ANTIOCH UNIVERSITY SEATTLE
School of Education

Purpose of the School of Education: The School of Education promotes constructivist pedagogy, critical reflection and a commitment to social justice through transformative education and realized by positive impact on the learner's growth, in school and beyond.

Course Number	EDUC 5550-ARTC
Course Name	Instructional Methods: Science I
Credits	2 Credits
Day & Time:	Mondays, 6:50 PM – 8:30 PM, 10 weeks
Quarter/Year:	Fall 2018
Location:	TBD, Kent School District
Faculty Member:	Dr. Carolyn Colley
Contact Information:	ccolley@antioch.edu
Office Hours:	Email to set up appointment. Happy to meet! ☺

Course Description
Teacher candidates utilize a framework of sets of science teaching practices focused on equity and intellectual engagement. Learning experiences integrate the use of technology, highlight multicultural and sustainability issues present in science education, and apply current assessment practices. Candidates develop practice-based, multicultural lessons that are based on Next Generation Science and Washington State Environmental and Sustainability Standards, with emphasis placed on student learning, assessing student understanding, culturally responsive teaching, and reflective teaching practices.

This course is guided by the following essential questions:
- How do students learn science? Why is it important to reach all learners in science?
- What teaching practices help students learn science in ways that help them revise their understanding over time? How can I facilitate learning as a *process*?
- How can I help *all* students make sense of science ideas through using school, local, and global community resources and lived experiences?

Learning Objectives
- Teacher candidates (TCs) learn how to plan for, instruct, differentiate, and assess K-8 standards-based science instructional plans to meet the needs of diverse learners.
- TCs design lessons that elicit student understandings of a scientific big idea, provide sensemaking opportunities for students, and allow students to apply their understandings.
- Evidence of student learning gathered from multiple sources of assessment and used to modify instruction in-the-moment and for subsequent lessons.
- TCs will design, reflect on, and modify science instruction that uses students' everyday lives as the basis of learning. Family and community contexts are assets and can form and shape science instruction.
- TCs will practice and reflect on discourse strategies that foster productive learning.

Core Learning Experiences for this course:

1. *Active participation*: Active participation means *being prepared for class, having completed assignments, and engaging in class discussions.* Participating means creating safe spaces, monitoring airtime, listening to and valuing others' ideas and perspectives, voicing concerns respectfully, being sensitive to who gets to speak, assuming "best intentions" and being mindful of impact, and being able to challenge each other.

2. *Homework:* Weekly reading and/or video homework assignments are noted on the class schedule. Discussions will take place during class. Actively read/watch by making notes and writing down questions, thoughts, and reflections to prepare to participate in discussions.

3. *One Cycle of Science Teaching Improvement*: During this quarter you will work in a group of three (you plus 2 classmates) to plan, enact, reflect, refine, and re-teach one science lesson. You will teach (week 7) and then improve and reteach (week 9) your lesson to a small group of your colleagues during our class session. Directions and assignment details will be posted in Sakai under "Assignments"

4. *Reflections:* You will be asked to provide a brief reflection on your experiences and/or your learning. This can be in any format (written document, narrated photo, audio recording, video recording) as long as it addresses the prompts provided. These will be posted in our SeeSaw course (free online platform https://app.seesaw.me and free app for smart phones). Ideally, we will have time *during* our class sessions for you to create and post these reflections.

Course Requirements

1. Adherence to Antioch University Seattle procedures stated in the syllabus and defined in the Antioch University Seattle Catalog: http://www.antiochseattle.edu/registrar/aus-catalog/
   - *Attendance*: Students are expected to attend all scheduled classes. Credits may be denied for failure to attend classes. (Antioch University Seattle Catalog)
   - *Incomplete policy*. The University expects students to complete all coursework by the end of the quarter. In exceptional circumstances, students may request an exception and negotiate with the instructor for an Incomplete (Inc).

2. Submitting course assignments to instructor(s) and returning course assignments to students:
   A. *Submitting course assignments to instructor*: Follow all assignment directions. If you have questions about directions, content, and/or where/how to submit an assignment, contact the instructor prior to the due date.
   B. *Returning course assignments to students*: All feedback on written assignments is electronic or may be given in-person during office hours. If you have questions about where to locate feedback, about the feedback itself, or want to further discuss an assignment, please contact the instructor.

3. Course Evaluations: Students evaluate all courses during mid-term and at the end of the quarter. The final course evaluation is required for all students in all courses.

Course Texts & Resources

REQUIRED:

Windschitl, M., Thompson, J., & Braaten, M. (2018). *Ambitious Science Teaching.* Cambridge, Massachusetts: Harvard Education Press.

RECOMMENDED *(These are useful but will not be used in this course)*:

Cartier, J.L., Smith, M.S., Stein, M.K., & Ross, D. K. (2013). *5 Practices for Orchestrating Productive Task-Based Discussions in Science*. The National Council of Teachers of Mathematics, Inc. Reston. VA: NSTA Press.

Michaels, S., Shouse, A., & Schweingruber, H. (2008). *Ready, Set, Science! Putting Research to Work in K-8 Science Classrooms*. Washington, DC: The National Acad. Press. (ISBN-10: 0309106141; ISBN-13: 9780309106146)
Free e-book available: http://www.nap.edu/openbook.php?record_id=11882

Rosebery, A. S. & Warren B. (2008). *Teaching Science to English Language Learners: Building on Students' Strengths*. NSTA Press: Arlington, Virginia.

Zembaul-Saul, C.L., McNeill, K.L., Hershberger, K. (2012) *What's Your Evidence? Engaging K-5 Children in Constructing Explanations in Science.* Pearson Professional Development. (Book includes CD-ROM with teaching video examples.)

SELECTED WEBSITES *to support science teaching and learning (There are many more!)*:

Ambitious Science Teaching - http://AmbitiousScienceTeaching.org/
National Science Teachers Association http://www.nsta.org/
Center for Science Education http://cse.edc.org/

Standards (bookmark and/or download to your computer)

- Next Generation Science Standards (NGSS): http://www.nextgenscience.org/
- Environmental & Sustainability Education (ESE) Learning Standards:
  - http://www.k12.wa.us/EnvironmentSustainability/default.aspx
- Common Core Standards :
  - http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf
  - http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf
- English Language Proficiency: http://www.k12.wa.us/MigrantBilingual/ELD.aspx

Audio- or Video-recording of Classes

This course includes recordings of class sessions for educational and academic purposes. The recordings will be used and shared by your instructor in accordance with the Guidelines for Lecture Capture and Audio/Video Recording. The Guidelines provide information about when it is necessary for faculty to obtain permission to use and/or share class recordings. Students will be asked to provide their verbal consent to have the sessions recorded. Faculty may not share or transfer the recordings to third parties outside the class without students' written consent. Students who receive copies of recorded classes may use the recordings for their own personal educational purposes only for the duration of the course. Students may not share or transfer the recordings to third parties outside the class under any circumstances.

Class Schedule and Summary of Assignment Due Dates

The schedule, assignments, and course content are subject to change at the discretion of the instructor. The order of weekly assignments is intentional to support your understanding. Work on the assignments in the order provided.

Creating a Vision for Science Teaching and Learning	**Session 1**
Assignments Due *Before* Class Today	Session Topic(s) during class
(Nothing due before our 1st class session) **Bring to class:** Please bring a laptop, tablet, and/or smart phone to class. (If none of these are available to you, we will be working in pairs or triads, so you can share.)	• **Personal Reflection***: How did/do you experience and identify with science? (How-to use SeeSaw)* • **Experience-a-lesson:** *Focus on eliciting ideas* • **Student Learning***: What are children capable of? Introduction to Ambitious Science Teaching* • **Course expectations**

7 Elements Equitable and Rigorous Science Teaching	**Session 2**
Assignments Due *Before* Class Today	Session Topic(s)
Must-do: • **READ** Ch 1 "A Vision of Ambitious Science Teaching" p1-18 (AST book) *Optional:* • **WATCH** the overview video on the AST website (18 mins) **https://tinyurl.com/ASToverview**	• **Entry task***:* Discuss homework reading pgs 1-18. Then, apply 7 elements (from homework) to analyze video watched during class • **Students' lived experiences as science-learning resources**: Conversations around equity and 7 elements using *The Butterfly Story* • **Personal learning reflection** (Seesaw)

Three-Dimensional (3-D) Science Learning: What is that?	**Session 3**
Assignments Due *Before* Class Today	Session Topic(s)
Must-do: • **READ** part of Ch 3 "Talk as a tool for learning" p 48-64, teacher talk moves • **WATCH** "Improving participation with talk moves" talk moves (3 mins) https://www.teachingchannel.org/video/student-participation-strategy (math example) • **WATCH** "Talk Moves in Academic Discussions" student talk moves (3 mins) https://www.teachingchannel.org/video/teaching-ells-to-participate-in-discussions-ousd	• **Entry task**: Watch video clip of a teacher talking with a student. Use HW reading/videos to discuss and identify teacher moves and scaffolding. • **Three-Dimensional (3-D) science learning***: Introduction to the Next Generation Science Standards and WSSLS* • **Experience-a-lesson***:* Supporting sensemaking *(abbreviated; follows eliciting lesson, session 1)* • **Unpacking a science lesson:** Building better learning opportunities from an existing lesson; 3-D NGSS learning; Supporting student talk in lesson tasks; (Start a "gotta-have" checklist for science lesson planning and improvement)

Making Students' Thinking Available and Visible: Modeling **Session 4**	
Assignments Due *Before* Class Today	Session Topic(s)
Must-do: • **READ** Ch 6 "Making thinking visible through models" p 111-129 *Optional:* • **WATCH** "Scientific modeling in the early grades" (K-2) (10 mins) https://www.teachingchannel.org/video/scientific-modeling-elementary-grades-nsf	• **Entry Task**: Q&A about student modeling at the beginning, during, and end-of-unit • **Experience-a-lesson***:* Supporting sensemaking *(follows in sequence from 1, 2, and 3)* • **Unpacking a science lesson:** Building better learning opportunities from an existing lesson guide: Critique and improve the lesson you experienced o Identifying and improving 3-D NGSS learning o Supporting student talk in lesson tasks o Add a modeling task • **Personal learning reflection**: Building a better lesson (Seesaw assignment, finish as HW if needed)

Supporting Student Thinking: Introducing Content Ideas **Session 5**	
Assignments Due *Before* Class Today	Session Topic(s)
Must-do: • **COMPLETE** Seesaw personal learning reflection from session 4 (if not completed in class) • **READ** Ch 8, "Supporting Ongoing Changes in Thinking: Introducing New Ideas" p. 151-167. *Examine Table 8.1 and compare with your experiences as a learner or teacher.* ***Optional:*** • **WATCH** *Everyday vs Science Meaning*: Teaching Vocabulary, 10 min https://safeshare.tv/x/4rOXWfGE2fM	• **Entry Task:** Homework discussion of introducing new content information to students • **Experience-a-lesson***:* Supporting sensemaking *(follows in sequence for our unit from sessions 1-4)* • **Unpacking a science lesson:** Building better learning opportunities from an existing lesson guide: o Identifying and improving 3-D NGSS learning o Supporting student talk in lesson tasks o Add/improve a modeling task o Add/improve direct instruction (intro new idea) • **Lesson planning time**: Workshop a lesson guide in a triad (3 people) following our "gotta-have" checklist for designing better learning opportunities

Supporting Student Thinking: Back-pocket Q's & Public Records **Session 6** **November 5**	
Assignments Due Before Class Today	Session Topic(s)
Must-Do: Choose option 1 or option 2 • **Option 1: READ** ch 9 "Supporting Ongoing Changes in Thinking: Activity and Sensemaking" p169 – 186 • **Option 2: READ** ch 10 "Supporting Ongoing Changes in Thinking: Collective Thinking" p187-198	• **Entry task**: Jigsaw presentation of how activity selection and collective thinking support sensemaking (using homework) • **The power of public records**: Summary tables • **Lesson planning time**: Continue working on your lesson plan following our "gotta-have" checklist for designing better learning opportunities. Teach next week!

Enact your Lesson	**Session 7**	**November 12**
Assignments Due *Before* Class Today	Session Topic(s)	
Must-do: • **COMPLETE** (if you haven't already) lesson plan with your triad. Prepare to teach a small group of your peers. *If you are using a video clip in your lesson:* • **SKIM** "Watch-Think-Write and Proven Strategies for Using video in the classroom" http://bit.ly/2jl13wQ	• **Experience/Teach-a-lesson**: Teach your peers! Triads take turns enacting lessons (in the teacher role) and participating as students (in student role) • **Triad team reflection on the lesson enactment:** Post a video lesson reflection following directions in SeeSaw assignment and referring to artifacts (student work, models, charts) as evidence	

~~~~~ No class the week of Thanksgiving (Monday, November 19) ~~~~~

Supporting Student Thinking: Scaffolding	**Session 8**	**November 26**
Assignments Due *Before* Class Today	Session Topic(s)	
[To-be determined and announced prior to Thanksgiving Break] ***Suggested:*** • Re-visit chapters 8, 9, and 10 with an eye on scaffolding and consider how to better support all students.	• **Scaffolding to meet the needs of all learners:** Discussion of prior enactments. Recapping and adding to the "gotta-have" lesson planning checklist. • **Lesson planning time**: Improve the lesson guide you previously taught with your triad (3 people) following our "gotta-have" checklist for designing better learning opportunities.	

Enact your Lesson Improvements	**Session 9**	**December 3**
Assignments Due Before Class Today	Session Topic(s)	
Must-do: • **COMPLETE** your lesson plan improvements with your triad and prepare to teach a small group (3-4 of your peers)	• **Experience/Teach-a-lesson**: Teach your peers! Take turns enacting your improved lessons (in the teacher role) and participating in student role • **Triad team reflection on improved lesson:** Post a video lesson reflection following directions in SeeSaw assignment and referring to artifacts (student work, models, charts) as evidence	

Pressing for Evidence-based Explanations	**Session 10**	**December 10**
Assignments Due *Before* Class Today	Session Topic(s)	
Must-do: • **READ** Ch 12 "Drawing Together Evidence-Based Explanations" p215-235 ***Optional:*** • **WATCH** "Pressing for Evidence-based explanations" (19 mins) https://tinyurl.com/ASTevidencebasedexplanation	• **Experience-a-lesson**: Pulling the unit together. Revising and updating models with evidence from activities • **Course wrap-up:** o What's next? Resources for teaching science o Course survey (emailed by AUS)	

!!!! **DUE DECEMBER 15** !!!!! Final personal reflection on course learning (Seesaw)

Rubrics for assignments

Assignment	Expectations not met	Expectations Met	Expectations Met High
Attendance and completion of homework	More than 2 absences, or make-up assignments for absences not completed, or did not meet expectations; Not prepared for class	Zero, one or two absence(s) during quarter, with make-up assignment meeting expectations; prepared for class;	No absences during quarter; Prepared for class, and engaged in class discussions as an active contributor in partner, small group and/or whole group discussions
Personal Learning Reflections	Reflections not completed and/or submitted to instructor. Does not address prompt.	Mostly addresses prompt, completed reflections and submitted on-time	Addresses prompts; thoughtful, complete reflections using evidence and/or examples
Teaching Enactments	Lesson plan and/or enactment not completed according to AUS standards.	Lesson completed according to AUS and course standards. Candidate linked assessment to learning objective. Student learning guided lesson. Active participant in peer's lessons and reflection. Lesson reflection complete. Level 1 or 2 on EdTPA rubric.	Met requirements and… Candidate preplanned back pocket questions and used student responses to inform instruction and direction of lesson. Lesson plan reflection reflected deep knowledge of positive impact on student learning and student voice. Level 3, 4 or 5 on EdTPA rubric distributed in class.
Overall course outcome	One or more of class assignments or expectations were not met.	All class assignments or expectations were met.	All class assignments or expectations met at a high level.

Antioch University Policies

Evaluation Procedures

1. **Attendance:** Students are expected to attend all scheduled classes. Credits may be denied for failure to attend classes.
2. **Conduct:** Students are expected to be treated and to treat others with respect. Failure to do so may result in suspension, dismissal, or exclusion from class.
3. **Plagiarism:** Plagiarism is defined as the presentation of an idea or a product as one's own, when that idea or product is derived from another source and presented without credit to the original source. "Idea or product" includes not only written work but also artworks, images, performances or ideas expressed orally or via any electronic or other medium.
4. **Communication Protocol:** All students must have access to computer technology. AUS maintains computer access in the AUS Library on the third floor and the study center on the second floor.
   E-mail accounts and addresses are assigned for all Antioch Seattle students. Students are required to check their e-mail accounts at least weekly and are responsible for being aware of information posted as official announcements and through their programs. To comply with students' record confidentiality and security requirements, official e-mail communication with Antioch Seattle, including e-mail between students and instructors, should originate from and be conducted within the Antioch University Seattle e-mail system.
5. **Incompletes:** If a student does not satisfactorily complete the assigned work in a course by the end of the term, he or she will be granted No Credit. If a student is unable to complete the work

due to extraordinary extending circumstances, he or she should discuss the matter with the instructor and, if approved, the instructor can assign an incomplete (INC) and set a deadline of thirty (30) days for required submission of all remaining assignments. The incomplete will be calculated in the same way as No Credit is when determining the student's academic standing. Upon satisfactory completion of the INC, it will no longer count against the student's academic standing. If the work is not completed by the deadline and an assessment has not been submitted, a No Credit (NC) will be assigned, not subject to change. To earn credit for a course deemed No Credit or permanently incomplete, the student must reenroll in and repay for the course. Incomplete contracts are not available to non-matriculated or visiting students.

Upon withdrawal from Antioch, outstanding incomplete courses are converted to NC (No Credit). An NC is permanent and not subject to change. Students must complete all course and degree requirements prior to or on the last day of classes of a term to be eligible to graduate that term.

University Policies

Antioch University is committed to building a vibrant and inclusive educational environment that promotes learning and the free exchange of ideas. Our academic and learning communities are based upon the expectation that their members uphold the shared goal of academic excellence through honesty, integrity, and pride in one's own academic efforts and respectful treatment of the academic efforts of others. All students are expected to comply with Antioch University policies, including the Title IX Sexual Harassment and Sexual Violence Policy, Student Academic Integrity Policy, and the Student Conduct Policy. Academic, student, and other university policies are available online: http://aura.antioch.edu/au_policies/

Questions about policies may be directed to Jane Harmon Jacobs, Academic Dean, Jharmonjacobs@antioch.edu or 206.268.4714.

Reasonable Accommodation for Students with Disabilities

Antioch University is committed to providing reasonable accommodations to qualified students with disabilities in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 2008. Students with disabilities may contact the Disability Support Services office to initiate the process and request accommodations that will enable them to have an equal opportunity to benefit from and participate in the institution's programs and services. Students are encouraged to do this as early in the term as possible, since reasonable accommodations are not retroactive. The Disability Support Services office is available to address questions regarding reasonable accommodations at any point in the term. For more information, please contact Jill Haddaway, Disability Support Services Coordinator: 206-268-4822 or dss.aus@antioch.edu.

Library Services and Research Support

The AUS Library is here to serve you throughout your academic career. On our physical shelves, you will find books carefully selected to help you in your academic pursuits. In addition, you will also find journals, masters' theses, dissertations, and videos/DVDs. The AUS Library provides computers including PCs and Macs, a printer/copier, and scanners available for you to use. You may also bring your laptop and connect to the campus wireless system. To search the library catalog and beyond, please see the AUS Library web page, http://www.antiochseattle.edu/library. Both the catalog and our extensive research databases may be searched from off campus. Please call the AUS Library at 206-268-4120 if you need information on how to access the databases. The Library teaches workshops throughout the year that are designed to help you in your research. Students may also make an appointment with the librarian for

individual research help. Call or email Beverly Stuart, Library Director, at 206-268-4507 or bstuart@antioch.edu.

Writing Support at Antioch University
Much of your learning is writing intensive, and you will write in a variety of genres, from critical reflections to more formal research papers. Writing for an academic audience can also require one to gain new understandings about style and format. All students are encouraged to seek writing support for their courses throughout their career at Antioch. Students at AUS have multiple venues for free writing support:

Academic Support Lab (room 323 Library/CTL): The ASL offers free peer-based writing consultations through appointments (schedule directly on line at https://antiochctl.mywconline, call: 268-4416 or email: asl.aus@antioch.edu) and drop in hours as well as workshops and resources for successful writing at AUS. ASL tutors are graduate assistant students in various programs at AUS and thus have deep understanding of the types of writing done by AUS students. Check their website for future workshops on topics related to academic writing.

The Virtual Writing Center (VWC): The VWC is located on the AU Drive at antioch.edu/vwc and allows busy AU students to get quality peer-based feedback of their writing within 48 hours. Live conversations with peer e-tutors may also be arranged by emailing vwc@antioch.edu.

The Writers' Exchange (WEX): fee-based writing support
The Writers' Exchange (WEX) was developed at Antioch University in direct response to the increase demand of graduate students' need for specialized editing support that exceeded the free peer-editing available at the Virtual Writing Center. If you're working on your thesis or dissertation, or just want professional writing support, visit WEX at wex.antioch.edu.
All WEX editors are professionals who have been vetted for their range of editing experience and the breadth of their expertise. Our fees are competitive and further discounted for the entire AU community.

All assignments align with AUS GTP Program Outcomes and AUS School of Education's conceptual framework

Program outcomes:
1. Multicultural Competency and Sensitivity, and a Commitment to Social Justice
2. Reflective Practice
3. Personal Qualities as a Leader
4. Knowledge of the Learner
5. Content Area Expertise
6. Student-centered Curriculum and Instruction
7. Personal Qualities as a Teacher
8. Sensitivity to the Community Context of Teaching and Learning
9. Responsibility to Washington State Standards

Conceptual Framework
1) Promotion of constructivist pedagogy
2) Promotion of critical reflection
3) Promotion of deep commitment to social justice through transformative education
4) Promotion of dedication to the learner's growth, in school and beyond

Course assignment alignment with State and University Standards

Standard V (WAC 181-78A-270(1))	edTPA Washington rubric (from Elem. Math TPA)	Course assignments
a. Effective teaching		

(i)Using multiple instructional strategies, including the principles of second language acquisition, to address student academic language ability levels and cultural and linguistic backgrounds	EM10: How does the candidate use knowledge of students' language development to identify a key language demand central to content learning? EM11: How does the candidate support academic language development associated with content learning? EM12: How does the candidate reveal students' understanding and use of academic language associated with content learning?	Teaching Enactment & Reflections
(ii) Applying principles of differentiated instruction, including theories of language acquisition, stages of language, and academic language development, in the integration of subject matter across the content areas of reading, mathematical, scientific, and aesthetic reasoning	EM10: How does the candidate use knowledge of students' language development to identify a key language demand central to content learning? EM11: How does the candidate support academic language development associated with content learning? EM12: How does the candidate reveal students' understanding and use of academic language associated with content learning?	Teaching Enactment & Reflections Readings Class discussion
(iii) Using standards-based assessment that is systematically analyzed using multiple formative, summative, and self-assessment strategies to monitor and improve instruction	EM3: How are the informal and formal assessments selected or designed to provide evidence of student progress toward the standards/learning targets? EM6: How does the candidate demonstrate an understanding of student performance with respect to standards/learning targets? EM8: How does the candidate use conclusions about what students know and are able to do to plan next steps in instruction? EM7: How does the candidate provide students feedback to guide their further learning? EM9: How does the candidate use evidence to evaluate and change teaching practice to meet the varied learning needs?	Teaching Enactment & Reflections
(iv) Implementing classroom/school centered instruction, including sheltered instruction that is connected to communities within the classroom and the school, and includes knowledge and skills for working with others	EM4: How does the candidate actively engage students in developing understandings of mathematical concepts?	Teaching Enactment Readings Class discussion
(v) Planning and/or adapting standards-based curricula that are personalized to the diverse needs of each student	EM2: How does the candidate use knowledge of his/her students to target support for students' development of conceptual understanding, computational/procedural fluency, and mathematical reasoning/problem solving skills?	Lesson planning Teaching Enactment & Reflection Readings Class discussion
(vi) Aligning instruction to the learning standards and outcomes so all students know the learning targets and their progress toward meeting them	EM13: How does the candidate focus student attention on the learning targets? EM14: How does the candidate support students to access resources for learning and to monitor their own learning progress? EM15: How does the candidate use student-voice evidence to identify instructional improvements?	Lesson planning Teaching Enactment & Reflection
(vii) Planning and/or adapting curricula that are standards driven so students develop understanding and problem-solving expertise in the content area(s) using reading, written and oral communication, and technology	EM1: How do the candidate's plans build conceptual understanding, computational/procedural fluency, and mathematical reasoning/problem solving skills? EM4: How does the candidate actively engage students in developing understandings of mathematical concepts? EM5: How does the candidate elicit and monitor students' responses to deepen their understanding of mathematical concepts?	Teaching Enactment
(viii) Preparing students to be responsible citizens for an environmentally sustainable, globally interconnected, and diverse society		Teaching Enactment
(ix) Using technology that is effectively integrated to create technologically proficient learners		Teaching Enactment Discussion Forum
(x) Informing, involving, and collaborating with families/neighborhoods, and communities in each student's educational	EM2: How does the candidate use knowledge of his/her students to target support for students' development of conceptual understanding, computational/procedural fluency,	Teaching Enactment Discussion Forum

process, including using information about student cultural identity, achievement and performance	and mathematical reasoning/problem solving skills?	
b. Professional development		
Developing reflective, collaborative, professional growth-centered practices through regularly evaluating the effects of his/her teaching through feedback and reflection	EM8: How does the candidate use conclusions about what students know and are able to do to plan next steps in instruction EM9: How does the candidate use evidence to evaluate and change teaching practice to meet the varied learning needs?	Teaching Enactment Peer Feedback Lesson planning
c. Teaching as a profession		
(i)Participating collaboratively and professionally in school activities and using appropriate and respectful verbal and written communication	NA	Pre-internships Class discussion
(ii)Demonstrating knowledge of professional, legal, and ethical responsibilities and policies	NA	Pre-internships