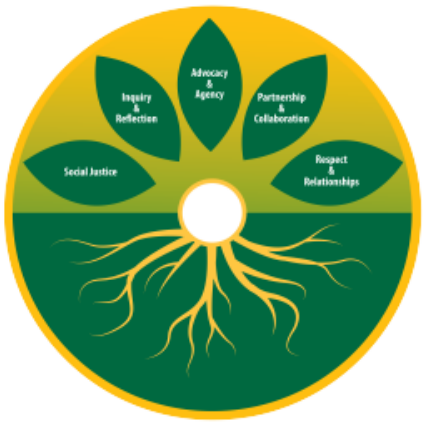


GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
Secondary and Elementary Education Program (SEED)

SEED 573-001: Teaching Science in the Secondary School
3 credits, Fall 2024
Face-to-face class - Mondays, 4:30 – 7:10 pm
Thompson Hall 2020, Fairfax Campus

Instructor:	Dr. Erin Peters-Burton
Day and Time:	Mondays 4:30-7:10 pm
Dates:	August 26 – Dec 9, 2023
Class Location:	Thompson 2020 Fairfax Campus
E-mail:	epeters1@gmu.edu
Phone:	703-993-9695
Office & Hours:	Thompson 1401, Fairfax Campus By appointment

Communication: Email is the best form of communication. During usual circumstances, turnaround time is 24-48 hours.

Prerequisites/Corequisites: Per state guidelines, you are required to complete 15 hours of fieldwork during this class. Please answer the survey sent by Dr. Zenkov. If you have missed this survey, go to http://cehd.gmu.edu/endorse/ferf to sign up for your placement. It is recommended that students take Methods I in the same semester as they enroll in SEED 540, Human Development.

University Catalog Course Description: Provides study of methods, materials, content, and organization of science programs. Emphasizes curriculum planning, current methodologies, safety, and trends in secondary schools.

Course Overview: SEED 573 is the first course in a two-part sequence of science methods courses for pre-service and provisionally licensed science teachers seeking a secondary school teaching license in earth science, biology, chemistry, or physics. The course builds upon students' knowledge of their subject matter and previous education coursework to construct fundamental knowledge of science teaching and learning including standards-based curriculum design and research-based teaching strategies. The course focuses on developing inquiry-based lessons for students to investigate science and assessing student understanding of science and the nature of science. The teachers will plan lessons for students to learn science, implement lessons in a high school classroom, observe students learning, and evaluate their teaching and student outcomes.

Course Delivery Method: This course is designated as a lecture course, however, the approach used in the class is intended to mirror best practices in the secondary classroom for developing both content knowledge and process skills. All SEED classes have designated delivery modes and specific modes for each class session (e.g., face-to-face, virtual synchronous, virtual asynchronous). The majority of SEED classes are held in a face-to-face mode. Students are expected to attend every class session in the mode it is offered. If you must miss a class session for illness or another valid reason, you are expected to proactively communicate (ahead of the

class session) with your instructor about your expected absence.

Emergency Procedures: You are encouraged to sign up for emergency alerts by visiting the website https://ready.gmu.edu/masonalert/. There are emergency posters in each classroom explaining what to do in the event of crises. Further information about emergency procedures exists on https://ready.gmu.edu/.
Professional Dispositions: Students are expected to always exhibit professional behaviors and dispositions. See https://cehd.gmu.edu/students/polices-procedures/.

CEHD Commitments

The College of Education and Human Development is committed to fostering collaboration and community, promoting justice and equity, and advancing research-informed practice. Students are expected to adhere to, and contribute to, these commitments, the CEHD Mission, and Core Values of George Mason University. More information can be found here: https://cehd.gmu.edu/about/culture/

GMU Policies and Resources for Students

Policies

- Students must adhere to Mason's Academic Standards (see https://catalog.gmu.edu/policies/academic-standards/)

- Students must follow the university policy for Responsible Use of Computing (see https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/).

- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.

- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see https://ds.gmu.edu/).

- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to VIA should be directed to viahelp@gmu.edu or https://cehd.gmu.edu/aero/assessments.

- Questions or concerns regarding use of your LMS should be directed to:
    - Canvas: https://its.gmu.edu/service/canvas/

- For information on student support resources on campus, see: https://ctfe.gmu.edu/teaching/student-support-resources-on-campus
    - TimelyCare: https://caps.gmu.edu/timelycare-services/
    - Writing Center: https://writingcenter.gmu.edu/

- For additional information on the College of Education and Human Development's Student Success Resources, please visit: https://cehd.gmu.edu/students/.

Notice of mandatory reporting of sexual assault, sexual harassment, interpersonal violence, and stalking:

As a faculty member, I am designated as a "Non-Confidential Employee," and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance or support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

Use of Generative AI

- Use of Generative AI tools should be used following the fundamental principles of Mason's Academic Standards. This includes being honest about the use of these tools for submitted work and including citations when using the work of others, whether individual people or Generative AI tools.

For additional information on the College of Education and Human Development, please visit our website https://cehd.gmu.edu/students/.

Required Electronic Texts: We will have required readings from an NSTA class bundle, consisting of various books and journals (and sometimes webinars) from the National Science Teacher Association (NSTA) – our national organizing body. We suggest you purchase the year-long course pack ($99) if you plan to take Methods 2 next semester, as that course also uses the course pack. If you want to purchase the course pack for just this semester it is ($79).

The purchase of these electronic materials also gives you a membership to NSTA, which opens a great deal of resources to you. We are doing this instead of having one book for two reasons:

- NSTA is an important organization to know over the course of your career as a science teacher – they are a premiere organization in professional development- and you should get to know them and get involved as soon as possible
- NSTA peer-reviews all of their work, so their professional development materials are the best available – and the biggest body of materials as well

To get the readings for the class, go to following collection – GMU SEED Readings Collection - https://my.nsta.org/collection/8FT6k6fnGa0_E? . I have set it as public, so you should all be able to have access to add this in one click once you have an account. You may also find and save other items to your learning center account – most of the materials are free – including science objects and webinars.

Course Materials Online: The Canvas site, found at http://canvas.gmu.edu, will be used for all assignments. Use the same login as your GMU email for the Canvas Sites.

Course Performance Evaluation: Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Canvas, VIA, hard copy).

Grade	Percentage
A	95-100%
A-	90-94%
B+	87-89%
B	83-86%
B-	80-82%
C	70-79%
F	Below 70%

Grading: High quality work and participation is expected on all assignments and in class. Attendance at all classes for the entire class is a course expectation. For each unexcused absence, the course grade will be reduced by 5% points. All assignments are graded and are due at the beginning of class on the day they are due. Late assignments will automatically receive a ten percent grade reduction (one full letter grade lower).

If circumstances warrant, a written contract (form provided by CEHD) for an incomplete must be provided to the instructor for approval prior to the course final examination date. Requests are accepted at the instructor's discretion, provided your reasons are justified and that 80% of your work has already been completed. Your written request should be regarded as a contract between you and the instructor and must specify the date for completion of work. This date must be at least two weeks prior to the university deadline for changing incompletes to letter grades.

Other Requirements: Every student registered for any Secondary Education course with a required VIA performance-based assessment (designated as such in the syllabus) must submit this/these assessment(s) (Original Lesson Plan assignments) to VIA through 'Assessments' in Canvas (regardless of whether a course is an elective, a one-time course or part of an undergraduate minor). Failure to submit the assessment(s) to VIA (through Canvas) will result in the course instructor reporting the course grade as Incomplete (IN). Unless this grade is changed upon completion of the required VIA submission, the IN will convert to an F nine weeks into the following semester.

Student Evaluation of Teaching: The student evaluation of teaching, or SET, is an online course survey. You are strongly encouraged to complete this form for each course as this feedback helps instructors and administrators improve your class experiences. Toward the end of the course, you will receive notifications when the evaluations open. Your anonymous and confidential feedback is only shared with instructors after final grades have been submitted. More information about the SET can be found on The Institute of Effectiveness and Planning website at https://oiep.gmu.edu/set/

Big Ideas in Science Education: During this semester we will focus on the following big ideas to frame your understanding of effective science education practices throughout both Science Methods I and Science Methods II.

- Our job is to help students figure out how to be lifelong learners
- **Have a theory of learning** – it is what should guide your instruction as you develop lessons
- Know what you want your students to be able to do and how you will assess it before you design any instruction
- Know your students – get into their heads when designing lessons
- Measure everything you do against student learning
- You don't have to reinvent the wheel, but do need to customize it based on your learning theory and unit objectives
- The more students figure out answers to tough questions on their own, the more they will trust they can learn on their own
- Science is a process that uses evidence to think critically and explain the natural world
    - The process leads to the knowledge we currently teach as facts
    - **If students don't experience and explicitly learn the process,** they won't value its ability to explain the natural world – plus they will only see science as a collection of facts

Assessments: Findings from science education research shows that frequent assessment of small amounts of material is most effective for learning science. Therefore, in this class formal and informal assessment will be continuously provided on assignments and class activities. Assessment is a two-way communication loop that informs both learning and teaching. Assessments for each of the objectives are identified and linked to documents describing them. Additionally, an overview of all the assessments and the percentage they make up of your overall grade can be found here. Due dates for each of the assessments (and links to describing them) can be found in the calendar below.

Assignment	Points	Due Date
Research Review	5	Several parts- see calendar
Scientific Investigation/ Nature of Science	5	October 14
Lesson Plans: Lesson Critique and Revision	10	October 21 & 28
Safety Assignment	5	October 21
Lesson Plans: "Original" Lesson Plan	20	December 1
Microteaching & Reflection	15	December 11
Clinical Experience Project	10	December 9
Professionalism	30	All Classes

SEED 573 Learner Outcomes/Objectives: Below is a list of the major course goals along with their corresponding objectives and assessments. They are written in the same ABCD format you will learn in Methods I with the Audience, Behavior, Conditions, and Degree color coded as shown. To the right is the assignment(s) that will be used to evaluate achievement of the objectives (follow the link to get a detailed description of the assignment).

Goal 1: Build a learning theory for developing and implementing lessons

Objective	Assignment
Methods I students will explain the role of a learning theory in instructional practice, using evidence from the literature.	Research Review
Methods I students will explain why Constructivism has become the "Grand Unifying Theory" for science education, using evidence from the literature.	Research Review
Methods I students will design instruction that reflects a constructivist learning theory (self-created or obtained from other sources and modified) that allow students to build the knowledge rather than being told.	Lesson Plan Revision "Original" Lesson Plan

Goal 2: Do science to understand how science is done

Objective	Assignment
Methods I students will use authentic science and engineering practices (SEP) to answer a scientific research question	Scientific Investigation/ Nature of Science
Methods I students will integrate authentic science and engineering practices (SEP) into their instruction that explicitly develops students understanding of how science and engineering is undertaken.	Lesson Plan Critique Lesson Plan Revision "Original" Lesson Plan

Goal 3: Recognize that inquiry learning using scientific practices has inherent risks that should be identified and addressed such that students learn to do science in and ethical and safe manner.

Objective	Assignment
Methods I students will describe the major safety and ethical concerns associated with conducting science in the classroom.	Safety Assignment
Methods I students will describe means to reduce the potential safety risks involved in conducting scientific investigations in the classroom while not compromising the benefit that conducting science and engineering has for student cognition.	Safety Assignment
Methods I students will design lessons that clearly indicate within the lesson any safety concerns, how to reduce them and what to do when accidents happen.	"Original" Lesson Plan

Goal 4: Develop an understanding of how inquiry can develop both scientific thinking and content knowledge

Objective	Assignment
Methods I students will develop inquiry-based lessons that incorporate scientific practices and advance students' content knowledge.	Lesson Plan Revision "Original" Lesson Plan

Goal 5: Understand how to develop effective lessons and units with backwards design

Objective	Assignment
Methods I students will use backwards design principles to create a lesson plan.	"Original" Lesson Plan
Methods I students will write measurable objectives using the ABCD format correctly	"Original" Lesson Plan

Methods I students will create assessments evaluating student achievement that are clearly aligned with the measurable objectives	"Original" Lesson Plan
Methods I students will design instructional activities that support student achievement of the measurable objectives	"Original" Lesson Plan

Goal 6: Develop skills as reflective practitioners.

Objective	Assignment
Methods I students will examine instructional activities and classroom management using their learning theory as a lens and student behavior, engagement, and learning (when possible) as the evidence	Clinical Experience Project
Methods I students will evaluate efficacy of a lesson by using data from assessments aligned with the objectives.	Microteaching & Reflection

Professional Dispositions (CEHD Student Guide)

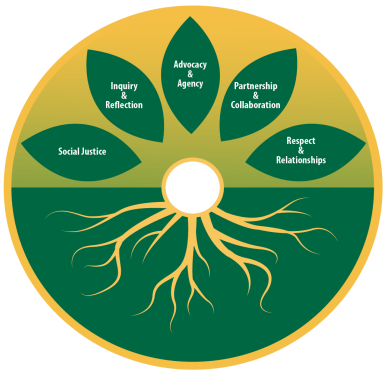
Throughout study in the College of Education and Human Development, students are expected to demonstrate behaviors that reflect the positive dispositions of a professional. See https://cehd.gmu.edu/current-students/cehd-student-guide.

Tentative Calendar and Online Calendar (subject to change based on student needs):	
Date	**Topic**
Class 1: Mon – Aug 26	**What is Learning?** **What is important for student to learn?** **What is the role of social justice in science teaching?**
Due at the end of the week	Research Review Part 1 – Question 1, 2 & 3 Due
Readings for next week	*NSTA class bundle –* ▪ Teaching and Assessing the Nature of Science (Clough) ▪ Using Metacognition to Develop Understanding of the Role of Evidence in Science (Peters-Burton)
	Monday – September 2: NO CLASS – Labor Day
Class 2: Mon – Sept 9	**Science Lesson – Inquiry Tubes** **What is the role of models in the science classroom?** • **Models-Based Science Teaching** **How does social justice relate to science? (revisited)**
Due at the end of the week	Research Review Part 2 – Question 1 &2 Due
Readings for next week	*NSTA class bundle –* ▪ Conceptualizing Moon Phases (Wilcox & Kruse) ES ▪ Models that Matter (Hitt & Townsend) CHEM ▪ Modeling Natural Selection (Bogiages & Lotter) BIO ▪ Reasoning from Models (Demir, Wade-Jaimes & Qureshi) PHY
Class 3: Mon – Sept 16	**Science Lesson - Pendulums** **How can students communicate their models? Scientific Argumentation**
Due at the end of the week	Research Review Part 3 – Question 1 & 2 Due
Readings for next week	*NSTA class bundle –* ▪ A Scaffolding Suite to Support Evidence-Based Modeling and Argumentation (Reinhart, Duncan, & Chinn) ▪ Promoting and supporting scientific argumentation in the classroom—The evaluate-alternatives instructional model (Sampson & Grooms) ▪ Inquiry, Argumentation, and the Phases of the Moon (Hall & Sampson)
Class 4: Mon – Sept 23	**Science Lesson - Electrolysis** **How can we help students develop both content knowledge AND science practices?**
Due at the end of the week	Research Review Part 4 – Question 1&2 Due
Readings for next week	*NSTA class bundle –* ▪ A Backward Approach to Inquiry (Hendrickson) ▪ Understanding by Design meets Integrated Science (Want & Allen)

Class 5: Mon – Sept 30	**What do effective teachers do to encourage learning?** • **Backwards Design** • **Learning Objectives** • **Assessment** **Demo of Science Practices Innovation Notebook – Data Practices**
Due at the end of the week	Research Review Part 4 – Question 3 & 4 Due
Readings for next week	*NSTA class bundle –* ▪ Formative Assessment Guideposts (Ayala) ▪ Formative Assessment Probes (Keeley, Eberle, & Farrin) ▪ Using Graphic Organizers as Formative Assessment (Strubel) ▪ Assessing Scientific Inquiry (Peters)
Class 6: Mon – Oct 7	**What approach to writing lessons reflect the current understanding of how students learn?** • **Learning cycle and 5-E** **How do you know students have learned what you intended?** • **Formative and Summative Assessment**
Due at the end of the week	Scientific Investigation/ Nature of Science Due
Readings for next week	*NSTA class bundle –* ▪ Safer Science: NSTA Portal to Science Safety (Roy) ▪ Lab safety: More than Just Goggles
Class 7: Mon – Oct 14	**FALL BREAK - No class meeting**
Due and the end of the week	Safety Assignment DUE
Readings for next week	*NSTA class bundle –* ▪ The ABCs of Assessment (Wright) ▪ Reaching the Zone of Optimal Learning: The Alignment of Curriculum, Instruction, and Assessment (Farenga, Joyce, & Ness) ▪ Reforming Cookbook Labs (Peters)
Class 8: Mon – Oct 21	**In Class Work Time - Lesson Critiques**
Due at the end of the week	Lesson Critiques Due Lesson Revision Assignment – Identify Lesson
Readings for next week	None
Class 9: Mon – Oct 28	**Work Time - Lesson Revision**
Due at the end of the week	Lesson Revision Assignment Due
Readings for next week	*NSTA class bundle –* ▪ Maximizing Student Time on Task (Peters) ▪ Managing Group Work (McGlynn & Kelly)

Class 10: Mon – Nov 4	**Managing the Inquiry Classroom**
Due at the end of the week	VDOE Cultural Competency Training Module – Will be required for your licensure (save your certificate) - Complete the training module at https://bit.ly/3BZeTMS
Class 11: Mon – Nov 11	**Work Time – Lesson Plan Development**
Class 12: Mon – Nov 18	**Work Time – Lesson Plan Development**
Due at the end of the week	"Original" Lesson Plan Due
Class 13: Mon – Nov 25	**Microteaching**
Class 14: Mon – Dec 2	**Microteaching**
Mon, Dec 9	Clinical Experience Project Due
Wed, Dec 11	Microteaching Reflection Paper Due

The Secondary Education (SEED) Program "Seeds"



As illustrated by the model above, the SEED program is guided by five "Seeds" or principles that students are expected to understand and learn to apply in their teaching and professional lives: Social Justice, Inquiry and Reflection, Advocacy and Agency, Partnership and Collaboration, and Respect and Relationship. SEED students address each Seed in a developmental fashion, twice during their licensure program and once again during the master's teacher research capstone experience:

- Each Seed is introduced and students demonstrate initial understandings and consider initial applications to teaching of the Seeds (as determined by the program, the course instructor, and individual students) during one of the five pre-licensure courses (Foundations, Methods I, Human Development, Methods II, Content Literacy)
- All five Seeds are revisited and students demonstrate deeper conceptual understandings of and identify applications to their teaching of the Seeds (in a manner they determine) during internship and internship seminar
- All five Seeds are explored more deeply, and students demonstrate mastery understandings of, applications to their teaching and teaching inquiries (via their teacher research Methodologies), and future integrations of the Seeds into their teaching and teaching inquiries (via their teacher research Discussions)

Course	Seed/Definition	Key Assignment Description
Foundations of Secondary Education	**Advocacy and Agency** The SEED program educates teachers to develop a commitment to advocating for and developing agency in every young person. Teachers' advocacy activities begin with pedagogical interactions and extend into school and community contexts. Similarly, teachers' consideration of youths' agency begins with enabling them to act independently and make choices in their own best interests—in the classroom and beyond.	Teacher Candidate Digital Portfolio This digital portfolio is a website the teacher candidate creates to begin assembling products and artifacts that illustrate their emerging philosophy of teaching, experiences designing instructional materials, interviews and reflections from clinical experiences, and professional documents such as resumes and work experience. Pieces that teacher candidates add to the digital portfolio demonstrate their agency as educators inside and outside of classrooms, candidates' advocacy of critical issues relevant to secondary education, and candidates' thinking on how educators, their learners, policy makers, and community members all have different agency in making choices related to secondary education. ***Note: Students will also be asked to identify what <u>they</u> consider to be evidence of their understanding/application of this Seed, in course, program, and professional projects and activities.***
Methods I	**Social Justice** The SEED program educates teachers to develop a commitment to social justice. Such a commitment encompasses the belief that all members of our school, university, and broader communities can contribute to disrupting inequitable	**Lesson Plan** Using a provided format, the lesson plan must include objectives, standards, instructional plans, assessments, classroom layout(s), a teacher script, and all materials that would be given to students as part of the lesson. The lesson must demonstrate the teacher candidate's ability to integrate justice concepts/content into their instruction.

	interactions, practices, and structures, with a focus on enhancing each individual's opportunity to learn and succeed. Social justice is also closely aligned with "equity," which involves the implementation of anti-oppressive and antiracist interactions, practices, and structures that ensure that every individual has an unbiased, impartial, responsive, and appropriately scaffolded opportunity for academic and professional success.	***Note: Students will also be asked to identify what <u>they</u> consider to be evidence of their understanding/application of this Seed, in course, program, and professional projects and activities.***
Human Development and Learning	**Relationships with and Respect for Youth** The SEED program educates teachers to develop relationships with and respect for youths. When a school culture promotes respect, support for students' identities, senses of belonging, and tolerance, students are able to work as active participants in the classroom and the community. Secondary teachers who create a welcoming environment in their classrooms; who strive to know and honor students' backgrounds, preferences, and perspectives; who build relationships with young people based on trust and mutual understanding; and who connect curriculum to students' cultures hold key to effective instruction. Their instruction will contribute to developing unique individuals who will be able to connect their life experiences to learning.	**Case Study/Student Application Project** The case study/student application project is a summative assessment of the teacher candidate's ability to use psychological theory to analyze problems in a classroom and practice approaches a thoughtful, ethically principled teacher would use to solve problems. The case study/student applicant project must demonstrate the teacher candidate's understanding of how and why teachers can use psychological theories and principles to develop relationships with and demonstrate respect for youths, with an ultimate goal of enhancing adolescents' school and life success. ***Note: Students will also be asked to identify what <u>they</u> consider to be evidence of their understanding/application of this Seed, in course, program, and professional projects and activities.***
Methods II	**Inquiry and Reflection** The SEED program educates teachers who appreciate and know how to ask questions about their practices and who are critically reflective of their pedagogies, empowered by evidence. The ability to inquire and reflect on one's teaching practice is foundational to educators' ongoing and self-directed professional growth across their professional lifespans. Educators who can inquire into and consistently implement effective instructional practices--and who can critically reflect on and evaluate their pedagogies--will be the most responsive teachers and will best inspire students to learn.	**Unit Plan/Lesson Implementation** Teacher candidates will use the "backwards design" process to develop a plan for teaching a unit which actively involves students in meaningful learning; individualizes learning to accommodate the strengths and needs of students; and provides authentic assessments. Unit plans will include objectives, a calendar, and an outline of each day in the unit. One lesson of the unit must be taught/co-taught in the teacher candidate's clinical experience classroom, and the unit plan and lesson implementation must demonstrate the candidate's understanding of how and why teachers use inquiry and reflection to improve their pedagogical practices and enhance student learning. ***Note: Students will also be asked to identify what <u>they</u> consider to be evidence of their understanding/application of this Seed, in course, program, and professional projects and activities.***
	Collaboration and Partnership The SEED program educates teachers	**Disciplinary Literacy Inquiry Project** Teacher candidates complete an inquiry into methods of

Content Literacy	who value collaborative engagement in learning and teaching and supporting collaboration through different forms of partnership. Collaboration takes on many forms, including collaboration amongst teacher candidates and their peers, course instructors and faculty advisors, mentor teachers in schools, their students and their students' families and caregivers, and amongst experts in their fields of teaching. These collaborations occur through a shared understanding of partnership. By spanning multiple boundaries, the SEED program supports partnerships with local schools and their divisions, with state and national professional associations, and with international experiences in other countries.	supporting students' comprehension in their respective content areas. Using resources from class and peer-reviewed articles, candidates develop an understanding of how to guide and deepen students' comprehension, addressing questions including "Why is it important to be literate in our respective subject areas?". The inquiry project must demonstrate the candidate's understanding of how and why teachers collaborate with other education professionals, students, families and caregivers and others to support students' subject area comprehension and literacy learning. ***Note: Students will also be asked to identify what <u>they</u> consider to be evidence of their understanding/application of this Seed, in course, program, and professional projects and activities.***

Student and Faculty Names and Pronouns

Name and pronoun use: If you wish, please share your name and gender pronouns with me and indicate how best to address you in class and via email. I use she/they for myself and you may address me as "Erin" or "Dr./Prof. Peters-Burton" in email and verbally. I encourage students to use tools Mason provides to change your name and pronouns on Mason records, if you so choose: https://registrar.gmu.edu/updating-chosen-name-pronouns/

Diversity and Inclusion Statement

The College of Education and Human Development, an intentionally inclusive community, promotes and maintains an equitable and just work and learning environment. We welcome and value individuals and their differences including race, economic/class status, gender expression and identity, sex, sexual orientation, ethnicity, national origin, first language, religion, age, and ability status, among other characteristics.

- We value our diverse student body and desire to increase the diversity of our faculty and staff.
- We commit to supporting students, faculty and staff who have been the victims of bias and discrimination.
- We promote continuous learning and improvement to create an environment that values diverse points of view and life experiences.
- We believe that faculty, staff, and students play a role in creating an environment that engages diverse points of view.
- We believe that by fostering their willingness to hear and learn from a variety of sources and viewpoints, our students will gain competence in communication, critical thinking and global understanding, and become aware of their biases and how they affect their interactions with others and the world.

Land Acknowledgement Statement

Land acknowledgment engages all present in an ongoing indigenous protocol to enact meaningful, reciprocal relationships with ancestors and contemporary tribal nations. As a state university, we have a responsibility to include and support indigenous communities and sovereign tribes in our work.

At the place George Mason University occupies, we give greetings and thanksgivings to these Potomac River life sources, to the Doeg ancestors, who Virginia annihilated in violent campaigns while ripping their lands apart with the brutal system of African American enslavement, to the recognized Virginia tribes who have

lovingly stewarded these lands for millennia, including the Rappahannock, Pamunkey, Upper Mattaponi, Chickahominy, Eastern Chickahominy, Nansemond, Monacan, Mattaponi, Patawomeck, and Nottaway, past, present, and future, and to the Piscataway tribes, who have lived on both sides of the river from time immemorial.

Professional Standards

The course focuses on the teaching of science as called for by the state and national science standards and as outlined by the National Council for Accreditation of Teacher Education (NCATE), the National Science Teachers Association (NSTA), and the Interstate New Teacher Assessment and Support Consortium (INTASC). EDCI 573 builds a repertoire of science teaching and assessment strategies to facilitate student learning.

The pre-service and provisionally licensed teacher will:

- Build a repertoire of science teaching and assessment strategies by reading, writing, observing, participating in, and reflecting on the teaching and learning of science; RESEARCH-BASED PRACTICE; SPA STANDARDS 1, 3, 5, 6, 8, 10
- Develop strategies to help students become scientifically literate, think critically and creatively, understand the nature of science, and see the importance of science as a way of knowing; ETHICAL LEADERSHIP; INNOVATION; SPA STANDARDS 2, 3, 4
- Plan standards-based (local, state, and national) units of science study including daily lesson plans for students that reflect research in effective science teaching and learning; RESEARCH-BASED PRACTICE; SPA STANDARD 5, 6, 8, 10
- Construct science lessons that include alignment of objectives, activities, and assessments that address the needs of a variety of student populations including English language learner, special needs students, and gifted and talented students; ETHICAL LEADERSHIP; SPA STANDARDS 8, 10
- Learn about science laboratory safety and plan teaching activities that highlight safety; ETHICAL LEADERSHIP; SPA STANDARD 9
- Work collaboratively with peers to teach and discuss science and science teaching. COLLABORATION; SPA STANDARD 10
- Incorporate environmental sustainability into teaching paradigms and into daily life. SOCIAL JUSTICE; SPA STANDARD 4

Common Policies Affecting All Courses at George Mason University

Updated August 2024

These four policies affect students in all courses at George Mason University. This Course Policy Addendum must be made available to students in all courses (see Catalog Policy AP.2.5).

Additional policies affecting this course, and additional resources or guidance regarding these policies, may be provided to students by the instructor.

Academic Standards

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- **Honesty:** Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- **Acknowledgement:** Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, co-authored pieces, and project reports.
- **Uniqueness of Work:** Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures. Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility: Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit https://ds.gmu.edu/ for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility: Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor *in advance* of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication

The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility: Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting

As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence. Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity: If you prefer to speak to someone ***confidentially***, please contact one of Mason's confidential employees in Student Support and Advocacy (SSAC), Counseling and Psychological Services (CAPS), Student Health Services (SHS), and/or the Office of the University Ombudsperson.