Austin Peay State University
CLARKSVILLE TENNESSEE

Eriksson

College of Education

Curriculum and Instruction:

Science Education Research & Practice

2026-2027 Handbook

Austin Peay State University
Welcome Students

Welcome to Austin Peay State University. Austin Peay combines the academic opportunities of a comprehensive university with the supportive environment of a smaller campus. Students can choose from a wide range of associate, bachelor's, master's, and doctoral programs that prepare them for academic success, career opportunities, and lifelong learning.

Learning at Austin Peay extends beyond the classroom through research opportunities, student organizations, leadership experiences, and community engagement. Located in Clarksville, one of Tennessee's fastest-growing cities, the University offers opportunities to connect with the local community while pursuing academic and professional goals.

Faculty and staff are committed to supporting student success and helping students make the most of their Austin Peay experience. We are pleased to welcome you to the Austin Peay community and wish you success in your academic journey.

Austin Peay State University Mission

Austin Peay State University is a mission-driven, community-minded institution that provides transformational experiences through innovative, creative, and scholarly activities. The university welcomes and inspires a community of learners to make a positive impact regionally and globally.

Austin Peay State University Vision

We will be the region's university of choice for those seeking to improve their lives. We will achieve this vision through student-centered teaching, unique developmental opportunities, and our focus on innovative research and public service.

Austin Peay State University: Strategic Plan

APSU Strategic Plan

University Student Policies

Student Handbook

This handbook contains policies, procedures, and student resources.
Student Handbook

Conduct & Behavioral Standards

Student Code of Conduct and University Policies
Student Handbook Overview
Disciplinary Offenses
Academic and Classroom Misconduct
Corrective Actions
Procedures and Conflict of Interest

Campus Life & Operational Policies

Student Life and Housing
Other Non-Academic Grievances

University Student Resources

Student Life
Academic Services

Austin Peay State University
CLARKSVILLE TENNESSEE

Eriksson

College of Education

Master of Arts in Education

Curriculum and Instruction:

Science Education Research & Practice

2026-2027 College Section Handbook

Introduction

The Martha Dickerson Eriksson College of Education at Austin Peay State University provides academic programs that prepare candidates to teach Pre-K through high school as well as advanced graduate degree programs. The Department of Educational Specialties, housed in the Martha Dickerson Eriksson College of Education, offers a variety of degree programs, primarily at the graduate level. As you seek a master's degree in Curriculum and Instruction – Science Education Research & Practice (SERP), you will have the opportunity to interact in classes with peers who are pursuing the same degree and with instructors who have had extensive teaching and scholarly experience in the area of SERP.

Mission

The mission of the Department of Educational Specialties is to prepare and support educational professionals in their development as effective practitioners.

Nondiscrimination Policy

"APSU shall not engage in practices which would discriminate against any individual or group because of race, color, religion, ethnic or national origin, sex, sexual orientation, gender identity/expression, disability, age (as applicable), status as a covered veteran, or genetic information. The University specifically finds that diversity of students, faculty, administrators and staff is a crucial element of the educational process and reaffirms its commitment to enhancing education through affirmative action to increase diversity at all levels." APSU Policy 6:003 Equal Opportunity, Affirmative Action and Nondiscrimination – March 25, 2017

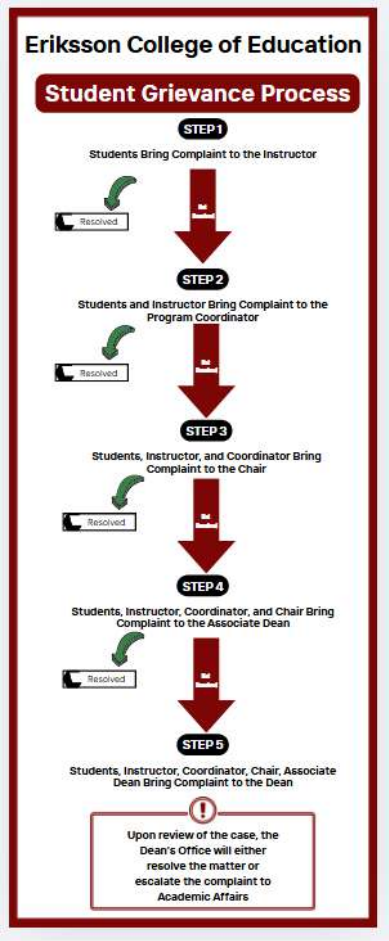
Conceptual Framework

Consistent with the institutional vision and mission and with our heritage as an institution with a major commitment to quality teacher preparation, the vision of the teacher education unit at Austin Peay State University is to prepare highly qualified professionals who are knowledgeable and skilled in standards-based practice. Our goal is to prepare competent, reflective, and caring educators who, while working in collaboration with other professionals, will serve as change agents to foster development and learning in the lives of all learners. Our theme, "Preparing Professionals Through Standards-Based Practices" reflects our vision, mission, and goals, and supports reflective, data-informed planning for continuous improvement. Specifically, these elements address: Knowledge: Enables professional educators to use their general and subject area knowledge to enable students to learn and communicate effectively with others. Also enables the use of technological knowledge and collaborative techniques to foster active inquiry, problem-solving, and performance skills among learners. Skill: Enables professional educators to use techniques and strategies to create learning environments that foster student intellectual, social, and personal development, use technology and collaborative learning strategies to foster active inquiry,

problem solving, and performance skills among learners, and use reflection and outcome assessments to improve learning experiences. Disposition: Enables professional educators to create a climate of openness, inquiry, and support by using strategies that develop an atmosphere of acceptance and appreciation for diverse individuals and groups in the larger community. Allows for the practice of behaviors that meet ethical and professional standards while striving for continuous personal improvement.

Student Grievance Process

https://canva.link/491elcahvr56kc1



Student Dispositions

Criterion	Target (3)	Approaching (2)	Unacceptable (1)	Not Applicable / No Basis for Judgment
Active Engagement • *Maintains purposeful and intensive involvement in the learning* • *Invests time, effort, and focus to create and sustain intellectual and emotional connections with both peers and professors* • *Pursues appropriate and effective communication with the professor* **CAEP Alignment:** RA 1.1 – Leading and/or participating in collaborative activities with peers, colleagues, and faculty.	The graduate student shows ongoing and deep commitment to the learning. They work to establish and substantiate scholarly connections to peers and to the professor. In discussions, they consistently and meaningfully contribute. They actively participate in meetings as needed with the professor and purposively meet assignment deadlines.	The graduate student demonstrates adequate participation in discussions with occasional insightful contributions that establish academic connections with peers and the professor. They stay involved in the learning, accessing course materials with reasonable consistency. They engage in meetings with the professor as needed, show acceptable interest in academic support, and manage to meet assignment deadlines on most occasions.	The graduate student lacks earnest participation in discussions and in the learning in general. They inconsistently access course materials, frequently miss assignment deadlines, and maintain minimal or no communication with the professor. The graduate student's academic connections with peers and the professor are wanting.	
Cultural Competence • *Demonstrates cultural respect, understanding, and equitable treatment for all individuals* • *Responds respectfully to diverse opinions and lifestyles* • *Supports and institutionalizes cultural knowledge* • *Assesses and adapts norms, policies, and values as they pertain to equity*	The graduate student has a thorough understanding of and demonstrates considerations for cultural and equitable norms in their course assignments and scholarly discourse. The graduate student demonstrates genuine respect for the opinions and lifestyles of all and seeks and is receptive to the interests and opinions of all	The graduate student's assignments and contributions to discussions in class represent a general understanding of cultural constructions, barriers, and needs. The graduate student requires prompts to go deeper in their consideration of those stakeholders that may be impacted by their proposed instructional or	The graduate student needs prompts and supports to identify cultural constructions, barriers, and needs in their course assignments and in class discussions. Cultural or equitable considerations are missing in their proposed solutions or assignments. Respect for diverse opinions and lifestyles is neither consistent nor professional.	

Criterion	Target (3)	Approaching (2)	Unacceptable (1)	Not Applicable / No Basis for Judgment
CAEP Alignment: RA 1.1 – Employment of data analysis and evidence to develop supportive, diverse, equitable, and inclusive environments.	stakeholders. The graduate student proposes solutions and suggestions that engage stakeholders and remove barriers at the university and in field-related institutions outside of the university.	leadership practices. A professional respect for diverse opinions and lifestyles is present. The graduate student's represented understanding of equity is developing.		
Ethical Agency • *Functions in line with accepted notions of right and wrong, professional standards, and societal laws* • *Exemplifies honesty and integrity* • *Complies with university and field-situated policies* • *Progresses through the program understanding that faculty are adopting a presumption of confidence* **CAEP Alignment:** RA 1.1 – Application of professional dispositions, laws and policies, codes of ethics, and professional standards.	The graduate student demonstrates a dedication to doing the right thing no matter the circumstance. They have a focus on honesty and follow university, district, and school-level policies in all their work. The graduate student understands that their academic journey is situated in the professor's belief and trust in the graduate student's competency and abilities; the graduate student acts accordingly.	The graduate student's demeanor presents as though they are operating within established constructs of right and wrong, professional standards, and societal laws. The graduate student seems to be honest and functioning within university and field-situated policies. The graduate student's understanding of the faculty's presumption of confidence in them is present but lacks deep effect on their progression through the program of study.	The graduate student's understanding of and adherence to professional standards are, at times, absent. The graduate student is negligent in maintaining the line between right and wrong, not always demonstrating honesty and integrity in their work or interactions with others. University and field-situated policies are often disregarded. The faculty's presumption of confidence in the graduate student is breached by the graduate student.	
Reflective Practice • *Accepts responsibility for decisions and actions* • *Engages in critical self-reflection* • *Integrates feedback*	The graduate student demonstrates self-awareness by examining the influence of their beliefs, biases, decisions, and actions on both successes and failures. They	The graduate student describes their beliefs, biases, decisions, and actions but inconsistently recognizes how their beliefs, biases, decisions, and actions influence both	The graduate student may recall and summarize without reflection and self-awareness. Additionally, they may blame others for negative outcomes or respond negatively or not at all to feedback. Any decisions are	

Criterion	Target (3)	Approaching (2)	Unacceptable (1)	Not Applicable / No Basis for Judgment
• *Makes both data-informed and evidence-based decisions* • *Bridges theoretical and practical knowledge* **CAEP Alignment:** RA 1.1 – Applications of data literacy and use of research and evidence to inform decision-making.	comprehensively assess practice, articulating the connection between theoretical and practical knowledge. Their response to feedback is positive, seeking and incorporating feedback from diverse sources. Their decisions are informed by examining multiple sources of data and evidence and applying insights to improve student outcomes through improved practice.	successes and failures. They identify relevant theoretical knowledge but do not clearly connect to practice. Their response to feedback is mostly positive, but they apply the feedback inconsistently, either responding only to selected feedback or not applying feedback to new contexts. Their decisions are informed by examining limited data and evidence, but changes do not lead to significant improvements in outcomes.	made intuitively or emotionally instead of based on data or evidence. They may convey some practical knowledge, but they do not make connections to theoretical knowledge. They do not demonstrate growth or positive changes in practice.	
Scholarly Communication • *Utilizes professional tonality in all communication* • *Employs the academic language and professional discourses of the discipline* • *Displays enhanced verbal communication skills, including effective speaking and active listening* • *Models person-first language* • *Adjusts language and register for all stakeholders as appropriate* **CAEP Alignment:** RA 1.1 – Application of	The graduate student's communication skills are highly developed, consistently professional in tone, and include the ability to speak and listen well. The graduate student incorporates the academic language and professional discourses of the discipline in their written work and in discussions in class. The graduate student always uses person-first language. They demonstrate the ability to tactfully	The graduate student's communications are mostly professional in tone. The graduate student is proficient in their use of professional discourse and discipline-specific academic language. The graduate student's speaking and listening skills are adequate, and person-first language is used in most cases. The graduate student shows the ability to adjust their language and register, although the adjustments	The graduate student's communications are unprofessional. The graduate student's language does not display the knowledge and beliefs that are acquired through scholarly work in their discipline. Verbal communication skills are weak, and the graduate student appears to have a single language and register for all situations. The graduate student must be reminded often to use person-first language in their spoken and written work.	

Criterion	Target (3)	Approaching (2)	Unacceptable (1)	Not Applicable / No Basis for Judgment
professional dispositions and standards; collaborative engagement with stakeholders.	adjust their language and register to match and honor the needs of all stakeholders.	are not always made smoothly.		
Scholarly Initiative • *Demonstrates a proactive pursuit of and persistence toward serious study* • *Exhibits enthusiasm for learning* • *Presents as a responsible intellectual self-starter, acting and taking charge without prompting while allowing others to lead when their leading may be more effective* • *Asks questions out of a curiosity for venturing off the prescribed path toward knowledge as long as the new path aligns with the goals of the graduate program* • *Requests feedback that identifies academic weaknesses* **CAEP Alignment:** RA 1.1 – Application of professional dispositions appropriate to the field of specialization.	The graduate student presents as regarding all course work as valuable; they reflect, discuss, and write with a fervor for expanding knowledge. The graduate student seeks academic feedback and incorporates the feedback into future work. They go above and beyond required tasks, reaching for as much learning as possible. The graduate student's questions are inquisitive and demonstrate the student's pondering stance toward academic development.	The graduate student's focus toward scholarly development ebbs and flows. They show enthusiasm and take initiative at times, only to sometimes falter and compel others to finish the task. They appear to welcome and value feedback, but their application of feedback that addresses academic areas for growth is at times inadequate.	The graduate student shows signs of quiet quitting, putting in the minimum amount of academic effort required to complete the program while not appearing to value feedback and guidance toward personal scholarly growth. They ask for outside guidance and for others to take charge of the learning and only respond enough to prompting and guidance to pass courses and receive the degree.	
Scholarly Responsibility • *Demonstrates sincere openness*	The graduate student demonstrates a focus on learning and a sincere	The graduate student's focus is on learning but can be drawn away from time to time	The graduate student's interaction with others does not indicate a willingness to seek to understand	

Criterion	Target (3)	Approaching (2)	Unacceptable (1)	Not Applicable / No Basis for Judgment
and responsiveness to the ideas of others • *Supports positive and appropriate interaction, even in times of struggle* • *Addresses and adjusts to graduate-level administration issues (scheduling, deadlines, bursar requirements, and more)* • *Values communication that leads to learning and seeks to resolve conflicts that interfere with said communication* **CAEP Alignment:** RA 1.1 – Leading and/or participating in collaborative activities with peers, colleagues, administrators, and community partners; application of professional dispositions and standards.	desire for understanding in their communication with graduate faculty and other students. They take an active role in determining the direction of their own studies and strive to recognize and acknowledge the scholarly contributions of others. Their efforts and attention concerning administrative issues or conflicts are appropriately directed, allowing the graduate student to expeditiously return to the desired focus on learning.	by problems that may arise along the graduate pathway. The graduate student's communication is appropriate but not always directed toward learning and knowledge. The graduate student responds to administrative issues but depends on others for support.	before, or even along with, seeking to be understood. In times of difficulty, they focus on and blame others rather than focusing on the issue that is interfering with their learning. The graduate student shows an ongoing inability to direct their efforts toward learning as the goal, instead allowing their attention to linger on obstacles and delays, regardless of how efficiently those are addressed by graduate faculty and staff.	

Course Syllabus Policy

Students should refer to the syllabus for each individual course for specific information regarding course requirements, assignments, grading policies, attendance expectations, required materials, deadlines, and instructor-specific procedures. While this handbook provides an overview of program requirements and expectations, the course syllabus serves as the official guide for all course-specific information. In the event of any discrepancy, the course syllabus shall take precedence for matters related to that course.

Artificial Intelligence (AI) Use Policy

Austin Peay State University recognizes the growing role of Artificial Intelligence (AI) tools in education and professional practice. Students are expected to use AI responsibly, ethically, and in accordance with university policies, instructor expectations, and academic integrity standards. The use of AI for coursework may vary by program, course, and instructor; therefore, students must review course syllabi carefully for specific guidance regarding permitted or prohibited AI use. To better understand APSU's expectations, policies, and best practices related to AI, students are required to review the official university guidance by accessing the link provided below.

Please review the APSU AI Guidance and Expectations here:
https://apsu.navexone.com/content/dotNet/documents/?docid=376&app=pt&source=browse&public=true

Accreditation

The Martha Dickerson Eriksson College of Education at Austin Peay State University has been accredited for over sixty years, first by National Council for Accreditation of Teacher Education (NCATE) and now by the Council for the Accreditation of Educator Preparation (CAEP). Our last CAEP accreditation was in 2021; the next accreditation visit will take place in 2028. Accreditation is the seal of approval that verifies quality in educator preparation.

Austin Peay State University
CLARKSVILLE TENNESSEE

Eriksson

Master of Arts in Education:

Curriculum and Instruction:
Science Education Research & Practice
Program Handbook Section

Program Description

The Science Education Research and Practice Concentration is designed as a non-licensure program for practicing teachers and others interested in science literacy, providing the knowledge and skills required for effective classroom science teaching, science curriculum leadership, and/or research. Students will complete a 6-credit-hour foundational core in educational research courses, a 15-credit-hour sequence in science education methods, one 3-credit-hour integrated education course, and a capstone project consisting of a 6-credit-hour thesis. This concentration is offered for cohorts as a two-year plan.

Standards for the Science Education Research & Practice Master's Degree

(2020 NSTA/ASTE Standards for Science Education)

Standard	Indicators
NSTA/ASTE Standard 1 **Content Knowledge** Effective teachers of science understand and articulate the knowledge and practices of contemporary science and engineering. They connect important disciplinary core ideas, crosscutting concepts, and science and engineering practices for their fields of licensure.	1a) Use and apply the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields. Explain the nature of science and the cultural norms and values inherent to the current and historical development of scientific knowledge. 1b) Demonstrate knowledge of crosscutting concepts, disciplinary core ideas, practices of science and engineering, the supporting role of science-specific technologies, and contributions of diverse populations to science. 1c) Demonstrate knowledge of how to implement science standards, learning progressions, and sequencing of science content for teaching their licensure level PK-12 students.

NSTA/ASTE Standard 2 **Content Pedagogy** Effective teachers of science plan learning units of study and equitable, culturally responsive opportunities for *all* students based upon their understandings of how students learn and develop science knowledge, skills, and habits of mind. Effective teachers also include appropriate connections to science and engineering practices and crosscutting concepts in their instructional planning.	2a) Using science standards and a variety of appropriate, student-centered, and culturally relevant science disciplinary-based instructional approaches that follow safety procedures and incorporate science and engineering practices, disciplinary core ideas, and crosscutting concepts. 2b) Incorporating appropriate differentiation strategies, wherein *all* students develop conceptual knowledge and an understanding of the nature of science. Lessons should engage students in applying science practices, clarifying relationships, and identifying natural patterns from empirical experiences. 2c) Using engineering practices in support of science learning wherein all students design, construct, test and optimize possible solutions to a problem. 2d) Aligning instruction and assessment strategies to support instructional decision making that identifies and addresses student misunderstandings, prior knowledge, and naïve conceptions. 2e) Integrating science-specific technologies to support *all* students' conceptual understanding of science and engineering.
NSTA/ASTE Standard 3 **Learning Environments** Effective teachers of science are able to plan for engaging *all* students in science learning by identifying appropriate learning goals that are consistent with knowledge of how students learn science and are aligned with standards. Plans reflect the selection of phenomena appropriate to the social context of the classroom and community, and safety considerations, to engage students in the nature of science and science and engineering practices. Effective teachers create an anti-bias, multicultural, and social justice learning environment to achieve these goals.	3a) Plan a variety of lesson plans based on science standards that employ strategies that demonstrate their knowledge and understanding of how to select appropriate teaching and motivating learning activities that foster an inclusive, equitable, and anti-bias environment. 3b) Plan learning experiences for *all* students in a variety of environments (e.g., the laboratory, field, and community) within their fields of licensure. 3c) Plan lessons in which *all* students have a variety of opportunities to investigate, collaborate, communicate, evaluate, learn from mistakes, and defend their own explanations of: scientific phenomena, observations, and data.

NSTA/ASTE Standard 4 **Safety** Effective teachers of science demonstrate biological, chemical, and physical safety protocols in their classrooms and workspace. They also implement ethical treatment of living organisms and maintain equipment and chemicals as relevant to their fields of licensure.	4a) Implement activities appropriate for the abilities of *all* students that demonstrate safe techniques for the procurement, preparation, use, storage, dispensing, supervision, and disposal of all chemicals/materials/equipment used within their fields of licensure. 4b) Demonstrate an ability to: recognize hazardous situations, including overcrowding; implement emergency procedures; maintain safety equipment; provide adequate student instruction and supervision; and follow policies and procedures that comply with established state and national guidelines, appropriate legal state and national safety standards (e.g., OSHA, NFPA, EPA), and best professional practices (e.g., NSTA, NSELA). 4c) Demonstrate ethical decision-making with respect to safe and humane treatment of all living organisms in and out of the classroom, and comply with the legal restrictions and best professional practices on the collection, care, and use of living organisms as relevant to their fields of licensure.
NSTA/ASTE Standard 5 **Impact on Student Learning** Effective teachers of science provide evidence that students have learned and can apply disciplinary core ideas, crosscutting concepts, and science and engineering practices as a result of instruction. Effective teachers analyze learning gains for individual students, the class as a whole, and subgroups of students disaggregated by demographic categories, and use these to inform planning and teaching.	5a) Implement assessments that show *all* students have learned and can apply disciplinary knowledge, nature of science, science and engineering practices, and crosscutting concepts in practical, authentic, and real-world situations. 5b) Collect, organize, analyze, and reflect on formative and summative evidence and use those data to inform future planning and teaching. 5c) Analyze science-specific assessment data based upon student demographics, categorizing the levels of learner knowledge, and reflect on results for subsequent lesson plans.

NSTA/ASTE Standard 6 **Professional Knowledge and Skills** Effective teachers of science strive to continuously improve their knowledge of both science content and pedagogy, including approaches for addressing inequities and inclusion for *all* students in science. They identify with and conduct themselves as part of the science education community.	6a) Engage in critical reflection on their own science teaching to continually improve their instructional effectiveness. 6b) Participate in professional development opportunities to deepen their science content knowledge and practices. 6c) Participate in professional development opportunities to expand their science-specific pedagogical knowledge.

(InTASC Standards)

Standard	Indicators
Standard #1: **Learner Development** The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.	1(a) The teacher regularly assesses individual and group performance in order to design and modify instruction to meet learners' needs in each area of development (cognitive, linguistic, social, emotional, and physical) and scaffolds the next level of development. 1(b) The teacher creates developmentally appropriate instruction that takes into account individual learners' strengths, interests, and needs and that enables each learner to advance and accelerate his/her learning. 1(c) The teacher collaborates with families, communities, colleagues, and other professionals to promote learner growth and development.
Standard #2: **Learning Differences** The teacher uses an understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.	2(a) The teacher designs, adapts, and delivers instruction to address each student's diverse learning strengths and needs and creates opportunities for students to demonstrate their learning in different ways. 2(b) The teacher makes appropriate and timely provisions (e.g., pacing for individual rates of growth, task demands, communication, assessment, and response modes) for individual students with particular learning differences or needs. 2(c) The teacher designs instruction to build on learners' prior knowledge and experiences, allowing learners to accelerate as they demonstrate their understandings. 2(d) The teacher brings multiple perspectives to the discussion of content, including attention to learners' personal, family, and community experiences and cultural norms. 2(e) The teacher incorporates tools of language development into planning and instruction, including strategies for making content accessible to English language learners and for evaluating and supporting their development of English proficiency.

	2(f) The teacher accesses resources, supports, and specialized assistance and services to meet particular learning differences or needs.
Standard #3: **Learning Environments** The teacher works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.	3(a) The teacher collaborates with learners, families, and colleagues to build a safe, positive learning climate of openness, mutual respect, support, and inquiry. 3(b) The teacher develops learning experiences that engage learners in collaborative and self-directed learning and that extend learner interaction with ideas and people locally and globally. 3(c) The teacher collaborates with learners and colleagues to develop shared values and expectations for respectful interactions, rigorous academic discussions, and individual and group responsibility for quality work. 3(d) The teacher manages the learning environment to actively and equitably engage learners by organizing, allocating, and coordinating the resources of time, space, and learners' attention. 3(e) The teacher uses a variety of methods to engage learners in evaluating the learning environment and collaborates with learners to make appropriate adjustments. 3(f) The teacher communicates verbally and nonverbally in ways that demonstrate respect for and responsiveness to the cultural backgrounds and differing perspectives learners bring to the learning environment. 3(g) The teacher promotes responsible learner use of interactive technologies to extend the possibilities for learning locally and globally. 3(h) The teacher intentionally builds learner capacity to collaborate in face-to-face and virtual environments through applying effective interpersonal communication skills.

Standard #4: **Content Knowledge** The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.	4(a) The teacher effectively uses multiple representations and explanations that capture key ideas in the discipline, guide learners through learning progressions, and promote each learner's achievement of content standards. 4(b) The teacher engages students in learning experiences in the discipline(s) that encourage learners to understand, question, and analyze ideas from diverse perspectives so that they master the content. 4(c) The teacher engages learners in applying methods of inquiry and standards of evidence used in the discipline. 4(d) The teacher stimulates learner reflection on prior content knowledge, links new concepts to familiar concepts, and makes connections to learners' experiences. 4(e) The teacher recognizes learner misconceptions in a discipline that interfere with learning, and creates experiences to build accurate conceptual understanding. 4(f) The teacher evaluates and modifies instructional resources and curriculum materials for their comprehensiveness, accuracy for representing particular concepts in the discipline, and appropriateness for his/her learners. 4(g) The teacher uses supplementary resources and technologies effectively to ensure accessibility and relevance for all learners. 4(h) The teacher creates opportunities for students to learn, practice, and master academic language in their content. 4(i) The teacher accesses school and/or district-based resources to evaluate the learner's content knowledge in their primary language.

Standard #5: **Application of Content** The teacher understands how to connect concepts and use diverse perspectives to engage learners in critical thinking, creativity, and collaborative problem-solving related to authentic local and global issues.	5(a) The teacher develops and implements projects that guide learners in analyzing the complexities of an issue or question using perspectives from varied disciplines and cross-disciplinary skills (e.g., a water quality study that draws upon biology and chemistry to look at factual information and social studies to examine policy implications). 5(b) The teacher engages learners in applying content knowledge to real world problems through the lens of interdisciplinary themes (e.g., financial literacy, environmental literacy). 5(c) The teacher facilitates learners' use of current tools and resources to maximize content learning in varied contexts. 5(d) The teacher engages learners in questioning and challenging assumptions and approaches in order to foster innovation and problem-solving in local and global contexts. 5(e) The teacher develops learners' communication skills in disciplinary and interdisciplinary contexts by creating meaningful opportunities to employ a variety of forms of communication that address varied audiences and purposes. 5(f) The teacher engages learners in generating and evaluating new ideas and novel approaches, seeking inventive solutions to problems, and developing original work. 5(g) The teacher facilitates learners' ability to develop diverse social and cultural perspectives that expand their understanding of local and global issues and create novel approaches to solving problems. 5(h) The teacher develops and implements supports for learner literacy development across content areas.

Standard #6: **Assessment** The teacher understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learners' decision-making.	6(a) The teacher balances the use of formative and summative assessment as appropriate to support, verify, and document learning. 6(b) The teacher designs assessments that match learning objectives with assessment methods and minimizes sources of bias that can distort assessment results. 6(c) The teacher works independently and collaboratively to examine test and other performance data to understand each learner's progress and to guide planning. 6(d) The teacher engages learners in understanding and identifying quality work and provides them with effective descriptive feedback to guide their progress toward that work. 6(e) The teacher engages learners in multiple ways of demonstrating knowledge and skill as part of the assessment process. 6(f) The teacher models and structures processes that guide learners in examining their own thinking and learning as well as the performance of others. 6(g) The teacher effectively uses multiple and appropriate types of assessment data to identify each student's learning needs and to develop differentiated learning experiences. 6(h) The teacher prepares all learners for the demands of particular assessment formats and makes appropriate accommodations in assessments or testing conditions, especially for learners with disabilities and language learning needs. 6(i) The teacher continually seeks appropriate ways to employ technology to support assessment practice both to engage learners more fully and to assess and address learner needs.

Standard #7: **Planning for Instruction** The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.	7(a) The teacher individually and collaboratively selects and creates learning experiences that are appropriate for curriculum goals and content standards, and are relevant to learners. 7(b) The teacher plans how to achieve each student's learning goals, choosing appropriate strategies and accommodations, resources, and materials to differentiate instruction for individuals and groups of learners. 7(c) The teacher develops appropriate sequencing of learning experiences and provides multiple ways to demonstrate knowledge and skill. 7(d) The teacher plans for instruction based on formative and summative assessment data, prior learner knowledge, and learner interest. 7(e) The teacher plans collaboratively with professionals who have specialized expertise (e.g., special educators, related service providers, language learning specialists, librarians, media specialists) to design and jointly deliver as appropriate learning experiences to meet unique learning needs. 7(f) The teacher evaluates plans in relation to short- and long-range goals and systematically adjusts plans to meet each student's learning needs and enhance learning.

Standard #8: **Instructional Strategies** The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.	8(a) The teacher uses appropriate strategies and resources to adapt instruction to the needs of individuals and groups of learners. 8(b) The teacher continuously monitors student learning, engages learners in assessing their progress, and adjusts instruction in response to student learning needs. 8(c) The teacher collaborates with learners to design and implement relevant learning experiences, identify their strengths, and access family and community resources to develop their areas of interest. 8(d) The teacher varies his/her role in the instructional process (e.g., instructor, facilitator, coach, audience) in relation to the content and purposes of instruction and the needs of learners. 8(e) The teacher provides multiple models and representations of concepts and skills with opportunities for learners to demonstrate their knowledge through a variety of products and performances. 8(f) The teacher engages all learners in developing higher-order questioning skills and metacognitive processes. 8(g) The teacher engages learners in using a range of learning skills and technology tools to access, interpret, evaluate, and apply information. 8(h) The teacher uses a variety of instructional strategies to support and expand learners' communication through speaking, listening, reading, writing, and other modes. 8(i) The teacher asks questions to stimulate discussion that serves different purposes (e.g., probing for learner understanding, helping learners articulate their ideas and thinking processes, stimulating curiosity, and helping learners to question).

Standard #9: **Professional Learning and Ethical Practice** The teacher engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community) and adapts practice to meet the needs of each learner.	9(a) The teacher engages in ongoing learning opportunities to develop knowledge and skills in order to provide all learners with engaging curriculum and learning experiences based on local and state standards. 9(b) The teacher engages in meaningful and appropriate professional learning experiences aligned with his/her own needs and the needs of the learners, school, and system. 9(c) Independently and in collaboration with colleagues, the teacher uses a variety of data (e.g., systematic observation, information about learners, research) to evaluate the outcomes of teaching and learning and to adapt planning and practice. 9(d) The teacher actively seeks professional, community, and technological resources, within and outside the school, as supports for analysis, reflection, and problem-solving. 9(e) The teacher reflects on his/her personal biases and accesses resources to deepen his/her own understanding of cultural, ethnic, gender, and learning differences to build stronger relationships and create more relevant learning experiences. 9(f) The teacher advocates, models, and teaches safe,legal, and ethical use of information and technology including appropriate documentation of sources and respect for others in the use of social media.
Standard #10: **Leadership and Collaboration** The teacher seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.	10(a) The teacher takes an active role on the instructional team, giving and receiving feedback on practice, examining learner work, analyzing data from multiple sources, and sharing responsibility for decision making and accountability for each student's learning. 10(b) The teacher works with other school professionals to plan and jointly facilitate learning on how to meet diverse needs of learners. 10(c) The teacher engages collaboratively in the school-wide effort to build a shared vision and supportive culture, identify common goals, and monitor and evaluate progress toward those goals.

	10(d) The teacher works collaboratively with learners and their families to establish mutual expectations and ongoing communication to support learner development and achievement. 10(e) Working with school colleagues, the teacher builds ongoing connections with community resources to enhance student learning and well-being. 10(f) The teacher engages in professional learning, contributes to the knowledge and skill of others, and works collaboratively to advance professional practice. 10(g) The teacher uses technological tools and a variety of communication strategies to build local and global learning communities that engage learners, families, and colleagues. 10(h) The teacher uses and generates meaningful research on education issues and policies. 10(i) The teacher seeks appropriate opportunities to model effective practice for colleagues, to lead professional learning activities, and to serve in other leadership roles. 10(j) The teacher advocates to meet the needs of learners, to strengthen the learning environment, and to enact system change. 10(k) The teacher takes on leadership roles at the school, district, state, and/or national level and advocates for learners, the school, the community, and the profession.

Curriculum and Instruction – Science Education Research & Practice

Program-level mapping for accreditation documentation, showing for each course, which InTASC AND NSTA standards are substantively addressed.

Matrix 1 – InTASC Standards × Course Legend:
✓ = Explicit, sustained focus and assessed
(✓) = Present but secondary/emerging emphasis

InTASC Standard	SCI 5050	SCI 5070	SCI 5090	EDUC 5360
1. Learner Development	✓	✓	(✓)	(✓)
2. Learning Differences	✓	✓	✓	✓
3. Learning Environments	✓	✓	(✓)	✓
4. Content Knowledge	✓	(✓)	✓	✓
5. Application of Content	✓	✓	✓	✓
6. Assessment	✓	✓	✓	✓
7. Planning for Instruction	✓	✓	✓	✓
8. Instructional Strategies	✓	✓	✓	✓
9. Professional Learning & Ethical Practice	✓	✓	✓	✓
10. Leadership & Collaboration	(✓)	✓	(✓)	✓

SCI 5050: Strong on planning, content application, environments, differentiation, tech, equity.
SCI 5070: Strong on instructional strategies, learning environments, discourse, equity, collaboration.
SCI 5090: Strong on assessment, data use, planning from evidence, equity in assessment.
EDUC 5360: Strong on application/content integration, environments, collaboration, equity, community.

Matrix 2 – NSTA 2020 Standards × Course Legend:
✓ = Explicit, sustained focus and assessed
(✓) = Present but secondary/emerging emphasis

NSTA Standard	SCI 5050	SCI 5070	SCI 5090	EDUC 5360
1. Content Knowledge	✓	(✓)	✓	✓
1a. Major concepts, NOS, cultural norms/values	(✓)	(✓)	(✓)	✓
1b. CCCs, DCIs, SEPs, technologies, diverse contrib.	✓	✓	✓	✓
1c. Standards, learning progressions, sequencing	✓	(✓)	✓	✓
2. Content Pedagogy (overall)	✓	✓	✓*	✓
2a. Student-centered, culturally relevant instruction	✓	✓	(✓)	✓
2b. Differentiation, NOS, empirical experiences	✓	✓	(✓)	✓
2c. Engineering practices for science learning	✓	✓	(✓)	✓
2d. Aligning instr. & assessment to guide decisions	✓	✓	✓	✓
2e. Science-specific technologies	✓	✓	✓	(✓)
3. Learning Environments (overall)	✓	✓	(✓)	✓
3a. Inclusive, equitable, anti-bias environments	✓	✓	(✓)	✓
3b. Variety of environments (lab, field, community)	✓	✓	(✓)	✓

NSTA Standard	SCI 5050	SCI 5070	SCI 5090	EDUC 5360
3c. Investigate, collaborate, communicate, defend	✓	✓	✓	✓
4. Safety	(✓)	✓	(✓)	(✓)
4a–c. Safety protocols, hazards, ethical treatment	(✓)	✓	(✓)	(✓)
5. Impact on Student Learning (overall)	✓	✓	✓	✓
5a. Implement assessments showing 3D learning	✓	✓	✓	✓
5b. Collect/analyze evidence to inform teaching	✓	✓	✓	(✓)
5c. Analyze data by demographics, reflect	(✓)	(✓)	✓	(✓)
6. Professional Knowledge & Skills (overall)	✓	✓	✓	✓
6a. Critical reflection on own science teaching	✓	✓	✓	✓
6b. PD for content knowledge/practices	(✓)	(✓)	(✓)	(✓)
6c. PD for science-specific pedagogy	✓	✓	✓	✓

***SCI 5090 addresses Standard 2 specifically through assessment design, alignment, and use of technologies, rather than general methods.**

Narrative Descriptions of Alignment with *InTASC Domains*

InTASC Domain 1 – The Learner and Learning (Standards 1–3)
Evidence for Domain 1 is strongest in SCI 5050, SCI 5070, and EDUC 5360. SCI 5050 foregrounds learner development and differences (Standards 1–2) through design of differentiated, culturally responsive units and explicit planning for diverse learners across grade bands. SCI 5070 extends this into practice by having candidates plan and rehearse ambitious discourse moves and management strategies that support varied needs and identities within equitable learning environments (Standard 3). EDUC 5360 further emphasizes learner differences and environments as candidates design integrated, place-based projects that intentionally center community contexts, cultural assets, and student identities across disciplines.

InTASC Domain 2 – Content Knowledge (Standards 4–5)
Domain 2 is most clearly evidenced in SCI 5050, SCI 5090, and EDUC 5360. SCI 5050 requires candidates to unpack and sequence science content and practices into coherent, 3D-aligned course blueprints and units (Standard 4), and to design tasks that require application of content in meaningful, problem- or project-based contexts (Standard 5). SCI 5090 focuses on how content knowledge and its applications are assessed, asking candidates to design assessments that authentically elicit students' use of content and practices and to interpret data in ways that speak to conceptual understanding and application. EDUC 5360 showcases application of content across disciplines as candidates integrate science with mathematics, engineering, technology, humanities, and arts in projects that address real local issues.

InTASC Domain 3 – Instructional Practice (Standards 6–8)
Instructional practice is a major throughline, with SCI 5070 and SCI 5090 providing the strongest evidence, supported by SCI 5050 and EDUC 5360. SCI 5070 centers on planning and executing ambitious, inquiry-based, 5E-aligned instruction (Standard 7) and developing a repertoire of instructional strategies, especially discourse practices and equitable participation structures (Standard 8), with assessment integrated into teaching cycles (Standard 6). SCI 5090 emphasizes Standard 6 by developing candidates' abilities to design, select, interpret, and act on a range of assessments, including performance tasks and data analyses that inform planning. SCI 5050 and EDUC 5360 contribute by having candidates plan complex units and integrated tasks that require careful alignment of strategies and assessments to learners, content, and context.

InTASC Domain 4 – Professional Responsibility (Standards 9–10)
Domain 4 is threaded across all four courses, with especially strong evidence in SCI 5070 and EDUC 5360. Each course requires systematic reflection on design and practice, connecting decisions to research and standards, thus addressing ongoing professional learning and ethical practice (Standard 9). SCI 5070 emphasizes ethical responsibilities around equity in participation, feedback, and safety, and positions candidates to seek and respond to feedback from peers and mentors. EDUC 5360 explicitly engages candidates in cross-disciplinary collaboration planning (Standard 10), requiring them to envision and document how they will work with colleagues and partners to implement integrated, community-based STEM units. SCI 5050 and SCI 5090 complement this by cultivating reflective habits around curriculum design and assessment, and by framing candidates as contributors to school-wide and program-level improvement in science/STEM education.

NSTA/ASTE Standards

NSTA Standard 1 – Content Knowledge

Across the MAT program, NSTA 1 is most visibly evidenced in SCI 5050, SCI 5090, and EDUC 5360. In SCI 5050, candidates unpack DCIs, SEPs, and CCCs to write three-dimensional goals and design coherent course blueprints and units, directly demonstrating 1b–1c. SCI 5090
extends 1c by asking candidates to design and analyze assessments explicitly aligned to 3D standards and learning progressions. EDUC 5360 addresses 1a–1c by requiring candidates to map standards across science, mathematics, engineering/technology, and other disciplines,
and to use local, place-based phenomena to show how core ideas and practices connect across fields in integrated STEM units.

NSTA Standard 2 – Content Pedagogy

NSTA 2 is a central emphasis in SCI 5050, SCI 5070, and EDUC 5360. SCI 5050 provides the strongest evidence for 2a–2e as candidates design 5E, project-based, culturally responsive science units that incorporate engineering practices and science-specific technologies, and
embed formative assessments to guide instructional decisions. SCI 5070 moves these designs into enactment, with candidates planning and rehearsing ambitious, student-centered lessons
that integrate discourse, differentiation, and technology, providing performance evidence for 2a–
d. EDUC 5360 demonstrates 2a–c through the design of integrated STEM tasks and projects,
ensuring that science practices, engineering design, and authentic problem solving are central rather than add-ons.

NSTA Standard 3 – Learning Environments

SCI 5070 and SCI 5050 provide the clearest evidence for NSTA 3, supported by EDUC 5360. In SCI 5070, candidates design and rehearse inquiry and project-based lessons that foreground inclusive, dialogic learning environments (3a), plan for investigations and collaboration in lab and community contexts (3b), and practice facilitating student investigation, communication, and defense of explanations (3c). SCI 5050 contributes by having candidates design units that intentionally incorporate community-based phenomena and varied learning environments
(classroom, technology-rich experiences, local field contexts), with explicit attention to equity and anti-bias aims in unit revisions. EDUC 5360 strengthens 3a–3c as candidates design
integrated STEM units grounded in local issues and assets, emphasizing collaborative, community-engaged learning spaces.

NSTA Standard 4 – Safety

NSTA 4 is most visible in SCI 5070, with supporting attention in SCI 5050 and EDUC 5360. In SCI 5070, safety is addressed explicitly within inquiry and PBL classroom management: candidates plan investigations with attention to safe material use, supervision, and emergency procedures, and these plans are enacted and discussed during microteaching

and field/practicum tasks (4a–4b). SCI 5050 incorporates safety as part of unit design expectations, particularly for hands-on,
technology- and lab-rich modules. EDUC 5360 reinforces safety considerations when candidates integrate engineering, maker technologies, and community-based field experiences,
requiring them to anticipate and plan for safe practices in non-traditional learning spaces.

NSTA Standard 5 – Impact on Student Learning

SCI 5090 provides the strongest direct evidence for NSTA 5, supported by SCI 5050 and SCI 5070. In SCI 5090, candidates design 3D performance assessments, rubrics, and item sets, collect or work with sample data, conduct item and data analyses, and use those findings to plan
differentiation, directly addressing 5a–5c. SCI 5050 contributes to 5a–5b as candidates embed formative assessments throughout their 5E units and describe how they would use resulting
evidence to adjust instruction. SCI 5070 adds performance evidence as candidates implement
lessons in microteaching and field/practicum settings, collect student work or observation data, and reflect on how evidence of student learning informs revisions to instructional plans.

NSTA Standard 6 – Professional Knowledge and Skills

Professional reflection and growth (NSTA 6) are threaded throughout the program but are most concentrated in SCI 5050, SCI 5070, SCI 5090, and EDUC 5360. Each course requires structured reflections linking practice and design decisions to current research and standards (6a), such as synthesis reflections in 5050 and 5360 and teaching/assessment portfolios in 5070 and 5090.
Participation in repeated design–enactment–analysis cycles, guided by NSTA/ASTE standards, NGSS, and texts like Krajcik & Reiser and Windschitl et al., functions as ongoing professional learning in science content and pedagogy (6b–6c), and positions candidates as reflective,
standards-literate members of the science education community.

Student Learning Outcomes

Upon completion of their program, candidates in the Science Education Research & Practice Concentration of the Master of Arts in Teaching Middle School Science Licensure will be able to:

1. Articulate how students learn and develop knowledge of science and scientific process skills.
2. Express, in written and oral formats, the knowledge of best practices of modern science instruction.
3. Develop inquiry- and problem-based lesson plans in appropriate settings, consistent with safety guidelines, that are aligned with state standards and national frameworks for science. Plans will be designed to engage diverse students in activities that address the nature of science, inquiry, and interactions between science and society.

4. Construct performance-based assessment strategies to equitably measure progress toward achievement of learning targets in the science classroom and use data-driven approaches to modify instruction based on evaluations and student feedback.
5. Demonstrate proficiency in utilizing action research strategies to identify systemic or classroom-specific issues and develop practical solutions relevant to achieving effectiveness in science education.

PLO 1: Students will be able to articulate how students learn and develop knowledge of science and scientific process skills.

PLO 2: Students will be able to express, in written and oral formats, the knowledge of best practices of modern science instruction.

PLO 3: Students will be able to develop inquiry and problem-based lesson plans in appropriate settings, consistent with safety guidelines, that are aligned with state standards and national frameworks for science. Plans will be designed to engage diverse students in activities that address the nature of science, inquiry, and interactions between science and society.

PLO 4: Students will be able to construct performance-based assessment strategies to equitably measure progress toward achievement of learning targets in the science classroom and use data-driven approaches to modify instruction based on evaluations and student feedback.

PLO 5: Students will be able to demonstrate proficiency in conducting original research on relevant problems in science education and present a cogent defense to faculty and peers.

Correction Needed:
https://graduate.catalog.apsu.edu/programs/MAED_CI/degree-maps-checksheets-psfpH

Collapse All
Science Education Research and Practice
Description
Year 1
Fall
Actual Credits
6
Requirements
- SCI5070 - Integrated Science and STEM Education II - Curriculum and Module Design(3 cr)

ANDSCI5050 - Integrated Science and STEM Education I - Teaching and Learning Strategies(3 cr)
Spring

Actual Credits
6
Requirements

- EDUC6030 - Statistics for Educational Research(3 cr)

ANDSCI5090 - Integrated Science and STEM Education III - Active Science Assessments(3 cr)

Summer
Actual Credits
6
Requirements

- EDUC5150 - The Reflective Practitioner(3 cr)

Complete 2 of the following:
SCI 6330, 6550, or 6770
EDUC 5110

Year 2
Fall
Actual Credits
6
Requirements

- EDUC5360 - Disciplinary Blends in Science and STEM Education(3 cr)
- EDUC5000 - Research in Education(3 cr)

ANDSCI6330 - Problems in Science Education(3 cr)

Spring
Actual Credits
6
Requirements

- EDUC5990 - Thesis - Science Education Concentrations(6 cr)

Course Descriptions

EDUC 5000 - Research in Education:
Description: Study and practice in the techniques of educational research; isolation of research problems; development of skill in reading, interpreting and applying research with extensive reading related to the student's interest.

EDUC 5360 - Disciplinary Blends in Science and STEM Education
Description: This course explores intra-, multi-, cross-, inter-, and trans-disciplinary integration in STEM, examining how science, technology, engineering, and math connect with other subjects across P-16. Practitioners will analyze design strategies, review diverse examples, and develop skills to create cohesive, inquiry-driven, and inclusive STEM learning experiences that span disciplinary boundaries.
Dual Listed: SCI 4031

EDUC 5990 – Thesis
Description: Designed to meet the research requirements for the thesis track in the M.A.Ed. Science Education Research and Practice degree. Requirements include developing a problem, conducting a literature review, collecting data, data analysis, and interpreting the results. Communication of findings must be presented in a written thesis and oral defense.

EDUC 6030 – Educational Statistics
Description: This course prepares students to conduct research and engage in scholarly activities by providing a clear understanding of descriptive and univariate inferential statistics. The course will prepare students to gain a level of independence that will equip them with the quantitative analysis skills required for the MAED research degrees.

SCI 5050 - Integrated Science and STEM Education I – Teaching and Learning Strategies
Description: Theories and classroom applications of inquiry-based, problem- or project-based, and Process-Oriented Guided Inquiry Learning (POGIL) in science disciplines. Topics include scaffolding, questioning authentic student investigations, interdisciplinary approaches, partnerships, dynamic classroom management for long-term projects, and performance-based assessments. Integration of digital tools and emerging technologies is emphasized.

SCI 5070 - Integrated Science and STEM Education II – Course Curriculum and Module Design
Description: This course prepares educators and curriculum developers to design, implement, and evaluate P–16 integrated Science and STEM curricula grounded in research-based learning theories and current professional standards, and frameworks. Students will create course blueprints and modular unit plans that map content a to clear objectives, assessments, and learning experiences.

SCI 5090 - Integrated Science and STEM Education III – Active Science Assessments
Description: Design of performance assessments for integrative science and STEM classrooms. Formative assessment of processes is emphasized. Emerging technologies are being introduced to enhance rubric creation, verify validity and reliability, conduct item analysis, and utilize student data to differentiate instruction, thereby improving transdisciplinary STEM courses through authentic inquiries.

Complete 2 of the following 3 courses:

SCI 5110 – Outdoor Strategies for Inquiry Science
Course Description
Description: Students will be given an opportunity to explore strategies for utilizing outdoor spaces for student-centered, inquiry-based science instruction. This course will require sessions at various outdoor sites on or near the APSU campus. Students will evaluate curricular materials and prepare individualized instructional materials that include the use of field/equipment, safety precautions, and performance assessments.

SCI 6330 - Problems in Science Education
Description: Historical and modern trends in science education will be researched. Students will be expected to identify and describe specific problems in the implementation of research-based science instruction, equity and culturally responsive science, policy issues, and/or other problems relevant to the goals of creating a scientifically literate society.

SCI 6550 - Socioscientific Issues in Education
Description: An introductory examination of historical developments influencing the trajectory of science education compared with modern challenges and opportunities in the implementation of research-based science instruction, equitable and culturally responsive science, policy issues, and/or other problems relevant to the goals of creating a scientifically literate society. Master's students will develop novel, experimental approaches for researching specific problems.
(designed for Master's Students of Science Education Research and Practice; Dual-listed with SCI 7550)

SCI 6770 – Leading Integration of STEM
Description: This course explores strategies for the design, implementation, and support of contemporary integrated STEM learning environments. Students will examine integrated and multidisciplinary practice-based pedagogies, the building of interdisciplinary bridges, and the melding of sociocultural and cognitive factors influencing P-20 STEM education.

Key Contacts

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Dr. Philip Short, Science Education Research & Practice MAED Program Leader, Associate Professor, Dept. of Educational Specialties, Claxton 112, 931.221.7513, shortp@apsu.edu

Advising
After declaring a Curriculum and Instruction - Instructional Technology major, you will meet with the Graduate Coordinator to create a program of study, and you will be assigned an advisor who is knowledgeable about the program. You will meet with your advisor prior to the beginning of each semester in order to determine your progress and courses to take in order to complete the program. Near the end of each semester you will be entitled to

priority advising and can enroll in classes on the first day of registration. Your advisor will be available to assist you throughout your program.

Criteria for Admission

- Undergraduate GPA of 2.75

Austin Peay State University Web Resources

You are an APSU student; please become familiar with these resources.

APSU Home Page
APSU Student Handbook
Schedule of Classes
APSU Disability Student Success Services
APSU College of Education
APSU Woodward Library
Digital Learning Resources
General Student Resources
Distance Education: D2L Resources

Appendix A: Calendar of Course Offerings

Class	Offered Fall	Offered Spring	Offered Summer
EDUC 5000: Research in Education (3)	Fall Year 2	Spring (if needed)	Summer (if needed)
EDUC 5360: Disciplinary Blends in Science and STEM Education (3)	Fall Year 2		
EDUC 5990: Thesis (6)		Spring Year 2	Summer (if needed)
EDUC 6030: Educational Statistics (3)		Spring Year 1	
SCI 5050: Integrated Science and STEM Education I – Teaching and Learning Strategies (3)	Fall Year 1		
SCI 5070: Integrated Science and STEM Education II – Course Curriculum and Module Design (3)	Fall Year 1		
SCI 5090: Integrated Science and STEM Education III – Active Science Assessments (3)		Spring Year 1	
Complete 2 of the following 3 courses SCI 6330: Problems in Sci Ed (3) SCI 6550: Socioscientific Issues in Education(3) SCI 6770: Leading Integration of STEM (3)			Summer Year 1

2 Year Plan

Year 1	
Full Fall Term	
SCI 5050 - Integrated Science and STEM Education I – Teaching and Learning Strategies	3
SCI 5070 - Integrated Science and STEM Education II – Course Curriculum and Module Design	3
Full Spring Term	
EDUC 6030 – Educational Statistics	3
SCI 5090 - Integrated Science and STEM Education III – Active Science Assessments	3
Full Summer Term	
Complete 2 of the following 3 courses:	
SCI 6330 - Problems in Sci Ed	3
SCI 6550 - Socioscientific Issues in Education	3
SCI 6770 – Leading Integration of STEM	3

Year 2	
Full Fall Term	
EDUC 5000 Research in Education	3
EDUC 5360 Disciplinary Blends in Science and STEM Education	3
Full Spring Term	**SCH**
EDUC 5990 – Thesis	6
Summer Semester	**SCH**
Completion of Thesis, if Necessary	0
TOTAL CREDIT HOURS: 30	

Appendix B: Milestone Checklist

Transition Point 1

- Minimum 2.75 GPA
- Minimum grade of B in SCI 5050 and SCI 5070
- Admission to the College of Graduate Studies
- Evidence of professional dispositions
- Clearance by Student Affairs for no incidents on campus

Transition Point 2

- Minimum 3.00 GPA
- Completion of EDUC 6030 with a C or better
- Evidence of professional dispositions
- Clearance by Student Affairs for no incidents on campus

Transition Point 3

- Minimum 3.00 GPA
- Completion EDUC 5000 with a C or better
- Acceptance of thesis proposal by committee chair and committee
- Evidence of professional dispositions
- Clearance by Student Affairs for no incidents on campus

Transition Point 4

- Minimum 3.00 GPA
- Completion and successful defense of thesis
- Evidence of professional dispositions
- Clearance by Student Affairs for no incidents on campus

Appendix C - Program Overview

The Science Education Research and Practice Concentration is designed as a non-licensure program for practicing teachers and others interested in science literacy, providing the knowledge and skills required for effective classroom science teaching, science curriculum leadership, and/or research. Students will complete a 9-credit-hour foundational core in education courses, a 15-credit-hour sequence in science education methods, one 3-credit-hour integrated education course, and a capstone project consisting of a 6-credit-hour thesis. This concentration is offered for cohorts as a two-year plan.

Martha Dickerson Eriksson College of Education - Austin Peay State University
Master of Arts in Education
Curriculum and Instruction with a Specialization in Science Education Research & Practice

Student Handbook Acknowledgement

I acknowledge that I have received, reviewed, and understood the information contained in this program handbook. I understand that this handbook outlines important policies, procedures, expectations, and program requirements. I recognize that it is my responsibility to remain informed of program and university updates and to review all course syllabi for specific course requirements, assignments, and expectations. After reviewing this handbook, please complete the Student Handbook Acknowledgment form using the link provided below. My submission confirms my understanding of and agreement with the policies and expectations outlined herein.
Student Handbook Acknowledgement