Course # LAI 525
Critical Computational Literacies

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Credits: 3

Course Description
This course centers critical computational literacies as a framework for thinking about how and why we might teach K12 Computer Science (CS). Just as schools participate in broader social systems which shape our lives and which may or may not contribute to a more just and peaceful society, CS is only one part of the work of a school. Our work as CS educators may be constrained by other priorities and stakeholders, and our work can also reshape the work of the school beyond the classroom. We take as our starting point the premise that CS education is currently figured in a way which gives it unusual leverage to reshape K12 educational practice.

Learning Outcome and Program Goals
Course learning outcomes

• **Computational literacy**: Understand the multiple ways CS can be defined as a K12 disciplinary subject and the consequences of these definitions for teaching and learning.

• **Computational culture**: Understand the relationship between disciplinary learning goals and broader educational priorities such as antiracism, culturally-sustaining pedagogy, and interdisciplinary computational literacy.
- **Computational identity**: Understand the needs and perspectives of diverse Computer Science learners, including specific factors within Computer Science which have historically marginalized students and how they can be mitigated.

- **Literacy-based CS education**: Own your own stance as a teacher, and know how you intend to put your beliefs into practice.

**Program Goals**
Critical Computational Literacies is part of all of UB's CS Teacher Preparation tracks. The course meets the following program goals in those tracks: Advanced Certificate in CS

![Diagram showing alignment of program outcomes, course learning outcomes, and assessments.](image)

**Figure 1.** Alignment of program outcomes, course learning outcomes, and assessments. Instructional methods for each assessment are described below.

**Mode of Instruction**
Critical Computational Literacies is a synchronous online course. Regular attendance, preparation, and participation is essential and required.

**Required Text and Materials**
There are no texts required to be purchased for this course. All readings will be accessible from the course website. You will need regular access to a computer and a stable Internet connection. If this is a challenge for you, please contact me.

**Course Assignments**
There are four major assessments in the course. Each is described below; more specific guidelines and examples will be distributed as they become relevant. Figure 1 (above) shows each assessment's relationship to the course learning goals and to broader program goals.
**Reading journal (20%)**
Keep a running log of your reading responses using a social digital medium. A required component of this assignment is some interaction as author and as audience with other students or an outside community. Summarize your reading and writing in this course with a closing reflection.

The reading journal functions as both a formative and as a summative assessment. This is a place to work through ideas you encounter in the readings, connecting them to your past experience and using them to articulate how your identity as an educator is growing and changing. The reading journal is also a place to participate in computational literacy and to reflect on the experience.

**Assessment criteria**
- *Engagement with readings.* Substantial and specific reference to ideas in each week's readings, generally including specific quotations. It is not necessary to summarize readings or respond to every ideas, but the ideas you take up should be put in accurate context of the text and of other relevant texts exploring those ideas.
- *Literacy participation.* Your journal actively engages with its medium to shape how you develop and present ideas, structure your content, engage with others, and author an identity in context. Exploration is encouraged.
- *Trajectory of thought.* Your reading journal builds on itself, making connections between posts and noting where and when your thinking is changing.

**Computer Science Autobiography (20%)**
Write your autobiography as a computer scientist or as a computer science learner, reflecting on how you understand your identities with respect to CS and how these understandings have developed through past experiences.

**Assessment criteria**
- *Theorizing experience.* Your autobiography should engage with both specific details of your lived experience and abstract interpretation of this experience, drawing on ideas from the course.
- *Voice.* The speaking voice has a considered relationship to what is related, creating an occasion for reflection, positionality, and the authorship of a chosen identity.

**Ethnographic Fieldnotes (20%)**
Visit a Computer Science learning environment (broadly understood), jot fieldnotes, and process them into observations and interpretations of the Computer Science learning
which took place. Rather than writing these up as a formal report, please submit your (cleaned-up) fieldnotes in a format which distinguishes between observations and interpretations. Additionally, prepare a five-minute slide presentation sharing several interpretive findings along with the observations they were based on. Sketches and photos are great to include if possible.

**Assessment criteria**

- **Observations.** Clear, detailed observations which "get close" to the activities being observed.
- **Interpretation.** Your assumptions, questions, responses, and reactions to observations, informed by ideas from the course and aware of how your positionality affects your experience.

**Teaching statement (40%)**

Define your stance as a Computer Science educator, including your working definition of K-12 Computer Science and your understanding of the relationship between disciplinary content knowledge and broader goals such as antiracism, supporting students in resisting oppression, and interdisciplinary computational literacies. Describe the context in which you expect to teach Computer Science and articulate a vision for how CS might contribute to the broader learning ecology.

**Assessment criteria**

- **Synthesis of course ideas.** Your teaching statement is grounded in the broad themes of the course and makes specific reference to a broad range of course readings.
- **Vision.** You develop a coherent vision for how CS might contribute to or transform your local learning ecology, connecting ideas from the course to specific details of your teaching context and your identities.

**Grading**

Each of the major course assignments will receive a holistic grade and qualitative feedback. One round of resubmission is available for all assignments (time permitting), to be submitted within two weeks of receiving feedback and in all cases no later than two weeks before the end of the course. When resubmitting, students should include a revision note (one page, double-spaced) responding to the feedback and explaining what has been changed.

Attendance and participation are expected but are not graded. Similarly, you are expected to complete work on time but there is no grade penalty for lateness. If grades are meant to be a measure of learning or of work quality, I cannot see a justification for
lowering grades due to missing class or turning work in late. Instead, I interpret these behaviors as signals that you may be having difficulty in the class, and will check in to see if there is a way I can better support you.
Class Schedule

The course is organized around three themes: literacy, identity, and education. Weeks 1-4 focus on literacy as a way of thinking about an academic discipline. Week 1 contextualizes computer science education in the digitally-mediated worlds of today's youth. Then Week 2 traces the development of computational thinking as an effort to name the relationship between computer science and everyday life and therefore the basis for K12 CS education. Week 3 examines the shortcomings of this project and reframes computational thinking in terms of computational literacies. Finally, Week 4's focus on critical computational literacies explores the role of computation in power and oppression, and how critical literacy practices can produce strategies for resistance.

Weeks 5-8 take up the second major theme of the course, identity, considering how people author identities within worlds of literacy practice. Week 5 considers identity authorship as a primary form of learning and examines various computational identities. Week 6 examines the relationship between identity and culture: how existing identities are reenacted and transformed in digital media and the ways in which computing cultures constrain possible selves. Week 8 considers the relationship between identities and the computational media upon which they rely. Finally, Week 7 explores disciplinary identities with a focus on the relationship between identity and the acquisition of disciplinary content knowledge.

Week 9 is devoted to student presentations sharing and interpreting communities of computational literacy practice.

Weeks 10-13 consider education as an intervention in the processes of literacy and identity. Week 10 examines the implications of designing and defining CS in a school community. Week 11 considers how teachers and schools can support critical action. Week 12 considers how pedagogy can connect across literacies. And Week 13 puts school-based CS education into its broader context, considering how schools might function as nodes in a network of connected learning.

The course concludes in Week 14 with sharing of participants' teaching statements: syntheses of the ideas explored during the course and statements of their own positionality: how they locate themselves and their work within these ideas and their intentions for future work.

**Week 1: Schooling in the age of computers**

We open the course with an overview of the major themes of the course. In small discussion groups, we connect these themes to our own past experience and to our existing priorities as educators. We examine several case studies of how computers currently shape learning and schooling. This provides the occasion for introducing the
reading log assignment, in which. We will conclude by reflecting on how our discussion of computers and schooling challenges our assumptions (e.g. where is a school? what are its boundaries?) and surfaces essential questions about education.

**Readings**


**Week 2: Computational thinking**

K-12 CS can't just mean hanging out online. Week 2 introduces CS disciplinary content knowledge as a priority in K-12 CS education, focusing on the effort to define computational thinking. We will spend the class doing several short lessons in Scratch designed to teach basic CS concepts, and then using this experience as the jumping-off point for a discussion of various tensions over what computational thinking ought to mean. (Don't worry! This activity will be differentiated to support students with any level of formal computer science experience.)

**Readings**


**Week 3: Computational literacies**

Building on Week 2, Week 3 focuses on the recent turn toward computational literacies as a framework for thinking about how and why we might teach K-12 Computer Science (CS). We will use the critical computational literacies framework to interpret several current K-12 CS education initiatives.

**Readings**


Week 4: Critical computational literacies
Reading journal assessed.
We will draw parallels between the disciplinary conversation within English/Language Arts and current debates within K-12 CS education in order to center questions of inclusion, representation, and power. We will identify several specific senses of "critical" education and make connections between the readings and our own experiences as students and teachers.

Readings

Week 5: Computing and identity
Draft teaching statement due.
Week 5 introduces the second major theme of the course, identity. We will review several ways in which the construct of "identity" is used in educational research, constructing a situated, performative, and dialogic idea of identity we will use through this course. This week we will consider a diverse array of computer-mediated cultures and identities.

Readings

Week 6: Identity, culture, and intersectionality
Even when people understand themselves to have identities as computer scientists, it is seldom their primary identity. This week we consider several ways in which computer science interacts with identity categories such as race, gender, sexuality, language, and ability.
Readings


**Week 7: Mediated identity**

Reading journal assessed.

Whereas Week 6 considered the ways in which computer science intersects broader identity categories in producing subject positions, Week 7 considers computation as a medium for literacy and identity practices. We will consider how computation mediates literacy practices at scales ranging from individual cognition to social and cultural processes.

Readings

**Week 8: Disciplinary identities**

Disciplinary identities are one way of thinking about learning in terms of identity. In Week 8 we will focus disciplinary identities within formal learning environments such as K-12 classrooms.

Readings


**Week 9: Literacy places**

*Fieldnotes due.*

Student presentations of fieldnotes and analyses of communities of computational literacy practice.

**Week 10: Designing and defining computer science**

Now that we have spent some time thinking about literacy and identity, it is clear that the question of what K-12 CS ought to be involves much more than content knowledge. In pursuit of this question we turn to the final theme of the course, education. In Week 10, we examine several efforts to define K-12 computer science. This is an opportunity to introduce the summative assessment of the class, the teaching statement.

**Readings**


**Week 11: Supporting critical action**

TODO

**Readings**

**Week 12: Connecting across literacies**

The interdisciplinary potential of CS is a major motivation for framing K-12 CS education in terms of literacies. Building on Week 7's analysis of mediated identities and Week 11's exploration of how we can support critical action, Week 12 considers a transliteracies perspective, asking what happens when practices move across literacies.

**Readings**


**Week 13: Connected learning**

Bringing our transliteracies focus back to the concrete context of schools in communities, our focus turns to connected learning. We will discuss schools as nodes within broad networks of learning, participation, and opportunity.

**Readings**


**Week 14: Sharing teaching statements**

*Teaching statement due.*

We will conclude the class by sharing our teaching statements and intentions for our future work.
Department-wide policies

Accessibility Services and Student Resources

If you have a disability and may require some type of instructional and/or examination accommodation, please inform me early in the semester so that we can coordinate the accommodations you may need. If you have not already done so, please contact the Office of Accessibility Services (formerly the Office of Disability Services) University at Buffalo, 60 Capen Hall, Buffalo, NY 14260-1632; email: stu-accessibility@buffalo.edu. Phone: 716-645-2608 (voice); 716-645-2616 (TTY); Fax: 716-645-3116; and on the web at http://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html. All information and documentation is confidential.

The University at Buffalo and the Graduate School of Education are committed to ensuring equal opportunity for persons with special needs to participate in and benefit from all of its programs, services and activities.

Academic Integrity

It is expected that you will behave in an honorable and respectful way as you learn and share ideas. Therefore, recycled papers, work submitted to other courses, and major assistance in preparation of assignments without identifying and acknowledging such assistance are not acceptable. All work for this class must be original for this class. Please be familiar with the University and the School policies regarding plagiarism. Read the Academic Integrity Policy and Procedure for more information. Visit The Graduate School Policies & Procedures page (http://grad.buffalo.edu/succeed/current-students/policy-library.html) for the latest information.

Course Evaluations

You will have two opportunities to provide anonymous feedback about the course. In the middle of the semester, I will send you a brief questionnaire asking about what activities are contributing to your learning and what might be done to improve your learning. At the conclusion of the semester you will receive an email reminder requesting your participation in the Course Evaluation process. Please provide your honest feedback; it is important to the improvement and development of this course. Feedback received is anonymous and I do not receive copies of the Evaluations until after grades have been submitted for the semester.

Counseling Service

As a student you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services and Health Promotion are here to help with these or other issues you may experience. You can learn more about these program and services by contacting:
Counseling Services
120 Richmond Quad (North Campus), 716-645-2720
202 Michael Hall (South Campus), 716-829-5900
https://www.buffalo.edu/studentlife/who-we-are/departments/counseling.html

Health Services
Michael Hall (South Campus), 716-829-3316
https://www.buffalo.edu/studentlife/who-we-are/departments/health.html

Office of Health Promotion
114 Student Union (North Campus), 716-645-2837
https://www.buffalo.edu/studentlife/who-we-are/departments/health-promotion.html

Sexual Violence
UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB’s Title IX Coordinator at 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Service Campus Advocate at 716-796-4399.

Please be aware UB faculty are mandated to report violence or harassment on the basis of sex or gender. This means that if you tell me about a situation, I will need to report it to the Office of Equity, Diversity and Inclusion. You will still have options about how the situation will be handled, including whether or not you wish to pursue a formal complaint. Please know that if you not wish to have UB proceed with an investigation, your request will be honored unless UB’s failure to act does not adequately mitigate the risk of harm to you or other members of the university community. You also have the option of speaking with trained counselors who can maintain confidentiality. UB's Options for Confidentiality Disclosing Sexual Violence provides a full explanation of the resources available, as well as contact information. You may call UB’s Office of Equity, Diversity and Inclusion at 716-645-2266 for more information, and you have the option of calling that office anonymously if you would prefer not to disclose your identity.