VSBPE
Date: Oct. 20, 2020
Notification: Follow-Up on UVM's New Computer Science Education Programs

ITEM: UVM's new Computer Science Education programs was approved by the VSBPE in May 2020 pending their completion of two stipulations. They have now completed those stipulations.

AGENCY RECOMMENDED ACTION:

No action needed.

RATIONALE:

From the May Green Sheet:
As noted in the ROPA Report, the program has two stipulations that need to be met prior to being granted recommendation for approval. Once those stipulations have been met, the team is confident that UVM is well-prepared to ensure its candidates have met the Core Teaching Standards and endorsement competencies.

From the May VSBPE meeting minutes:

R. Reardon moved that the VSBPE grants conditional approval of UVM's new Computer Science Education programs for two years with the provision that the two stipulations in the report are met. A Two-Year Report will be due in May of 2022. Seconded by B. Cleland. Motion approved.

SUPPORTING DOCUMENTS:

UVM's response to the ROPA report.

SECONDARY EDUCATION PROGRAM
EDSC 237-Teaching Computer Science in Secondary Schools
3 Credit Course

Course Description:

Welcome to the wonderful world of computer science teaching! This course explores multiple theories and practices of teaching, learning and assessing computer science in middle school and high school. Throughout the course we will engage in critical dialogue and reflection about the nature of computer science, the structure of computer science disciplines, computer science learning standards, best practices of teaching and assessing computer science, and social, legal, and ethical issues in computer science and computer science education. This course is participatory in nature and practice. Each week we will engage in inquiry-based, problem-based and/or project-based demonstrations and lessons that represent the Computer Science Teachers Association (CSTA) learning standards and other essential practices necessary to become a master teacher of computer science.

Course Objectives:

As you engage in this course throughout this semester, please reflect upon the following enduring understandings and essential questions that constitute the framework for the course:

Course Enduring Understandings:

1. **The Nature of Computer Science** is both a set of practices and the accumulation of knowledge that is the outcome of investigating, questioning, data collecting and analyzing. An essential part of computer science education is learning computer science practices and developing knowledge of the concepts that are foundational to computer science disciplines. (CSTA)

2. **Sociocultural theories of learning** focus on not only how adults and peers influence individual learning, but also on how cultural beliefs and attitudes impact how instruction and learning take place. (Vygotsky)

3. The **Understanding by Design(UbD)** curriculum framework focuses on teaching and assessing for understanding and learning transfer and designing curriculum "backward" from those ends. (Wiggins and McTighe)

4. **Differentiated Instruction** accommodates the different ways that students learn by modifying the content (what is being taught), the process (how it is taught) and the product (how students demonstrate their learning). It is an approach to teaching that advocates active planning for student differences in classrooms. (Tomlinson)

4. **Formative assessment** includes all those activities undertaken by teachers and/or students which provide information to be used as feedback to modify the teaching and learning activities in which they engage. (Black and William).

5. **Problem-based learning** is driven by challenging, open-ended problems with no one right answer where students work as self-directed, active investigators and problem-solvers in small collaborative groups. (Learning-Theories.com)

6. **Project-based learning** is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge. (Buck Institute for Education – BIE.Org)

7. **Place-based education** is the process of using the local community and environment as a starting point to teach hands-on, real-world learning experiences in language arts, mathematics, social studies, science and other subjects across the curriculum. The goal is to help students develop stronger ties to their community, enhance students' appreciation for the natural world, and create a heightened commitment to serving as active, contributing citizens. (David Sobel)

VT Agency of Education Computer Science Education Endorsement Standards Addressed in this Course:

1.5.2. Cybersecurity including identifying features and functions of security tools (e.g., firewalls, antivirus programs, filtering software, encryption).
1.8.2. Intellectual property rights and related issues (e.g., copyright laws, fair use, patents, trademarks) when using, manipulation, and editing electronic data.
1.8.3. Issues related to the equitable use of technology (e.g. gender, ethnicity, language, disabilities, access to technology)

Standard #5 - Implements an inquiry-based computer science curriculum that integrates conceptual understanding and skill development. Specifically, the educator:

5.1 Plans and implements instruction that allows students to use computer science in problem-solving and decision-making situations
5.2 Keeps current with the use of technology in education and issues related to legal and ethical use of technology resources
5.3 Designs and implements activities which reinforce verbal and written technical communication skills central to computer science
5.4 The ability to use the basic steps in algorithmic problem-solving to design solutions (e.g., problem statement and exploration, examination of sample instances, design, implementing a solutions, testing, evaluation).
5.5 Uses effective management strategies for teaching computer science (e.g. laboratory work, cooperative learning, electronic communication)
5.6 Uses appropriate instructional strategies for teaching computer science (e.g., case studies, role-playing, manipulatives, visualizations, simulations, modeling)

Course Essential Questions:

1. What is the nature of computer science education in K-12 classrooms?
2. What is the nature of students' conceptions and prior knowledge in computer science? What are theories of learning? How do students best learn computer science principles and practices?
3. What is the nature of computer science curricula? How are the various computer science units of study structured?
4. What is the nature of problem, place-based and project-based teaching? What are effective methods and strategies of teaching computer science?
5. What is the nature of computer science assessment? How does one assess (formative and summative) understanding in the computer science classroom?
6. How does one organize and manage a safe, sustainable and effective learning environment for all in computer science?
7. How are field trips effectively integrated into computer science curriculum and teaching?
8. What are some social, legal and ethical issues in computer science education today?
9. How do we create, manage and maintain an inclusive computer science classroom that promotes the ideas and practices of a sustainable society?

Course Text:
Various journal articles as outlined in the syllabus, online (BB) or distributed in class.

Course Requirements:
1. All assignments will be submitted on the due date. Please double-space and use 12 pt. font.
2. Late assignments will result in a full grade reduction for the assignment.
3. Attendance is mandatory. If you anticipate missing a class please inform me via email.
4. Consistent lateness disrupts the class. Please arrive and be ready to begin class on time.
5. Plagiarism including downloading lessons and other teacher resources from the Internet without proper citation will result in an F for the course. Please refer to University policy on plagiarism in the Student Handbook.

Course Policies/Norms/Expectations:
Participants are expected to actively contribute in course discussions and activities. Participants are expected to complete course assignments and readings when they are due. Additional expectations and policies are described below.

Contributions in Class:
Participants are expected to actively and constructively participate in class discussions and activities.

Student Learning Accommodations:
In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact SAS, the office of Disability Services on campus. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly encouraged to meet with their faculty to discuss the accommodations they plan to use in each course. A student's accommodation letter lists those accommodations that will not be implemented until the student meets with their faculty to create a plan.
Contact SAS: A170 Living/Learning Center; 802-656-775
access@uvm.edu www.uvm.edu/access

Religious Holidays:
Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time. https://www.uvm.edu/registrar/religious-holidays

Academic Integrity:
The policy addresses plagiarism, fabrication, collusion, and cheating.
https://www.uvm.edu/policies/student/acadintegrity.pdf

Grade Appeals:
If you would like to contest a grade, please follow the procedures outlined in this policy:
https://www.uvm.edu/policies/student/gradeappeals.pdf

Grading:
For information on grading and GPA calculation, go to https://www.uvm.edu/registrar/grades

Code of Student Rights and Responsibilities:
http://catalogue.uvm.edu/undergraduate/academicinfo/rightsandresponsibilities/

FERPA Rights Disclosure:
The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974. http://catalogue.uvm.edu/undergraduate/academicinfo/ferparightsdisclosure/

Promoting Health & Safety:
The University of Vermont's number one priority is to support a healthy and safe community:

Center for Health and Wellbeing:
https://www.uvm.edu/health

Counseling & Psychiatry Services (CAPS):
Phone: (802) 656-3340

C.A.R.E.
If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at https://www.uvm.edu/studentaffairs

Final Exam Policy:
The University final exam policy outlines expectations during final exams and explains timing and process of examination period. https://www.uvm.edu/registrar/final-exams

Alcohol and Cannabis Statement:

> As a faculty member, I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. It is important to note that alcohol and cannabis have no place in an academic environment. They can seriously impair your ability to learn and retain information not only in the moment you may be using, but up to 48 hours or more afterwards. In addition, alcohol and cannabis can:
>
> - Cause issues with attention, memory and concentration
> - Negatively impact the quality of how information is processed and ultimately stored
> - Affect sleep patterns, which interferes with long-term memory formation
>
> It is my expectation that you will do everything you can to optimize your learning and to fully participate in this course.

UVM Learning Cooperative:
The ability to communicate thoughts through the written work is an essential skill and required for success in the teaching profession. In this course it is assumed that you have the ability to communicate clearly and effectively through the written word. For one-on-one assistance with any stage of the writing process including outlining, grammatical advice and proofreading) as well as help with study skills (such as time management and organization) please contact the Learning Cooperative at 244 Commons Living/Learning, 656-4075.

UVM's Writing Center offers free one-to-one tutoring to graduate students on a wide range of projects: seminar papers, reports, proposals, poster presentations, and more. You can sit down with a consultant at any stage of a project, from initial planning and first draft to final organization and edits. Visit go.uvm.edu/gradtutor to meet the graduate writing consultants and learn how to schedule an appointment. Watch your email inbox, too, for announcements of weekend writing retreats and dissertation/thesis workshops.

Course Assignments:

1. Big Ideas in Computer Science Assignment - Group Project – (20%)
For this assignment, you will work in groups to identify and evaluate the big ideas that represent the broad themes in the field of computer science education today. A detailed project description and evaluation criteria project are found on p. 11 of the syllabus.

2. Computer Science Start-up Activity – (15%)
Each student will be responsible for conducting a motivational start-up activity in computer science twice during the semester. The activity should be about 10 minutes in length and should serve as a motivator or start-up to a larger lesson or unit that you would teach to your students. The activity will be evaluated according to the following criteria**: Content (25 pts.), Presentation (25 pts.), Engagement (25 pts.), Questioning Skills (25 pts.)**

3. Computer Science Lesson Presentation – (15%)
Each student will be responsible for conducting an full inquiry and problem-based lesson in computer science once during the semester. The lesson should be about 40 minutes in length and be part of a larger unit (from your computer science resource portfolio) that you would teach to your students. Utilize the standard secondary education lesson template for lesson development. The lesson presentation evaluation rubric is found on pp. 12-14 of the syllabus.

4. Computer Science Resource Portfolio – (35%). The computer science resource portfolio is the final culminating project for this class that will focus on a specific unit topic in computer science that you will teach during student teaching. The overall goal is to develop specific lesson plans for a given topic that demonstrate various dimensions and practices of exemplary computer science curriculum, instruction, and assessment that we will discuss throughout the semester. CS Portfolio description and evaluation rubric are found on pp. 15-16 of the syllabus.

5. Class Participation (15%) is extremely important in a class that is predominantly investigative and collaborative in nature. You are expected to attend all classes and to actively participate in investigations, discussions, and projects.

EDSC 237 OVERALL GRADING AND EVALUATION:

Grading Scheme for Undergraduates:

A	92-100
A-	90 - 91
B+	88-89
B	82-87
B-	80-81
C+	78-79
C	72-77
C-	70-71
D+	68-69
D	62-67
D-	60-61
F	Below 60

Teaching Computer Science in Secondary School
Class Schedule

Class	Date	Topics	Notes & Due Dates
1		**The Nature and History of Computer Science** • Introduction – What brought you to computer science teaching? • What is the nature of computer science? • What common ideas/interests do we share? "Vote with your feet?" • Course Syllabus and Requirements • Discuss "Big Ideas" Assignment – Form groups and plan • Sign-Up – Start-up Lesson Activity, Lesson Presentations, Online Discussion Groups • When will you be student teaching? (planning field trips)	
2		**The Nature of Computer Science and the CSTA Standards** • How do we create lessons that integrate computer science? • Discuss lesson planning and the lesson plan template • Group Work - Plan "Big Ideas" Presentation • Introduction to the CSTA Standards. **Read (BB): CSTA Standards - https://www.csteachers.org/page/standards** Gal-Ezer, J. & Stephenson, C. (2009). The Current State of Computer Science in U.S. High Schools: A Report from Two National Surveys. *Journal for Computing Teachers.*	
3		**Exploring the CSTA Standards and CS Big Ideas** An exploration of the CSTA Standards. **Read: CSTA Standards - https://www.csteachers.org/page/standards** **Tasks for today:** 1. Complete CSTA hand-outs (See: BB) 2. Work in Big Ideas Groups to Design Presentations (See: BB)	**Work on Big Ideas presentations in groups**
4		**Big Ideas in Computer Science Presentations** • What is the history of the computer science standards? • What are the big ideas, themes and concepts of computer science? • "CS Big Ideas" Presentations - 30 minutes per group (peer feedback and prof. evaluation)	**Big Ideas in Computer Science Presentations**
5		**What is the nature of computer science teaching?** • What are best teaching practices for promoting computer science learning in MS and HS?	**CS Lesson Due**

		• What is "high-quality" inquiry teaching? • 5E Model • Discuss Lesson Presentations & Computer Science Portfolio **Read (BB):** Problem-based Learning (2001), Stanford University Newsletter on Teaching, 11(1). Llewellyn (2002).What is Inquiry? In: *Inquire from Within.* Corwin Press. TERC – Cultivating a Culture of Inquiry - https://www.terc.edu/display/Newsroom/January+25%2C+2001+-+Cultivating+a+Culture+of+Inquiry	
6		**What is the nature of computational thinking?** **Read (BB):** Barr and Stephenson (2011). Bringing computational thinking to K-12: What is involved and what is the role of the computer science education community? ACM Inroads. 2:1. Orr, G. (2009). Computational thinking through programming and algorithmic art. SIGGRAPH 2009 Talks. Wing, J. (2006). Computational Thinking. *Communications of the ACM*. 49:3.	
7		**What is the nature of project-based and placed-based computer science teaching and learning?** • What are the basic tenets and principles of project and place-based learning? • How do I develop a project-based and/ or placed-based lesson plan? • Project-planner **Read (BB):** Moursund, D. (2003). Project-based Learning Using Information Technology. *International Society for Technology in Education.* Whitmore, G. (2016). A Student's Perspective on Place-Based Learning. https://www.edutopia.org/blog/students-perspective-place-based-learning-grace-whitmore	**CS Inquiry-based Lesson Due**
8		**Differentiation and Classroom Management in Computer Science How do we differentiate computer science instruction?** **Read (BB):**	**CS Project-based lesson**

		1. DiMaria, F. (2016). 3 Easy Ways to Differentiate Computer Lessons https://www.aeseducation.com/blog/2016/07/differentiated-lesson-plans-computer-classes 2. Miller, A. (2016. Six (6) Strategies for Differentiated Instruction in PBL. https://www.edutopia.org/blog/differentiated-instruction-strategies-pbl-andrew-miller **How do we effectively manage the computer science classroom?** 3. Haynes, K. (2011). 12 Easy Ways to Use Technology in the Classroom, Even for Technophobic Teachers http://www.teachhub.com/12-easy-ways-use-technology-your-classroom-even-technophobic-teachers	
		UVM Spring Recess - No Class	
9		**How is computing, computational thinking and technology infused into the MS and HS curriculum?** **Read (BB):** Vaidyanathan, S. (2017). Why Computer Science Belongs in Every Science Teacher's Classroom. *Technology in School.* Guzey, S. S., & Roehrig, G. H. (2009). Teaching science with technology: Case studies of science teachers' development of technology, pedagogy, and content knowledge. *Contemporary Issues in Technology and Teacher Education*, *9*(1), 25-45.	
10		**How is learning assessed in computer science?** Formative and summative assessment in the computer science classroom **Read (BB):** Sazawal, V., Schwarm, S., Goldner, B, Gellenbeck, E., & Zander, C. (2003). Assessment of student learning in computer science education. Journal of Computing Sciences in Colleges, 19(2), 39-42. Parham, J. (2003). An assessment and evaluation of computer science education. Journal of Computing Sciences in Colleges, 19(2), 115-127.	**CS Integrated Lesson Due**
11		**Cybersecurity and Intellectual Property Rights** Read (BB): Cybersecurity in the Classroom: https://niccs.us-cert.gov/formal-education/integrating-cybersecurity-classroom Schools Are Training Students to Be Cyber Sleuths: http://blogs.edweek.org/edweek/curriculum/2017/11/schools_are_training_students_to_be_cyber_sleuths.html	

		With Hacking in Headlines, K-12 Cybersecurity Ed. Gets More Attention https://www.edweek.org/ew/articles/2017/03/22/with-hacking-in-headlines-k-12-cybersecurity-ed.html Intellectual Property Rights and Computer Technology https://link.springer.com/chapter/10.1007/978-1-4471-4990-3_6 Stuart P. Meyer - Computer- and Internet-related intellectual property issues (BB).	
12		**Computer Science Lesson Presentations –** 2 students will present their lesson presentations – 30 minutes each **Computer Science Portfolio Workshop –** Students will work in self-assigned teams to discuss progress and questions on CS Portfolio.	
13		**Issues Related to the Equitable use of Computers and Technology** **Read (BB):** Margolis, J. and Fisher, A. (2003). Unlocking the Clubhouse, Women in Computing. MIT Press. (Ch. 1) Margolis, J., Estrella, R., Goode, J. and Jellison Holme, J (2010). Stuck in the Shallow End: Education, Race, and Computing. MIT Press. (Ch. 1-2) Migga Kizza, J. (2013) Ethical and Social Issues in the Information Age. Springer (Ch. 3).	
14		**Computer Science Lesson Presentations –** 3 students will present their lesson presentations – 30 minutes each	
15		**Computer Science Lesson Presentations –**2 students will present their lesson presentations – 30 minutes each. Course wrap-up, debrief and evaluations	**Computer Science Resource Portfolio Due**

ASSIGNMENT DESCRIPTION AND EVALUATION

Big Ideas in Computer Science - Group Project – (20%)

For this collaborative project, you will work in groups to evaluate the themes or big ideas that constitute the key areas of computer science. In the process, you will consult a variety of CS resources such as textbooks, standards, and curriculum resources. You will create a visual and/or interactive representation of your findings. Possible formats include infographic, video or video clip compilation, graphic organizer, interactive presentation or one of your choosing. Possible tools include PowerPoint, Prezi, Popplet, Animoto, Ease.ly, etc. Each group will have **30 minutes to present** with **5 minutes** for questions and discussion. Your presentation should address the following criteria. (evaluation percentages are assigned for each of the criteria).

1. How will students enter the learning environment? What will they know about computer science on day one? What **assumptions** will they be making? What **biases** will they carry that need dismantling?

    a. Who can be a computer scientist? What skill set does it require?
    b. What does it mean to be a **digital citizen**? What protections and precautions should technology users practice?
    c. How do **societal biases** affect computer science? What can you as an educator do about it in your classroom?

2. What are the **overarching themes and big ideas** that constitute computer science education in grades 7-12? What are the relationships between these themes? How do the themes fit together to form a framework or foundation for CS? **(20 points)**

    a. Related to each of the themes, what are the **key ideas or concepts** that students must know? Is the content realistic and comprehensive? What level of understanding does mastering this content require? What prior knowledge are students assumed to know before learning these concepts?
    b. Related to each of the themes, what **computer science practices** are students required to know and be able to do? What level of competency does mastery of these practices require? What prior practices are students assumed to have mastered before learning new practices?

3. To what extent are **problem-solving, critical thinking, and inquiry** evident in the CS resources that you examined? What kinds of inquiry are endorsed by the various CS standards and curricula? **(20 points)**

4. What are the relevant, interesting, **essential questions worth asking or legal or ethical problems** worth solving about CS that might intrigue your students? **(20 points)**

5. To what extent are the contributions of various **genders, cultures and ethnicities represented** in the CS resources that you examined? **(20 points)**

6. Make recommendations for **adapting or modifying how computer science** is presented in secondary schools. What order of themes or topics would you suggest? What would you emphasize or de-emphasize? What is your rationale for these recommendations? **(20 points)**

CS LESSON PRESENTATION RUBRIC

CURRICULUM/PLANNING

Performance Indicator	Area for Concerns (1)	Approaches Standard (2)	Meets Standard (3)	Rating	Comments
The candidate demonstrates an understanding of content pedagogy through the development of lessons/units with appropriate standards, grade level expectations, and educational objectives in order to make the discipline accessible and meaningful. **(InTASC 4 and 7)**	The candidate's standards, grade level expectations, and educational objectives are unclear/inappropriate and demonstrate a misunderstanding of the content /discipline	The candidate's standards, grade level expectations, and educational objectives somewhat appropriate in order to select content activities that make the learning accessible and meaningful	The candidate's standards, grade level expectations, and educational objectives consistently demonstrate a clear understanding of content pedagogy in order to create content specific learning experiences that make the discipline accessible and meaningful		
The candidate uses an understanding of how learners grow and develop (in cognitive, linguistic, social, emotional, and physical areas) to design developmentally appropriate and challenging learning experiences. **(InTASC 1)**	. The candidate's learning experience does not take into account the developmental level of the learners (cognitive, linguistic, social, emotional or physical areas) and is not appropriate or challenging.	The candidate demonstrates an understanding of how learners grow and develop (in cognitive, linguistic, social, emotional, and physical areas) and can select appropriate and challenging learning experiences.	The candidate consistently demonstrates an understanding of how learners grow and develop (in cognitive, linguistic, social, emotional, and physical areas) and can design and assess appropriate and challenging learning experiences.		
The candidate demonstrates an understanding of individual and population group differences, issues of diversity including learner's prior knowledge, needs, background or interest in order to design inclusive learning experiences that maintain high expectations for all learners. **(InTASC 2)**	The learning experience(s) demonstrate little or no understanding of individual and group differences, issues of diversity including the students' prior knowledge, needs, background, and interests.	The candidate demonstrates a clear understanding of individual and population group differences, issues of diversity including learner's prior knowledge, needs, background or interest and is able to select/apply inclusive learning experiences that maintain high expectations for all learners.	The candidate consistently demonstrates a clear understanding of individual and population group differences, issues of diversity including learner's prior knowledge, needs, background or interest and is able to design/assess inclusive learning experiences that maintain high expectations for all learners.		
The candidate evaluates and modifies instructions resources and curricular materials based on their comprehensiveness, accuracy and appropriateness for her/his students, and uses supplementary resources and technologies as available and appropriate to	The candidate demonstrates little or no understanding of the effective and appropriate use of resources to support or enhance instruction and there is little or no use of technology with students.	The candidate is able to evaluate and modify some instruction using curricula materials based on their appropriateness for the students, and uses technology appropriately most of the time.	The candidate consistently evaluates and modifies instructions resources and curricular materials based on their comprehensiveness, accuracy and appropriateness for her/his students, and uses supplementary resources and technologies as available and appropriate to ensure accessibility and relevance for all students when		

ensure accessibility and relevance for all students. (**InTASC 4)**			teaching the majority of the time.		
General Feedback on Planning:					

INSTRUCTION/TEACHING

Performance Indicator	Area of Concerns	Approaches Standard	Meets Standard	Rating	Comments
The candidate works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction and active engagement in learning . (**InTASC 3)**	The candidate is rarely able to create an engaged, learning community that supports individual and collaborative learning and positive social interactions are minimal among students.	The candidate shows some ability to create an engaged, classroom learning community that supports individual and collaborative learning and provides occasional opportunities for positive social interactions among students.	The candidate consistently creates a learning community that supports individual and collaborative learning, which encourages positive social interactions and active engagement.		
The candidate understands and utilizes a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply in meaningful ways. **(InTASC 8)**	The instructional strategies have little or no variety and do not encourage learners to think critically about content or to make connections in meaningful ways.	The instructional strategies have some variety and sometimes encourage learners to develop a deep understanding of content and connections and building skills in meaningful ways.	The instructional strategies are varied and consistently encourage learners to develop a deep understanding of content, to make connections in meaningful ways.		
The candidate understands how to connect concepts, use questioning techniques and use differing perspectives to engage learners in higher order, critical thinking. **(InTASC 5)**	The candidate is unable to connect concepts and use differing perspectives to engage learners in higher order, critical thinking.	The candidate occasionally connects concepts, uses a limited variety of questioning techniques and some differing perspectives to engage students in higher order, critical thinking.	The candidate consistently connects concepts, uses questioning techniques and different perspectives to engage learners in higher order, critical thinking.		
The candidate differentiates and modifies aspects of instruction based on individual learner ability, interest, and preferences to engage all learners. **(InTASC 2)**	.The instruction demonstrates little or no differentiation or modification, and aspects of the lesson are inappropriate the learners.	The instruction is somewhat differentiated and/or modified as appropriate for the learners.	The instruction is thoroughly differentiated and/or modified as appropriate for the learners.		
General Feedback on Instruction:					

ASSESSMENT

Performance Indicator	Acute Area of Concerns	Approaches Standard	Meets Standard	Rating	Comments

The candidate understands and uses multiple methods (formative and summative) of assessment to engage learners in their own growth, to monitor student progress by using data to make instructional decisions and to guide the teacher's and learner's decision making **(InTASC 6)**	The candidate does not plan effective methods of assessment, minimally monitors student progress and does not utilize data to make instructional decisions.	The candidate uses some assessments and is beginning to utilize data to monitor student growth, engage learners and make instructional decisions.	The candidate consistently plans and uses relevant methods of assessment, collects and utilizes assessment data to monitor student progress, engage learners and make instructional decisions.		
General Feedback on Assessment:					

MANAGEMENT*

Performance Indicator	Acute Area of Concerns	Approaches Standard	Meets Standard	Rating	Comments
The candidate establishes classroom routines, procedures, and expectations to actively and equitably engage learners and uses respectful and *effective* verbal and nonverbal communication strategies **(InTASC 3)**	. The candidate rarely establishes expectations or holds students accountable and occasionally uses inappropriate or ineffective verbal and non-verbal communication resulting in loss of instructional time.	The candidate generally establishes classroom routines and expectations, holds students accountable and uses respective and effective verbal and nonverbal communication strategies to engage all students.	The candidate consistently establishes classroom routines and expectations, holds students accountable and uses respective and effective verbal and nonverbal communication strategies to engage all students.		
The candidate monitors transitions and changes in the learning environment and uses a variety of instructional and behavioral management strategies to encourage learning and active participation. **(InTASC 3)**	The candidate rarely monitors transitions and changes in the learning environment and/or inconsistently or incorrectly uses behavioral management strategies and instructional strategies to address the learning and active participation of students.	The candidate is beginning to recognize and monitor transitions and changes in the environments and uses behavioral management strategies and instructional strategies that generally encourage learning and active participation.	The candidate consistently monitors transitions and changes in the learning environment and uses a variety of instructional and behavioral management strategies to encourage learning and active participation		
General Feedback on Management:					

OVERALL FEEDBACK AND GRADE:

Computer Science Resource Portfolio (30%)

Introduction and Goals

In methods, it is essential that you gain some experience with writing lesson plans to reflect a broad range of activities and assessments. During student teaching you might not see every type of inquiry, instructional strategy, or assessment since you will be somewhat limited by time and the expectations of your cooperating teachers. Thus, the resource portfolio that you design will not necessarily correspond to a specific time frame, but rather to a specific topic that pertains to the HS computer science curriculum. The overall goal is to write lesson plans for a given topic that demonstrate various dimensions of exemplary computer science instruction that we have been discussing throughout the semester. The portfolio should include the following:

1. Narrative explaining overall the rationale, background and goals (EU's and EQ's) of the instructional sequence. Please demonstrate how your portfolio connects to the computer science standards.
2. Curriculum Map – outlining all lessons, projects and assessments
3. Curriculum Resources – a list of all the resources you utilized in the portfolio design
4. Instructional strategies/lesson plans to include a total of 6 lesson plans (utilizing the secondary lesson plan template)
    - Inquiry-based lesson – See class readings and notes
    - Project-based/Place-based inquiry – See class readings and notes
    - CS based lesson; historical lesson
    - Online security/privacy lesson
    - Societal and legal issues to elicit students' values and to develop a plan of action
    - Integrated lesson that demonstrates the integration of instructional technology and one of the following subjects: mathematics, science, English or social studies.
5. Assessment and Grading
    - Diagnostic assessment given at the beginning of the unit plan.
    - Traditional assessment (e.g. unit exam)
    - Performance-based or project-based assessment with rubrics
6. Summary and Reflection of the Portfolio Development Process

Note: You should write no fewer than 6 lesson plans (multiple day plans including labs), each of which may correspond to multiple days of instruction. Be sure to use the lesson plan formats that were discussed in your program (middle and secondary). As always, be sure to include references to *CSTA Standards* and other appropriate standards and other computer science texts and resources.

Computer Science Resource Portfolio Rubric

Performance Indicator	Meets Standard (3 pts)	Approaches Standard (2pts)	Below Standard (1 pt.)
Narrative explaining overall goals and connections to science standards.	Clear and grammatically correct narrative connecting rationale to CSTA standards.	Clear rationale and references to CSTA, but no strong connection between the two.	Clear rationale and only a listing of the relevant CSTA standards.
Traditional lesson	Each lesson appropriately formatted and detailed.	Lesson plan lacking in a few minor details or formatting.	Lesson plan lacking in many details or formatting.
Inquiry-based lesson	Lesson appropriately formatted and detailed.	Lesson plan lacking in detail or formatting.	Lessons lacking in detail or formatting.
Project-based/Place-based lesson	Each lesson appropriately formatted and detailed.	Lesson plan lacking in a few minor details or formatting.	Lesson plan lacking in many details or formatting.
Mathematics as a complement to conceptual understanding.	Mathematics used to understand and reinforce content within lessons.	Mathematics used at the end of lessons to reinforce concepts.	Mathematics used only as an add-on to the content of the unit plan.
Effective use of instructional technology.	Technology used to engage individuals and whole class.	Technology used to engage whole class.	Technology used only to present info to whole class.
Diagnostic assessment for beginning of unit.	Clear objectives and grading guidelines.	Clear objectives, but somewhat vague on grading.	General description of goals, but no grading guidelines.
Performance-based assessment.	Clear objectives and grading guidelines provided.	Clear objectives for each student, but somewhat vague on grading.	General description of goals of assessment, but no grading guidelines.
CS-based lesson; historical	Clear CS objectives and mechanisms for student assessment.	Clear CS objectives, but vague criteria for assessment.	Clear CS objectives, but no description of how to assess students.
Societal and legal issue related to computer science that elicits students' values and requires a plan of action.	Each lesson appropriately formatted and detailed.	Lesson plan lacking in a few minor details or formatting.	Lesson plan lacking in many details or formatting.
Reflection of curriculum process.	In-depth and insightful reflection.	Reflection evident and acceptable	Reflection evident but lacking in detail and insight.

Comments: **Resource Portfolio Score =**

NOTES: