505-3-.19 MIDDLE GRADES EDUCATION PROGRAM

(1) Purpose. This rule states field-specific content standards for approving programs that prepare individuals to teach middle grades**,** grades 4-8, and supplements requirements in Rule 505-3-.01 REQUIREMENTS AND STANDARDS FOR APPROVING EDUCATOR PREPARATION PROVIDERS AND EDUCATOR PREPARATION PROGRAMS.

(2) Requirements.

(a) To receive approval, GaPSC-approved educator preparation providers shall offer a preparation program described in program planning forms, catalogs, and syllabi addressing the following standards:

1. Middle Grades Core. The program shall conform to the following standards for Initial Programs in Middle Level Teacher Education adapted from the Association for Middle Level Education (AMLE) Middle Level Teacher Preparation Standards (2012):

(i) Standard 1: Young Adolescent Development
Middle level teacher candidates understand, use, and reflect on the major concepts, principles, theories, and research related to young adolescent development and use that knowledge in their practice. They demonstrate their ability to apply this knowledge when making curricular decisions, planning and implementing instruction, participating in middle level programs and practices, and providing healthy and effective learning environments for all young adolescents. Middle level teacher candidates demonstrate their understanding of the implications of diversity on the development of young adolescents and participate successfully in instructional practices that acknowledge and value the diversity of all young adolescents.

(ii) Standard 2: Middle Level Curriculum
Middle level teacher candidates demonstrate a depth and breadth of subject matter content knowledge in the subjects they teach. Middle level teacher candidates understand and use the central concepts, standards, research, and structures of content to plan and implement curriculum that develops all young adolescents' competence in subject matter. They use their knowledge and available resources to design, implement, and evaluate challenging, developmentally responsive curriculum that results in meaningful learning outcomes. Middle level teacher candidates demonstrate their ability to assist all young adolescents in understanding the interdisciplinary nature of knowledge. They design and teach curriculum that is responsive to all young adolescents' local, national, and international histories, language/dialects, and individual identities (e.g., gender, race, ethnicity, culture, age, appearance, ability, sexual orientation, gender expression, gender identity, socioeconomic status, family composition).

(iii) Standard 3: Middle Level Philosophy and School Organization
Middle level teacher candidates understand the major concepts, principles, theories, and research underlying the historical and philosophical foundations of developmentally responsive middle level programs and schools, and they work successfully within middle level organizational components. Middle level teacher candidates perform successfully in middle level programs and practices such as interdisciplinary teaming, advisory programs, flexible block schedules, and common teacher planning time.

(iv) Standard 4: Middle Level Instruction and Assessment
Middle level teacher candidates understand, use, and reflect on the major concepts, principles, theories, and research related to data-informed instruction and assessment. They establish and maintain equitable, caring, and productive learning environments for all young adolescents. They employ a variety of developmentally appropriate instructional strategies, information literacy skills, and technologies to meet the learning needs of all young adolescents (e.g., gender, race, ethnicity, culture, age, appearance, ability, sexual orientation, gender expression, gender identity, socioeconomic status, family composition). They use instructional strategies and technologies that are especially effective in the subjects that they

teach in ways that encourage exploration, creativity, and information literacy skills (e.g., critical thinking, problem solving, evaluation of information gained) so that young adolescents are actively engaged in their learning. Middle level teacher candidates develop and administer assessments and use them as formative and summative tools for assessing prior learning, implementing effective lessons, reflecting on young adolescent learning, and adjusting instruction based on the knowledge gained.

(v) Standard 5: Middle Level Professional Roles
Middle level teacher candidates understand their complex roles as teachers of young adolescents. They engage in practices and behaviors that develop their competence as middle level professionals. They are informed advocates for young adolescents and middle level education, and work successfully with colleagues, families, community agencies, and community members. Middle level teacher candidates demonstrate positive dispositions and orientations toward teaching young adolescents and model high standards of ethical behavior and professional competence. They are continuous, collaborative learners who demonstrate knowledgeable, reflective, critical perspectives on their teaching.

2. Reading and Writing. The program shall prepare candidates who understand and apply principles of teaching reading and writing at the middle grades level and who meet the following elements of the standards specified by the International Reading Association (IRA) Standards for Reading Professionals, 2010. This requirement may be met in a separate three (3) semester-hour course, or content may be embedded in courses and experiences throughout the preparation program:

(i) Candidates use knowledge of adolescent literacy development;

(ii) Candidates apply knowledge of the teaching of reading and writing to adolescents;

(iii) Candidates use knowledge of formal and informal literacy assessment strategies in the content areas;

(iv) Candidates apply knowledge of how to meet the needs of students who read at differing levels; and

(v) Candidates demonstrate knowledge of how to facilitate all students' learning from content area texts.

3. Areas of Concentration. Baccalaureate degree programs shall require preparation of candidates in at least two of the following areas of concentration: reading, language arts, mathematics, science, or social science. Post-baccalaureate programs shall require preparation of candidates in at least one of the following areas of concentration: reading, language arts, mathematics, science, or social science.

(i) An area of concentration shall be defined as a minimum of fifteen semester hours of content that meet the standards of the appropriate national specialized professional association, as described below;

(ii) A course taken to meet the requirements of Standard 2 (above) may be counted toward the fifteen semester hours required for the reading concentration;

(iii) A course taken to meet the requirements of Standard 2 (above) may be counted toward the fifteen semester hours required for the language arts concentration; and

(iv) Reading Concentration. Programs that prepare middle grades teachers in the concentration area of reading shall meet the following standards for classroom teachers of reading published by the International Reading Association (equivalent to the Reading In-Field Endorsement; see Rule 505-3-.**96** READING ENDORSEMENT PROGRAM):

(I) Candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction:

I. Candidates understand major theories and empirical research that describe the cognitive, linguistic, motivational, and socio-cultural foundations of reading, and writing development, processes and components, including word recognition, language comprehension, strategic knowledge, and reading-writing connections:

A. Candidates read the scholarship of the reading profession and recognize the theoretical knowledge base about the reading and writing of adolescents;

B. Candidates explain major theories of reading and writing processes and development in adolescents using supporting research evidence, including the relationship between culture and the native language of English learners as a support system in their learning to read and write in English;

C. Candidates explain language and reading development during adolescence (e.g., word description, language comprehension, strategic knowledge, and reading-writing connections) with supporting evidence from theory and research; and

D. Candidates explain the research and theory of learning environments that support individual motivation to read and write.

II. Candidates understand the role of professional judgment and practical knowledge for improving all students' reading development and achievement:

A. Candidates show fair-mindedness, empathy, and ethical behavior in literacy instruction and when working with other professionals;

B. Candidates use multiple sources of information to guide instructional planning to improve reading achievement for all students;

C. Candidates understand the historically shared knowledge of the profession and changes over time in the perceptions of reading and writing development, processes and components; and

D. Candidates Identify major milestones in reading scholarship and interpret them in light of the current social context.

(II) Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing:

I. Candidates use foundational knowledge to design or implement an integrated, comprehensive and balanced curriculum:

A. Candidates explain how the reading and writing curriculum is related to local, state, national and professional standards;

B. Candidates implement the curriculum based on students' prior knowledge, world experiences, and interests;

C. Candidates evaluate the curriculum to ensure that instructional goals and objectives are met; and

D. Candidates work with the team or department to help ensure interdisciplinary connections in traditional print, digital, and online contexts.

II. Candidates use appropriate and varied instructional approaches, including those that develop word recognition, language comprehension, strategic knowledge, and reading-writing connections:

A. Candidates select and implement instructional approaches that are evidence based and meet student needs;

B. Candidates differentiate instructional approaches to meet students' reading and writing needs in all content areas;

C. Candidates implement and evaluate instruction in each of the following areas as appropriate: concepts of print, phonemic awareness, phonics, vocabulary, comprehension, fluency, critical thinking, motivation, and writing;

D. Candidates incorporate traditional print, digital, and online resources as instructional tools to enhance student learning; and

E. Candidates adapt instructional approaches and materials to meet the language-proficiency needs of English learners.

III. Candidates use a wide range of texts (e.g., narrative, expository and poetry) from traditional print, digital, and online resources:

A. Candidates, guided by evidence-based rationale, select and use quality traditional print, digital, and online resources;

B. Candidates identify the resources necessary to build an accessible, multilevel, and diverse classroom library including traditional print, digital, and online resources; and

C. Candidates demonstrate knowledge about various materials including those specifically for adolescent learners and their uses.

(III) Candidates use a variety of assessment tools and practices to plan and evaluate effective reading and writing instruction:

I. Candidates understand types of assessment and their purposes, strengths, and limitations:

A. Candidates demonstrate an understanding of established purposes for assessing student performance, including tools for screening, diagnosis, progress monitoring, and measuring outcomes;

B. Candidates describe strengths and limitations of a range of assessment tools and their appropriate uses;

C. Candidates recognize the basic technical adequacy of assessments (e.g., reliability, content and construct validity); and

D. Candidates explain district and state assessment frameworks, proficiency standards, and student benchmarks.

II. Candidates select, develop, administer, and interpret assessments, both traditional print and electronic, for specific purposes:

A. Candidates select or develop appropriate assessment tools to monitor student progress and to analyze instructional effectiveness;

B. Candidates administer classroom and school-based assessments using consistent, fair, and equitable assessment procedures;

C. Candidates interpret and use assessment data to analyze individual, group, and classroom performance and progress; and

D. Candidates collaborate with other teachers and personnel to discuss interpretation of assessment data and their uses in responding to student needs and strengths.

III. Candidates use assessment information to plan and evaluate instruction:

A. Candidates use assessment data to plan instruction systematically and to select appropriate traditional print, digital, and online reading resources;

B. Candidates use assessment data to evaluate students' responses to instruction and to develop relevant next steps for teaching;

C. Candidates interpret patterns in classroom and individual students' data; and

D. Candidates collaborate with other professionals to modify instruction and to plan and evaluate interventions based on assessment data.

IV. Candidates communicate assessment results and implications to a variety of audiences:

A. Candidates communicate assessment purposes and a summary of results to appropriate audiences (i.e., student, parents or guardians, colleagues, and administrators); and

B. Candidates use assessment data and student work samples to discuss relevant implications and goals for reading and writing instruction.

(IV) Candidates create and engage their students in literacy practices that develop awareness, understanding, respect, and a valuing of differences in our society:

I. Candidates recognize, understand, and value the forms of diversity that exist in society and their importance in learning to read and write;

A. Candidates demonstrate an understanding of the ways in which diversity can be used to strengthen a literate society, making it more productive, more adaptable to change, and more equitable;

B. Candidates demonstrate an understanding of the impact of urban, suburban and rural environments on local culture, language and learning to read and write;

C. Candidates demonstrate an understanding of the ways in which the various forms of diversity interact with reading and writing development; and

D. Candidates demonstrate an understanding of the relationship between first- and second-language acquisition and literacy development.

II. Candidates use a literacy curriculum and engage in instructional practices that positively impact students' knowledge, beliefs and engagement with the features of diversity:

A. Candidates assess the various forms of diversity that exist in students as well as in the surrounding community;

B. Candidates provide differentiated instruction and instructional materials including traditional print, digital and online resources that capitalize on diversity; and

C. Candidates provide instruction and instructional formats that engage students as agents of their own learning.

III. Candidates develop and implement strategies to advocate for equity:

A. Candidates provide students with linguistic, academic, and cultural experiences that link their communities with the school;

B. Candidates advocate for change in societal practices and institutional structures that are inherently biased or prejudiced against certain groups; and

C. Candidates demonstrate how issues of inequity and opportunities for social justice activism and resiliency can be incorporated into the literacy curriculum.

(V) Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments:

I. Candidates design the physical environment to optimize students' use of traditional print, digital, and online resources in reading and writing instruction:

A. Candidates arrange their classrooms to provide easy access to books, other instructional materials, and specific areas designed for a variety of individual, small group and whole-class activities; and

B. Candidates modify the arrangements to accommodate students' changing needs.

II. Candidates design a social environment that is low-risk, includes choice, motivation, and scaffolded support to optimize students' opportunities for learning to read and write:

A. Candidates demonstrate a respectful attitude toward all learners and understand the roles for choice, motivation and scaffolded support in creating low-risk and positive social environments;

B. Candidates model and teach students routines for establishing and maintaining positive social environments (e.g., appropriate ways to interact with each other and adults); and

C. Candidates create supportive environments where English learners are encouraged and given many opportunities to use English.

III. Candidates use routines to support reading and writing instruction (e.g., time allocation, transitions from one activity to another, discussions and peer feedback):

A. Candidates understand the role of routines in creating and maintaining positive learning environments for reading and writing instruction using traditional print, digital and online resources; and

B. Candidates create and use routines to support instructional and social goals (e.g., regular steps for sharing and responding to stories, formats for reporting, and efficient transitions among activities, spaces and online resources).

IV. Candidates use a variety of classroom configurations (i.e., whole class, small group, and individual) to differentiate instruction:

A. Candidates use evidence-based rationale to make and monitor flexible instructional grouping options for students;

B. Candidates model and scaffold procedures so students learn to work effectively in a variety of classroom configurations and activities; and

C. Candidates use various practices to differentiate instruction (e.g., cooperative learning, literature circles, partner work and research/investigation groups).

(VI) Candidates recognize the importance of, demonstrate, and facilitate professional learning and leadership as a career-long effort and responsibility:

I. Candidates demonstrate foundational knowledge of adult learning theories and related research about organizational change, professional development, and school culture:

A. Candidates demonstrate awareness of the factors that influence adult learning, organizational change, professional development, and school culture.

II. Candidates display positive dispositions related to their own reading and writing, the teaching of reading and writing, and pursue the development of individual professional knowledge and behaviors:

A. Candidates display reading and writing behaviors and serve as a model to students;

B. Candidates promote student appreciation of the value of reading traditional print, digital and online resources in and out of school;

C. Candidates join and participate in professional literacy organizations, symposia, conferences and workshops;

D. Candidates work collaboratively and successfully with families, colleagues and community members to support students' reading and writing;

E. Candidates demonstrate effective use of technology for improving student learning;

F. Candidates identify specific questions and goals about the teaching of reading and writing and plan specific strategies for finding answers to questions; and

G. Candidates implement plans and use results for their own professional growth.

III. Candidates participate in, design, facilitate, lead, and evaluate effective and differentiated professional development programs:

A. Candidates recognize the importance of professional development for improving reading and writing in schools;

B. Candidates participate individually and with colleagues in professional development programs at the school and district levels; and
C. Candidates apply learning from professional development in instructional practices.

IV. Candidates understand and influence local, state, or national policy decisions:

A. Candidates are informed about important professional issues; and

B. Candidates advocate with various groups (e.g., administrators, school boards, and local, state and federal policymaking bodies) for needed organizational and instructional changes to promote effective literacy instruction.

(v) <u>Language Arts Concentration</u>. Programs that prepare middle grades teachers in the concentration area of language arts shall meet the following standards published by the National Council of Teachers of English (2012):

(I). <u>Content Knowledge</u>

I.   Candidates demonstrate knowledge of English language arts subject matter content that specifically includes literature and multimedia texts as well as knowledge of the nature of adolescents as readers.

A.   Candidates are knowledgeable about texts—print and non-print texts, media texts, classic texts and contemporary texts, including young adult—that represent a range of world literatures, historical traditions, genres, and the experiences of different genders, ethnicities, and social classes; they are able to use literary theories to interpret and critique a range of texts.

B.   Candidates are knowledgeable about the processes adolescents use to read texts and make meaning through interaction with a variety of media.

II.   Candidates demonstrate knowledge of English language arts subject matter content that specifically includes language and writing as well as knowledge of adolescents as language users.

A.   Candidates can compose a range of formal and informal texts taking into consideration the interrelationships among form, audience, context, and purpose; candidates understand that writing is a recursive process; candidates can use contemporary technologies and/or digital media to compose multimodal discourse.

B.   Candidates know the conventions of English language as they relate to various rhetorical situations (grammar, usage, and mechanics); they understand the concept of dialect and are familiar with relevant grammar systems (e.g., descriptive and prescriptive); they understand principles of language acquisition; they recognize the influence of English language history on ELA content; and they understand the impact of language on society.

C.   Candidates are knowledgeable about processes that adolescents use to compose texts and make meaning through interaction with a variety of media.

(II). <u>Content Pedagogy: Planning Literature and Reading Instruction in ELA</u>

I.   Candidates plan instruction and design assessments for reading and the study of literature to promote learning for all students.

A.   Candidates use their knowledge of theory, research, and practice in English Language Arts to plan standards-based, coherent and relevant learning experiences utilizing a range of different texts—across genres, periods, forms, authors, cultures, and various forms of media—and instructional strategies that are motivating and accessible to all students, including English language learners, students with special needs, students from diverse language and learning backgrounds, those designated as high achieving, and those at risk of failure.

B.   Candidates design a range of authentic assessments (e.g., formal and informal, formative and summative) of reading and literature that demonstrate an understanding of how learners develop and that address interpretive, critical, and evaluative abilities in reading, writing, speaking, listening, viewing, and presenting.

C.   Candidates plan standards-based, coherent and relevant learning experiences in reading that reflect knowledge of current theory and research about the teaching and learning of reading and that utilize individual and collaborative approaches and a variety of reading strategies.

D. Candidates design or knowledgeably select appropriate reading assessments that inform instruction by providing data about student interests, reading proficiencies, and reading processes.

E.   Candidates plan instruction that incorporates knowledge of language—structure, history, and conventions—to facilitate students' comprehension and interpretation of print and non-print texts.

F.   Candidates plan instruction which, when appropriate, reflects curriculum integration and incorporates interdisciplinary teaching methods and materials.

(III). Content Pedagogy: Planning Composition Instruction in ELA

I.   Candidates plan instruction and design assessments for composing texts (i.e., oral, written, and visual) to promote learning for all students.)

A.   Candidates use their knowledge of theory, research, and practice in English Language Arts to plan standards-based, coherent and relevant composing experiences that utilize individual and collaborative approaches and contemporary technologies and reflect an understanding of writing processes and strategies in different genres for a variety of purposes and audiences.

B. Candidates design a range of assessments for students that promote their development as writers, are appropriate to the writing task, and are consistent with current research and theory. Candidates are able to respond to student writing in process and to finished texts in ways that engage students' ideas and encourage their growth as writers over time.

C. Candidates design instruction related to the strategic use of language conventions (grammar, usage, and mechanics) in the context of students' writing for different audiences, purposes, and modalities.

D. Candidates design instruction that incorporates students' home and community languages to enable skillful control over their rhetorical choices and language practices for a variety of audiences and purposes.

(IV) Learners and Learning: Implementing English Language Arts Instruction

I.   Candidates plan, implement, assess, and reflect on research-based instruction that increases motivation and active student engagement, builds sustained learning of English language arts, and responds to diverse students' context-based needs.

A. Candidates plan and implement instruction based on ELA curricular requirements and standards, school and community contexts, and knowledge about students' linguistic and cultural backgrounds.

B. Candidates use data about their students' individual differences, identities, and funds of knowledge for literacy learning to create inclusive learning environments that contextualize curriculum and instruction and help students participate actively in their own learning in ELA.

C. Candidates differentiate instruction based on students' self-assessments and formal and informal assessments of learning in English language arts; candidates communicate with students about their performance in ways that actively involve them in their own learning.

D. Candidates select, create, and use a variety of instructional strategies and teaching resources, including contemporary technologies and digital media, consistent with what is currently known about student learning in English Language Arts.

(IV). Professional Knowledge and Skills

I. Candidates demonstrate knowledge of how theories and research about social justice, diversity, equity, student identities, and schools as institutions can enhance students' opportunities to learn in English Language Arts.

A. Candidates plan and implement English language arts and literacy instruction that promotes social justice and critical engagement with complex issues related to maintaining a diverse, inclusive, and equitable society.

B. Candidates use knowledge of theories and research to plan instruction responsive to students' local, national and international histories, individual identities (e.g., race, ethnicity, gender expression, age, appearance, ability, spiritual belief, sexual orientation, socioeconomic status, and community environment), and languages/dialects as they affect students' opportunities to learn in ELA..

II. Candidates are prepared to interact knowledgeably with students, families, and colleagues based on social needs and institutional roles, engage in leadership and/or collaborative roles in English Language Arts professional learning communities, and actively develop as professional educators.

A. Candidates model literate and ethical practices in ELA teaching, and engage in/reflect on a variety of experiences related to ELA.

B. Candidates engage in and reflect on a variety of experiences related to ELA that demonstrate understanding of and readiness for leadership, collaboration, ongoing professional development, and community engagement.

(vi) Mathematics Concentration. Programs that prepare middle level teachers in the concentration area of mathematics shall meet the following standards published by the National Council of Teachers of Mathematics(NCTM) (2012):

(I) Content Knowledge. Candidates of middle level mathematics demonstrate conceptual understanding and apply knowledge of major mathematics concepts, algorithms, procedures, connections, and applications within and among mathematical content domains.

(II) Mathematical Practices. Candidates of middle level mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as essential mathematical practices. Candidates understand that these practices intersect with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching.

(III) Content Pedagogy. Candidates of middle level mathematics apply knowledge of curriculum standards for mathematics and their relationship to student learning within and across mathematical domains. Candidates incorporate research-based mathematical experiences and include multiple instructional mathematical understanding and proficiency. Candidates provide students with opportunities to do mathematics by allowing students to talk about it, connect it to both theoretical and real-world contexts. Candidates plan, select, implement, interpret, and use formative and summative assessments for monitoring student learning, measuring student mathematical understanding, and informing practice.

(IV) Mathematical Learning Environment. Candidates of middle level mathematics exhibit knowledge of young adolescent learning, development, and behavior. They use this knowledge to plan and create sequential learning opportunities grounded in mathematics education research where students are actively engaged in the mathematics they are learning and building from prior knowledge and skills. Candidates demonstrate a positive disposition toward mathematical practices and learning, include culturally relevant perspectives in teaching, and demonstrate equitable and ethical treatment of and high expectations for all students. Candidates use instructional tools such as manipulatives, digital tools, and virtual resources to enhance learning while recognizing the possible limitations of such tools.

(V) Impact on Student Learning.   Candidates of middle level mathematics provide evidence demonstrating that as a result of their instruction, secondary students' conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and application of major mathematics concepts in varied contexts have increased.   Candidates support the continual development of a productive disposition toward mathematics. Candidates show that new student mathematical knowledge has been created as a consequence of their ability to engage students in mathematical experiences that are developmentally appropriate, require active engagement, and include mathematical-specific technology in building new knowledge.

(VI) Professional Knowledge and Skills.   Candidates of middle level mathematics are lifelong learners and recognize that learning is often collaborative. They participate in professional development experiences specific to mathematics and mathematics education, draw upon mathematics education research to inform practice, continuously reflect on their practice, and utilize resources from professional mathematics organizations.

(vii) Science Concentration. Programs that prepare middle grades teachers in the concentration area of science shall meet the following standards adapted from the National Science Teachers' Association (NSTA) (2011):

(I)   The program shall prepare candidates who can understand and articulate the knowledge and practices of contemporary science. They interrelate and interpret important concepts, ideas, and applications in the fields of biology, physical sciences and earth and space science. The sciences should be interwoven to develop interdisciplinary perspectives and mastery of competencies in each content area: life science, physical science, and Earth and space science:

 I.   Candidates should be prepared in life science to lead students to understand:

A.   Features distinguishing living from nonliving systems;

B.   Characteristics distinguishing plants, animals, and other living things;

C.   Multiple ways to order and classify living things;

D.   Ways organisms function and depend on their environments;

E.   Ways organisms are interdependent;

F.   Reproductive patterns and life cycles of common organisms;

G.   Growth, change, and interactions of populations to form communities;

H.   Factors governing the structures, functions, and behaviors of living systems;

I.   Multiple systems of classification of organisms;

J. Cycles of matter, and flow of energy, through living and nonliving pathways;

K. Natural selection, adaptation, diversity, and speculation;

L. Structure, function, and reproduction of cells, including microorganisms;

M. Levels of organization from cells to biomes;

N. Reproduction and heredity, including human reproduction and contraception;

O. Behavior of living systems and the role of feedback in their regulation; and

P. Hazards related to living things including allergies, poisons, disease, and aggression.

II. Candidates should be prepared in physical science to lead students to understand:

A. Properties of matter such as mass, solubility, and density;

B. Combinations of matter to form solutions, mixtures, and compounds with different properties;

C. Variations in the physical and chemical state of matter and changes among states;

D. Ordering and classification of matter and energy and their behaviors;

E. Factors affecting the position, motion and behavior of objects;

F. Properties of simple machines and tools, such as levers and screws;

G. Properties of light, electricity, sound, and magnetism;

H. Types of energy, energy sources, and simple transformations of energy;

I. Properties and applications of sound, light, magnetism, and electricity;

J. Potential and kinetic energies and concepts of work;

K. Energy flow in physical and chemical systems, including simple machines;

L. State of matter and bonding in relation to molecular behavior and energy;

M. Conversation of matter and energy;

N. Classifications of elements and compounds;

O. Solvents (especially water) and solutions;

P. Chemical nature of the earth and its living organisms; and

Q. Chemical, electrical and radiation hazards.

III. Candidates should be prepared in Earth and Space Sciences to lead students to understand:

A. Natural objects in the sky and why they change in position and appearance;

B. Causes of the seasons and seasonal changes;

C. Changes in the atmosphere resulting in weather and climate;

D. Changes in the Earth creating and eroding landforms;

E. Basic properties of rocks, minerals, water, air, and energy;

F. Differences between renewable and nonrenewable natural resources;

G. Structures of objects and systems in space;

H. Earth's structure, evolution, history and place in the solar system;

I. Characteristics and importance of oceans, lakes, rivers, and the water cycle;

J. Characteristics of the atmosphere including weather and climate;

K. Changes in the Earth caused by chemical, physical and biological forces;

L. Causes and occurrences of hazards such as tornadoes, hurricanes, and earthquakes;

M. Characteristics and importance of cycles of matter such as oxygen, carbon, and nitrogen;

N. Characteristics of renewable and nonrenewable natural resources and implications for their use; and

O. Interactions among populations, resources, and environments.

IV. Candidates should be prepared to create interdisciplinary perspectives and to help students understand why science is important to them and to lead students to understand:

A. Differences between science, as investigation, and technology as design;

B. Impact of science and technology on themselves and their community, and on personal and community health;

C. How to use observation, experimentation, data collection, and inference to test ideas and construct concepts scientifically;

D. How to use metric measurement and mathematics for estimating and calculating, collecting and transforming data, modeling, and presenting results;

E. Interrelationships of pure and applied sciences, and technology;

F. Applications of science to local and regional problems and the relationship of science to ones' personal health, well-being, and safety;

G. Historical development and perspectives on science including contributions of underrepresented groups and the evolution of major ideas and theories;

H. Applications of science to the investigation of individual and community problems;

I. Use of technological tools in science, including calculators and computers; and

J.   Applications of basic statistics and statistical interpretation to the analysis of data.

(II)   The program shall prepare candidates who understand how students learn and develop scientific knowledge;

(III)   The program shall prepare candidates who are able to plan for engaging students in science learning by setting appropriate goals that are consistent with knowledge of how students learn science and are aligned with state and national standards. The plans reflect the nature and social context of science, practices of science and engineering, and appropriate safety considerations. Candidates design and select learning activities, instructional settings, and resources--including technology, to achieve those goals; and they plan fair and equitable assessment strategies to evaluate if the learning goals are met;

(IV)   The program shall prepare candidates who can in a classroom setting, demonstrate and maintain chemical safety, safety procedures, and the ethical treatment of living organisms needed in the science classroom appropriate to their area of licensure;

(V)   The program shall prepare candidates who can provide evidence to show that students' understanding of major science concepts, principles, theories, and laws have changed as a result of instruction by the candidate and that student knowledge is at a level of understanding beyond memorization;

(VI)   The program shall prepare candidates who strive continuously to improve their knowledge and understanding of the ever changing knowledge base of both content and science pedagogy. They identify with and conduct themselves as part of the science education community.

(viii) Social Studies Concentration. Programs that prepare middle grades teachers in the concentration area of social studies shall meet the following standards published by the National Council for the Social Studies:

(I)   The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of culture and cultural diversity;

(II)   The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of time, continuity, and change;

(III)   The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of people, places, and environment;

(IV)   The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of individual development and identity;

(V)   The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of individuals, groups, and institutions;

(VI)   The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of power, authority and governance;

(VII) The program shall prepare candidates in social studies who possess the knowledge, capabilities, and disposition to organize and provide instruction at the appropriate school level for the study of production, distribution, and consumption of goods and services;

(VIII) The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of science, technology and society;

(IX) The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of global connections and interdependence; and

(X) The program shall prepare candidates in social studies who possess the knowledge, capabilities, and dispositions to organize and provide instruction at the appropriate school level for the study of civic ideals and practices.

(b) The program shall meet all requirements specified in Rule 505-3-.01.

Authority O.C.G.A. § 20-2-200