism or cheating is unacceptable under any circumstances. If you are in doubt about whether your work is paraphrased or plagiarized see the Plagiarism Prevention for Students website <http://library.csusm.edu/plagiarism/index.html>. If there are questions about academic honesty, please consult the University catalog.

### **Students with Disabilities Requiring Reasonable Accommodations**

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive reasonable accommodations should meet with their instructor during office hours or, in order to ensure confidentiality, in a more private setting.

### **Credit Hour Policy Statement**

Per the University Credit Hour Policy: Online courses are comprised of out-of-class time associated with the no face-to-face sessions, and on-line work will total at least 45 hours per unit of credit.

### **All University Writing Requirement**

The All-University Writing Requirement of 2500 words for a 3-unit course is satisfied written blogs and Forum Assignments of this course.

### **Course Format**

This course is 100% online with 135+ hours of out of class and online class participation. This course will be 100% online. There will be no physical meetings on campus. The course will consist of 7 learning modules and a final module concerning a final project and culminating experience. Each module will be two weeks. It is expected that each student be a consistently active participant in the course online community.

**In this online course, the instructor has adopted this policy: you must be active in online coursework including email, discussions and activities regularly (at least twice weekly and/or at least every 3 days), or you cannot receive a grade of A or A-; if you are inactive for one week or more, you cannot receive a grade of B+ or B. If you have extenuating circumstances, you should contact the instructor as soon as possible.** *Modules begin on Monday each week and end on the second Sunday of the following week (see online schedule).* It is expected that all EDT 635 students will have an active presence in the online class community. Active presence is measured not only by the number of times you log on (minimum every 2-3 days) but also by the promptness, quantity, and quality of your postings, contributions to class discussions, messages you initiate to peers and instructor, assignments completed successfully and on time, and your responsiveness to questions posted by classmates. Organize each week so that you visit the Cougar Course shell every 2-3 days. This will provide you the opportunity to stay in touch with the class assignments and discussions.



### **Necessary Technical Competency Required of Students**

For on-line and hybrid courses: This course is based on the Cougar Course Moodle designed by the instructor. To successfully complete online activities, you need to use Cougar Courses (download course materials, watch presentations and videos, upload your assignments, post discussion responses and reply to peers' posts, join online chats, etc.). You need to use e-mail effectively and know how to attach files. It is best that you know how to make minor configuration changes in a Web browser (change font sizes, open and close tabs, allow or disable pop-ups and plug-ins, enable Cookies and JavaScript, etc.). In addition, you are expected to use office applications (such as a word processor, a presentation tool, a spreadsheet tool, an image viewer, a PDF reader, etc.), engage in collaboration, and apply Web literacy skills (conduct an effective search with a search engine, evaluate trustworthiness of web content, understand copyrights). Lastly, you may need to troubleshoot basic hardware and software problems.

### **Contact Information for Technical Support Assistance**

If you need any technical support, contact IITS Student Help Desk: <http://www.csusm.edu/sth/>.

### **Electronic Communication Protocol**

Electronic correspondence is a part of your professional interactions. If you need to contact the instructor, e-mail is often the easiest way to do so. It is my intention to respond to all received e-mails in a timely manner. Please be reminded that e-mail and on-line discussions are a very specific form of communication, with their own nuances and etiquette. For instance, electronic messages sent in all upper case (or lower case) letters, major typos, or slang, often communicate more than the sender originally intended. With that said, please be mindful of all e-mail and on-line discussion messages you send to your colleagues, to faculty members in the School of Education, or to persons within the greater educational community. All electronic messages should be crafted with professionalism and care.

Things to consider:

- Would I say in person what this electronic message specifically says?
- How could this message be misconstrued?
- Does this message represent my highest self?
- Am I sending this electronic message to avoid a face-to-face conversation?

In addition, if there is ever a concern with an electronic message sent to you, please talk with the author in person in order to correct any confusion.